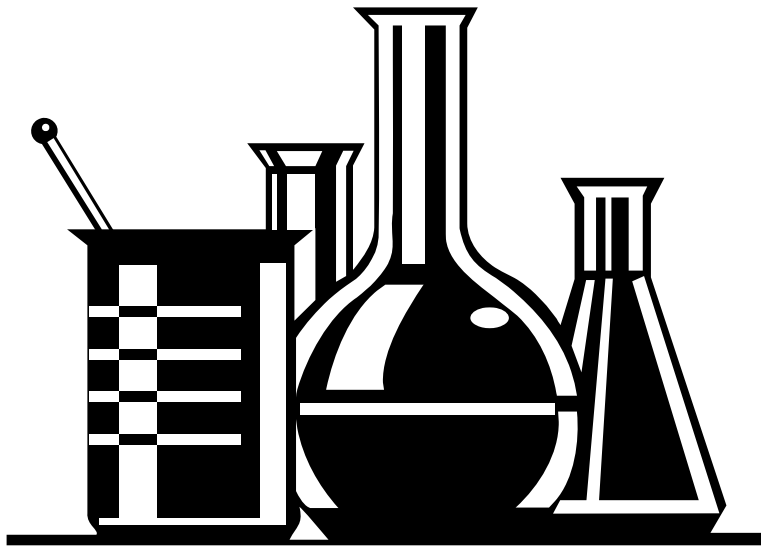


# Material Safety Data Sheets



*These papers must be easily accessible for all  
Firefighters and Authorized Personnel.*

# FLINN SCIENTIFIC INC.

"Your Safer Source for Science Supplies"

## Material Safety Data Sheet (MSDS)

MSDS #: 3.00

Revision Date: November 25, 2002

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### Section 1 — Chemical Product and Company Identification

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#### Acetamide

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

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### Section 2 — Composition, Information on Ingredients

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Acetamide

Synonyms: acetic acid amide, ethanamide

CAS#: 60-35-5

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### Section 3 — Hazards Identification

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Colorless to white crystal; deliquescent. Musty odor.  
Avoid all body tissue contact. Irritating to body tissues.  
Possible carcinogen.

#### FLINN AT-A-GLANCE

Health-0  
Flammability-1  
Reactivity-1  
Exposure-3  
Storage-1

0 is low hazard, 3 is high hazard

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### Section 4 — First Aid Measures

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Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash continuously with fresh water and mild liquid soap for 15 minutes.

Internal: Give no more than 1-2 cups of water for dilution. Do not induce vomiting. Call a physician or poison control immediately.

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### Section 5 — Fire Fighting Measures

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Non-flammable, combustible liquid.

When heated to decomposition, may produce toxic fumes of NO<sub>x</sub>, CO, or NH<sub>3</sub>.

**Fire Fighting Instructions:** Use triclass, dry chemical fire extinguisher. Firefighters should wear PPE and SCBA with full facepiece operated in positive pressure mode.

#### NFPA CODE

None Established

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### Section 6 — Accidental Release Measures

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Restrict unprotected personnel from area. Sweep up, place in sealed bag or container and dispose. Ventilate area and wash spill site after material pickup is complete. See Sections 8 and 13 for further information. Remove all ignition sources and ventilate area.

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### Section 7 — Handling and Storage

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Flinn Suggested Chemical Storage Pattern: Organic #2. Store with alcohols, glycols, amines and amides.

Deliquescent, store in Flinn Chem-Saf bag. Store in a cool dry place. Use and dispense in a hood.

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### Section 8 — Exposure Controls, Personal Protection

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Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron. Always wear a NIOSH-approved respirator with proper cartridges or a positive pressure, air-supplied respirator when handling this material in emergency situations (spill or fire).

### Section 9 — Physical and Chemical Properties

Colorless to white crystal.  
Solubility: One gram dissolves in 0.5 ml of water and 2 ml of alcohol, soluble in chloroform.  
Formula: CH<sub>3</sub>CONH<sub>2</sub>  
Formula Weight: 59.07

Specific Gravity: 1.159  
Melting Point: 81 C  
Vapor Pressure: 1mm @ 65 C  
Boiling Point: 222 C

### Section 10 — Stability and Reactivity

Avoid contact with strong oxidizers.  
Shelf life: Poor; deliquescent.

### Section 11 — Toxicological Information

Acute effects: irritant  
Chronic effects: possible carcinogen, mutagen  
Target organs: liver

ORL-RAT LD50: 7000 mg/kg  
IHL-RAT LC50: N.A.  
SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

### Section 12 — Ecological Information

Data not yet available

### Section 13 — Disposal Considerations

Please consult with state and local regulations.  
Flinn Suggested Disposal Method #26a is one option.

### Section 14 — Transport Information

Shipping Name: Not regulated  
Hazard Class: N/A  
UN Number: N/A

N/A = Not applicable

### Section 15 — Regulatory Information

TSCA-listed, EINECS-listed (200-473-5).

### Section 16 — Other Information

Consult your copy of the Flinn Scientific Catalog/Reference Manual for additional information about laboratory chemicals. This Material Safety Data Sheet (MSDS) is for guidance and is based upon information and tests believed to be reliable. Flinn Scientific Inc. makes no guarantee of the accuracy or completeness of the data and shall not be liable for any damages relating thereto. The data is offered solely for your consideration, investigation, and verification. Flinn Scientific Inc. assumes no legal responsibility for use or reliance upon this data.

**FLINN SCIENTIFIC INC.**

"Your Safer Source for Science Supplies"

*Flinn--"Your Safer Source for Chemicals"*

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(800) 452-1261 Fax (866) 452-1436

MSDS Number: A0323 \* \* \* \* \* Effective Date: 11/21/08 \* \* \* \* \* Supersedes: 02/16/06



From: Mallinckrodt Baker, Inc.  
222 Red School Lane  
Phillipsburg, NJ 08865



24 Hour Emergency Telephone: 908-859-2151  
CHEMTREC: 1-800-424-9300

National Response in Canada  
CANUTEC: 613-996-6666

Outside U.S. And Canada  
Chemtrec: 703-527-3887

NOTE: CHEMTREC, CANUTEC and National Response Center emergency numbers to be used only in the event of chemical emergencies involving a spill, leak, fire, exposure or accident involving chemicals.

All non-emergency questions should be directed to Customer Service (1-800-562-2537) for assistance.

## Acetic Acid Solution

### 1. Product Identification

**Synonyms:** methane carboxylic acid; Acetic acid, 30% solution (w/v); Acetic acid solution 4.0N

**CAS No.:** 64-19-7

**Molecular Weight:** 60.05

**Chemical Formula:** CH<sub>3</sub>COOH (in water)

**Product Codes:** 0320, 0330

### 2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
Acetic Acid	64-19-7	22 - 30%	Yes
Water	7732-18-5	70 - 78%	No

### 3. Hazards Identification

#### Emergency Overview

**POISON! DANGER! CORROSIVE. LIQUID AND MIST CAUSE SEVERE BURNS TO ALL BODY TISSUE. MAY BE FATAL IF SWALLOWED. HARMFUL IF INHALED. INHALATION MAY CAUSE LUNG AND TOOTH DAMAGE. FLAMMABLE LIQUID AND VAPOR.**

**SAF-T-DATA<sup>(tm)</sup>** Ratings (Provided here for your convenience)

Health Rating: 3 - Severe (Poison)

Flammability Rating: 2 - Moderate

Reactivity Rating: 2 - Moderate

Contact Rating: 4 - Extreme (Corrosive)

Lab Protective Equip: GOGGLES & SHIELD; LAB COAT & APRON; VENT HOOD; PROPER GLOVES; CLASS B EXTINGUISHER

Storage Color Code: White (Corrosive)

#### Potential Health Effects

Hazard evaluation based upon pure (glacial) acetic acid. Hazards of dilute solutions may not be as severe as those of glacial acetic acid.

#### Inhalation:

Inhalation of concentrated vapors may cause serious damage to the lining of the nose, throat, and lungs. Breathing difficulties may occur. Neither odor nor degree of irritation are adequate to indicate vapor concentration.

#### Ingestion:

Swallowing can cause severe injury leading to death. Symptoms include sore throat, vomiting, and diarrhea. Ingestion of as little as 1.0 ml has resulted in perforation of the esophagus.

#### Skin Contact:

Contact with concentrated solution may cause serious damage to the skin. Effects may include redness, pain, skin burns. High vapor concentrations may cause skin sensitization.

#### Eye Contact:

Eye contact with concentrated solutions may cause severe eye damage followed by loss of sight. Exposure to vapor may cause intense watering and irritation to eyes.

#### Chronic Exposure:

Repeated or prolonged exposures may cause darkening of the skin, erosion of exposed front teeth, and chronic inflammation of the nose, throat, and bronchial tubes.

#### Aggravation of Pre-existing Conditions:

Persons with pre-existing skin disorders or eye problems, or impaired respiratory function may be more susceptible to the effects of the substance.

### 4. First Aid Measures

Hazard evaluation based upon pure (glacial) acetic acid. Hazards of dilute solutions may not be as severe as those of glacial acetic acid.

#### Inhalation:

Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.

**Ingestion:**

DO NOT INDUCE VOMITING! Give large quantities of water or milk if available. Never give anything by mouth to an unconscious person. Get medical attention immediately.

**Skin Contact:**

In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. Call a physician.

**Eye Contact:**

Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention immediately.

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## 5. Fire Fighting Measures

**Fire:**

Flash point: 39C (102F) CC

Autoignition temperature: 516C (961F)

Flammable limits in air % by volume:

lcl: 4.0; ucl: 19.9

Listed fire data is for Glacial Acetic Acid. Flammable Liquid and Vapor!

**Explosion:**

Above flash point, vapor-air mixtures are explosive within flammable limits noted above. Vapors can flow along surfaces to distant ignition source and flash back. Contact with strong oxidizers may cause fire. Reacts with most metals to produce hydrogen gas, which can form an explosive mixture with air.

**Fire Extinguishing Media:**

Water spray, dry chemical, alcohol foam, or carbon dioxide. Water spray may be used to keep fire exposed containers cool.

**Special Information:**

In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode. Water diluted acid can react with metals to form hydrogen gas.

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## 6. Accidental Release Measures

Ventilate area of leak or spill. Remove all sources of ignition. Wear appropriate personal protective equipment as specified in Section 8. Isolate hazard area. Keep unnecessary and unprotected personnel from entering. Use water spray to dilute spill to a nonflammable mixture. Contain and recover liquid when possible. Collect liquid in an appropriate container or absorb with an inert material (e. g., vermiculite, dry sand, earth), and place in a chemical waste container. Use non-sparking tools and equipment. Do not use combustible materials, such as saw dust. Do not flush to sewer! If a leak or spill has not ignited, use water spray to disperse the vapors, to protect personnel attempting to stop leak, and to flush spills away from exposures. US Regulations (CERCLA) require reporting spills and releases to soil, water and air in excess of reportable quantities. The toll free number for the US Coast Guard National Response Center is (800) 424-8802.

J. T. Baker NEUTRASORB® acid neutralizers are recommended for spills of this product.

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## 7. Handling and Storage

Protect against physical damage. Store in a cool, dry well-ventilated location, away from any area where the fire hazard may be acute. Outside or detached storage is preferred. Separate from incompatibles. Containers should be bonded and grounded for transfers to avoid static sparks. Storage and use areas should be No Smoking areas. Use non-sparking type tools and equipment, including explosion proof ventilation. Store above 17C (63F). Containers of this material may be hazardous when empty since they retain product residues (vapors, liquid); observe all warnings and precautions listed for the product.

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## 8. Exposure Controls/Personal Protection

**Airborne Exposure Limits:**

-OSHA Permissible Exposure Limit (PEL):

10 ppm (TWA).

-ACGIH Threshold Limit Value (TLV):

10 ppm (TWA); 15 ppm (STEL).

**Ventilation System:**

A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, *Industrial Ventilation, A Manual of Recommended Practices*, most recent edition, for details.

**Personal Respirators (NIOSH Approved):**

If the exposure limit is exceeded and engineering controls are not feasible, a full facepiece respirator with organic vapor cartridge may be worn up to 50 times the exposure limit or the maximum use concentration specified by the appropriate regulatory agency or respirator supplier, whichever is lowest. For emergencies or instances where the exposure levels are not known, use a full-facepiece positive-pressure, air-supplied respirator. **WARNING:** Air purifying respirators do not protect workers in oxygen-deficient atmospheres.

**Skin Protection:**

Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact.

**Eye Protection:**

Use chemical safety goggles and/or a full face shield where splashing is possible. Maintain eye wash fountain and quick-drench facilities in work area.

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## 9. Physical and Chemical Properties

Physical data below refers to Acetic Acid Glacial.

**Appearance:**

Clear, colorless liquid.

**Odor:**

Strong, vinegar-like.

**Solubility:**

Infinitely soluble.

**Density:**

1.05

**pH:**

2.4 (1.0M solution)

% Volatiles by volume @ 21C (70F):

100

**Boiling Point:**

118C (244F)

**Melting Point:**

16.6C (63F)

**Vapor Density (Air=1):**

2.1

**Vapor Pressure (mm Hg):**

11 @ 20C (68F)

**Evaporation Rate (BuAc=1):**

0.97

## 10. Stability and Reactivity

**Stability:**

Stable under ordinary conditions of use and storage. Heat and sunlight can contribute to instability.

**Hazardous Decomposition Products:**

Carbon dioxide and carbon monoxide may form when heated to decomposition. May also release toxic and irritating vapors.

**Hazardous Polymerization:**

Will not occur.

**Incompatibilities:**

Acetic Acid is incompatible with chromic acid, nitric acid, ethylene glycol, perchloric acid, phosphorous trichloride, oxidizers, sodium peroxide, strong caustics, most metals (except aluminum), carbonates, hydroxides, oxides, and phosphates.

**Conditions to Avoid:**

Heat, flame, ignition sources, freezing, incompatibles

## 11. Toxicological Information

For Acetic Acid: Oral rat LD50: 3310 mg/kg. Dermal rabbit LD50: 1.06g/Kg. Inhalation mouse LC50: 5620 ppm/1 hr. Investigated as a mutagen, reproductive effector.

Ingredient	---NTP Carcinogen---		IARC Category
	Known	Anticipated	
Acetic Acid (64-19-7)	No	No	None
Water (7732-18-5)	No	No	None

## 12. Ecological Information

**Environmental Fate:**

For glacial acetic acid: If released to the atmosphere, it is degraded in the vapor phase by reaction with photochemically produced hydroxyl radicals (estimated typical half-life of 26.7 days). If released to water, acetic acid will biodegrade readily. If released to soil, it will biodegrade readily. Standard dilution BOD water, 5-day 57.7% theoretical BOD average. Acetic acid shows no potential for biological accumulation or food chain contamination. BCF estimated < 1.

**Environmental Toxicity:**

For glacial acetic acid:

EC50 (wheat fumigation) = 23.3 mg/m<sup>3</sup>/2-hr, effect: leaf injury

LC50 (shrimp) = 100 - 300 mg/l/48-hr

LC50 (fathead minnow) = 88 mg/l/96-hr

This material may be toxic to aquatic life.

## 13. Disposal Considerations

Whatever cannot be saved for recovery or recycling should be handled as hazardous waste and sent to a RCRA approved waste facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

## 14. Transport Information

**Domestic (Land, D.O.T.)**

**Proper Shipping Name:** ACETIC ACID, 30% SOLUTION

**Hazard Class:** 8

**UN/NA:** UN2790

**Packing Group:** III

**Information reported for product/size:** 200L

**International (Water, I.M.O.)**

**Proper Shipping Name:** ACETIC ACID, 30% SOLUTION

**Hazard Class:** 8

**UN/NA:** UN2790

**Packing Group:** III

**Information reported for product/size:** 200L

**International (Air, I.C.A.O.)**

**Proper Shipping Name:** ACETIC ACID, 30% SOLUTION

**Hazard Class:** 8

**UN/NA:** UN2790

**Packing Group:** III

Information reported for product/size: 200L

**15. Regulatory Information**

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-----\Chemical Inventory Status - Part 1\-----
Ingredient                               TSCA  EC  Japan  Australia
-----
Acetic Acid (64-19-7)                   Yes  Yes  Yes    Yes
Water (7732-18-5)                       Yes  Yes  Yes    Yes

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-----\Chemical Inventory Status - Part 2\-----
Ingredient                               --Canada--
                               Korea  DSL  NDSL  Phil.
-----
Acetic Acid (64-19-7)                   Yes  Yes  No    Yes
Water (7732-18-5)                       Yes  Yes  No    Yes

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-----\Federal, State & International Regulations - Part 1\-----
Ingredient                               -SARA 302-  -SARA 313-
                               RQ  TPQ  List  Chemical Catg.
-----
Acetic Acid (64-19-7)                   No   No   No    No
Water (7732-18-5)                       No   No   No    No

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-----\Federal, State & International Regulations - Part 2\-----
Ingredient                               -RCRA-  -TSCA-
                               CERCLA  261.33  8(d)
-----
Acetic Acid (64-19-7)                   5000   No    No
Water (7732-18-5)                       No     No    No

```

Chemical Weapons Convention: No      TSCA 12(b): No      CDTA: No  
SARA 311/312: Acute: Yes      Chronic: Yes      Fire: Yes      Pressure: No  
Reactivity: Yes      (Mixture / Liquid)

**Australian Hazchem Code: 2R****Poison Schedule: S5****WHMIS:**

This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

**16. Other Information****NFPA Ratings:** Health: 3 Flammability: 1 Reactivity: 0**Label Hazard Warning:**

POISON! DANGER! CORROSIVE. LIQUID AND MIST CAUSE SEVERE BURNS TO ALL BODY TISSUE. MAY BE FATAL IF SWALLOWED. HARMFUL IF INHALED. INHALATION MAY CAUSE LUNG AND TOOTH DAMAGE. FLAMMABLE LIQUID AND VAPOR.

**Label Precautions:**

Do not get in eyes, on skin, or on clothing.

Do not breathe vapor or mist.

Keep container closed.

Use only with adequate ventilation.

Wash thoroughly after handling.

Keep away from heat, sparks and flame.

**Label First Aid:**

In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. If swallowed, DO NOT INDUCE VOMITING. Give large quantities of water. Never give anything by mouth to an unconscious person. If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. In all cases call a physician.

**Product Use:**

Laboratory Reagent.

**Revision Information:**

No Changes.

**Disclaimer:**

\*\*\*\*\*

**Mallinckrodt Baker, Inc. provides the information contained herein in good faith but makes no representation as to its comprehensiveness or accuracy.**

**This document is intended only as a guide to the appropriate precautionary handling of the material by a properly trained person using this product.**

**Individuals receiving the information must exercise their independent judgment in determining its appropriateness for a particular purpose.**

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\*\*\*\*\*

**Prepared by:** Environmental Health & Safety

Phone Number: (314) 654-1600 (U.S.A.)

MSDS Number: **A0446** \* \* \* \* \* Effective Date: 02/01/07 \* \* \* \* \* Supersedes: 05/20/04

<b>MSDS</b>	<b>Material Safety Data Sheet</b>		24 Hour Emergency Telephone: 908-859-2151 CHEMTREC: 1-800-424-9300
	From: Mallinckrodt Baker, Inc. 222 Red School Lane Phillipsburg, NJ 08865		National Response In Canada CANUTEC: 613-996-6666
Outside U.S. and Canada Chemtrec: 703-527-3887			NOTE: CHEMTREC, CANUTEC and National Response Center emergency numbers to be used only in the event of chemical emergencies involving a spill, leak, fire, exposure or accident involving chemicals.

All non-emergency questions should be directed to Customer Service (1-800-582-2637) for assistance.

# ACETONE

## 1. Product Identification

**Synonyms:** Dimethylketone; 2-propanone; dimethylketal

**CAS No.:** 67-64-1

**Molecular Weight:** 58.08

**Chemical Formula:** (CH<sub>3</sub>)<sub>2</sub>CO

**Product Codes:**

J.T. Baker: 5008, 5018, 5356, 5580, 5965, 5975, 9001, 9002, 9003, 9004, 9005, 9006, 9007, 9008, 9009, 9010, 9015, 9024, 9036, 9125, 9254, 9271, A134, V655  
 Mallinckrodt: 0018, 2432, 2435, 2437, 2438, 2440, 2443, 2850, H451, H580, H981

## 2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
Acetone	67-64-1	99 - 100%	Yes

## 3. Hazards Identification

### Emergency Overview

**DANGER! EXTREMELY FLAMMABLE LIQUID AND VAPOR. VAPOR MAY CAUSE FLASH FIRE. HARMFUL IF SWALLOWED OR INHALED. CAUSES IRRITATION TO SKIN, EYES AND RESPIRATORY TRACT. AFFECTS CENTRAL NERVOUS SYSTEM.**

**SAF-T-DATA<sup>(tm)</sup>** Ratings (Provided here for your convenience)

Health Rating: 2 - Moderate

Flammability Rating: 3 - Severe (Flammable)

Reactivity Rating: 0 - None

Contact Rating: 3 - Severe

Lab Protective Equip: GOGGLES & SHIELD; LAB COAT & APRON; VENT HOOD; PROPER GLOVES; CLASS B EXTINGUISHER

Storage Color Code: Red (Flammable)

### Potential Health Effects

#### Inhalation:

Inhalation of vapors irritates the respiratory tract. May cause coughing, dizziness, dullness, and headache. Higher concentrations can produce central nervous system depression, narcosis, and unconsciousness.

#### Ingestion:

Swallowing small amounts is not likely to produce harmful effects. Ingestion of larger amounts may produce abdominal pain, nausea and vomiting. Aspiration into lungs can produce severe lung damage and is a medical emergency. Other symptoms are expected to parallel inhalation.

#### Skin Contact:

Irritating due to defatting action on skin. Causes redness, pain, drying and cracking of the skin.

#### Eye Contact:

Vapors are irritating to the eyes. Splashes may cause severe irritation, with stinging, tearing, redness and pain.

#### Chronic Exposure:

Prolonged or repeated skin contact may produce severe irritation or dermatitis.

#### Aggravation of Pre-existing Conditions:

Use of alcoholic beverages enhances toxic effects. Exposure may increase the toxic potential of chlorinated hydrocarbons, such as chloroform, trichloroethane.

## 4. First Aid Measures

#### Inhalation:

Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

#### Ingestion:

Aspiration hazard. If swallowed, vomiting may occur spontaneously, but DO NOT INDUCE. If vomiting occurs, keep head below hips to prevent aspiration into lungs. Never give anything by mouth to an unconscious person. Call a physician immediately.

#### Skin Contact:

Immediately flush skin with plenty of water for at least 15 minutes. Remove contaminated clothing and shoes. Get medical attention. Wash clothing before reuse.



Thoroughly clean shoes before reuse.

**Eye Contact:**

Immediately flush eyes with plenty of water for at least 15 minutes, lifting upper and lower eyelids occasionally. Get medical attention.

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## 5. Fire Fighting Measures

**Fire:**

Flash point: -20C (-4F) CC

Autoignition temperature: 465C (869F)

Flammable limits in air % by volume:

lcl: 2.5; ucl: 12.8

Extremely Flammable Liquid and Vapor! Vapor may cause flash fire.

**Explosion:**

Above flash point, vapor-air mixtures are explosive within flammable limits noted above. Vapors can flow along surfaces to distant ignition source and flash back. Contact with strong oxidizers may cause fire. Sealed containers may rupture when heated. This material may produce a floating fire hazard. Sensitive to static discharge.

**Fire Extinguishing Media:**

Dry chemical, alcohol foam or carbon dioxide. Water may be ineffective. Water spray may be used to keep fire exposed containers cool, dilute spills to nonflammable mixtures, protect personnel attempting to stop leak and disperse vapors.

**Special Information:**

In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode.

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## 6. Accidental Release Measures

Ventilate area of leak or spill. Remove all sources of ignition. Wear appropriate personal protective equipment as specified in Section 8. Isolate hazard area. Keep unnecessary and unprotected personnel from entering. Contain and recover liquid when possible. Use non-sparking tools and equipment. Collect liquid in an appropriate container or absorb with an inert material (e. g., vermiculite, dry sand, earth), and place in a chemical waste container. Do not use combustible materials, such as saw dust. Do not flush to sewer! If a leak or spill has not ignited, use water spray to disperse the vapors, to protect personnel attempting to stop leak, and to flush spills away from exposures. US Regulations (CERCLA) require reporting spills and releases to soil, water and air in excess of reportable quantities. The toll free number for the US Coast Guard National Response Center is (800) 424-8802.

J. T. Baker SOLUSORB® solvent adsorbent is recommended for spills of this product.

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## 7. Handling and Storage

Protect against physical damage. Store in a cool, dry well-ventilated location, away from any area where the fire hazard may be acute. Outside or detached storage is preferred. Separate from incompatibles. Containers should be bonded and grounded for transfers to avoid static sparks. Storage and use areas should be No Smoking areas. Use non-sparking type tools and equipment, including explosion proof ventilation. Containers of this material may be hazardous when empty since they retain product residues (vapors, liquid); observe all warnings and precautions listed for the product.

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## 8. Exposure Controls/Personal Protection

**Airborne Exposure Limits:**

Acetone:

-OSHA Permissible Exposure Limit (PEL):

1000 ppm (TWA)

-ACGIH Threshold Limit Value (TLV):

500 ppm (TWA), 750 ppm (STEL) A4 - not classifiable as a human carcinogen

**Ventilation System:**

A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, *Industrial Ventilation, A Manual of Recommended Practices*, most recent edition, for details.

**Personal Respirators (NIOSH Approved):**

If the exposure limit is exceeded and engineering controls are not feasible, a half-face organic vapor respirator may be worn for up to ten times the exposure limit, or the maximum use concentration specified by the appropriate regulatory agency or respirator supplier, whichever is lowest. A full-face piece organic vapor respirator may be worn up to 50 times the exposure limit, or the maximum use concentration specified by the appropriate regulatory agency or respirator supplier, whichever is lowest. For emergencies or instances where the exposure levels are not known, use a full-face piece positive-pressure, air-supplied respirator.

WARNING: Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.

**Skin Protection:**

Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact.

**Eye Protection:**

Use chemical safety goggles and/or a full face shield where splashing is possible. Maintain eye wash fountain and quick-drench facilities in work area.

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## 9. Physical and Chemical Properties

**Appearance:**

Clear, colorless, volatile liquid.

**Odor:**

Fragrant, mint-like

**Solubility:**

Miscible in all proportions in water.

**Specific Gravity:**

0.79 @ 20C/4C

**pH:**

No information found.

% Volatiles by volume @ 21C (70F):

100

**Boiling Point:**

56.5C (133F) @ 760 mm Hg

**Melting Point:**

-95C (-139F)

**Vapor Density (Air=1):**

2.0

**Vapor Pressure (mm Hg):**

400 @ 39.5C (104F)

**Evaporation Rate (BuAc=1):**

ca. 7.7

## 10. Stability and Reactivity

**Stability:**

Stable under ordinary conditions of use and storage.

**Hazardous Decomposition Products:**

Carbon dioxide and carbon monoxide may form when heated to decomposition.

**Hazardous Polymerization:**

Will not occur.

**Incompatibilities:**

Concentrated nitric and sulfuric acid mixtures, oxidizing materials, chloroform, alkalis, chlorine compounds, acids, potassium t-butoxide.

**Conditions to Avoid:**

Heat, flames, ignition sources and incompatibles.

## 11. Toxicological Information

Oral rat LD50: 5800 mg/kg; Inhalation rat LC50: 50,100mg/m3; Irritation eye rabbit, Standard Draize, 20 mg severe; investigated as a tumorigen, mutagen, reproductive effector.

Ingredient	---NTP Carcinogen---		IARC Category
	Known	Anticipated	
Acetone (67-64-1)	No	No	None

## 12. Ecological Information

**Environmental Fate:**

When released into the soil, this material is expected to readily biodegrade. When released into the soil, this material is expected to leach into groundwater. When released into the soil, this material is expected to quickly evaporate. When released into water, this material is expected to readily biodegrade. When released to water, this material is expected to quickly evaporate. This material has a log octanol-water partition coefficient of less than 3.0. This material is not expected to significantly bioaccumulate. When released into the air, this material may be moderately degraded by reaction with photochemically produced hydroxyl radicals. When released into the air, this material may be moderately degraded by photolysis. When released into the air, this material is expected to be readily removed from the atmosphere by wet deposition.

**Environmental Toxicity:**

This material is not expected to be toxic to aquatic life. The LC50/96-hour values for fish are over 100 mg/l.

## 13. Disposal Considerations

Whatever cannot be saved for recovery or recycling should be handled as hazardous waste and sent to a RCRA approved incinerator or disposed in a RCRA approved waste facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

## 14. Transport Information

**Domestic (Land, D.O.T.)****Proper Shipping Name:** ACETONE**Hazard Class:** 3**UN/NA:** UN1090**Packing Group:** II**Information reported for product/size:** 188L**International (Water, I.M.O.)****Proper Shipping Name:** ACETONE**Hazard Class:** 3**UN/NA:** UN1090**Packing Group:** II**Information reported for product/size:** 188L

## 15. Regulatory Information

Ingredient	-----\Chemical Inventory Status - Part 1\-----			
	TSCA	EC	Japan	Australia
Acetone (67-64-1)	Yes	Yes	Yes	Yes

-----\Chemical Inventory Status - Part 2\-----	
--Canada--	
Acetone (67-64-1)	Yes

Ingredient	Korea	DSL	NDSL	Phil.
Acetone (67-64-1)	Yes	Yes	No	Yes

-----\Federal, State & International Regulations - Part 1\-----				
Ingredient	-SARA 302-		-SARA 313-	
	RQ	TPQ	List	Chemical Catg.
Acetone (67-64-1)	No	No	Yes	No

-----\Federal, State & International Regulations - Part 2\-----			
Ingredient	-RCRA-		-TSCA-
	CERCLA	261.33	8 (d)
Acetone (67-64-1)	5000	U002	No

Chemical Weapons Convention: No TSCA 12(b): No CDTA: Yes  
SARA 311/312: Acute: Yes Chronic: No Fire: Yes Pressure: No  
Reactivity: No (Pure / Liquid)

**Australian Hazchem Code:** 2[Y]E

**Poison Schedule:** None allocated.

**WHMIS:**

This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

## 16. Other Information

**NFPA Ratings:** Health: 1 Flammability: 3 Reactivity: 0

**Label Hazard Warning:**

DANGER! EXTREMELY FLAMMABLE LIQUID AND VAPOR. VAPOR MAY CAUSE FLASH FIRE. HARMFUL IF SWALLOWED OR INHALED. CAUSES IRRITATION TO SKIN, EYES AND RESPIRATORY TRACT. AFFECTS CENTRAL NERVOUS SYSTEM.

**Label Precautions:**

Keep away from heat, sparks and flame.

Keep container closed.

Use only with adequate ventilation.

Wash thoroughly after handling.

Avoid breathing vapor.

Avoid contact with eyes, skin and clothing.

**Label First Aid:**

Aspiration hazard. If swallowed, vomiting may occur spontaneously, but DO NOT INDUCE. If vomiting occurs, keep head below hips to prevent aspiration into lungs. Never give anything by mouth to an unconscious person. Call a physician immediately. If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes. Remove contaminated clothing and shoes. Wash clothing before reuse. In all cases, get medical attention.

**Product Use:**

Laboratory Reagent.

**Revision Information:**

No Changes.

**Disclaimer:**

\*\*\*\*\*  
Mallinckrodt Baker, Inc. provides the information contained herein in good faith but makes no representation as to its comprehensiveness or accuracy. This document is intended only as a guide to the appropriate precautionary handling of the material by a properly trained person using this product. Individuals receiving the information must exercise their independent judgment in determining its appropriateness for a particular purpose. MALLINCKRODT BAKER, INC. MAKES NO REPRESENTATIONS OR WARRANTIES, EITHER EXPRESS OR IMPLIED, INCLUDING WITHOUT LIMITATION ANY WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE WITH RESPECT TO THE INFORMATION SET FORTH HEREIN OR THE PRODUCT TO WHICH THE INFORMATION REFERS. ACCORDINGLY, MALLINCKRODT BAKER, INC. WILL NOT BE RESPONSIBLE FOR DAMAGES RESULTING FROM USE OF OR RELIANCE UPON THIS INFORMATION.  
\*\*\*\*\*

**Prepared by:** Environmental Health & Safety

Phone Number: (314) 654-1600 (U.S.A.)

MSDS Number: A1856 \* \* \* \* \* Effective Date: 08/03/07 \* \* \* \* \* Supercedes: 11/10/05



From: Mallinckrodt Baker, Inc.  
222 Red School Lane  
Phillipsburg, NJ 08865



24 Hour Emergency Telephone: 908-859-2151  
CHEMTREC: 1-800-424-9300

National Response in Canada  
CANUTEC: 613-996-6666

Outside U.S. And Canada  
Chemtrec: 703-527-3887

NOTE: CHEMTREC, CANUTEC and National Response Center emergency numbers to be used only in the event of chemical emergencies involving a spill, leak, fire, exposure or accident involving chemicals.

All non-emergency questions should be directed to Customer Service (1-800-562-2537) for assistance.

## AGAR AGAR

### 1. Product Identification

**Synonyms:** Polysaccharide Complex  
**CAS No.:** 9002-18-0  
**Molecular Weight:** Not applicable.  
**Chemical Formula:** Not applicable.  
**Product Codes:** A434

### 2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
Agar	9002-18-0	90 - 100%	No

### 3. Hazards Identification

#### Emergency Overview

As part of good industrial and personal hygiene and safety procedure, avoid all unnecessary exposure to the chemical substance and ensure prompt removal from skin, eyes and clothing.

SAF-T-DATA<sup>(tm)</sup> Ratings (Provided here for your convenience)

Health Rating: 0 - None  
Flammability Rating: 0 - None  
Reactivity Rating: 0 - None  
Contact Rating: 0 - None  
Lab Protective Equip: GOGGLES; LAB COAT  
Storage Color Code: Green (General Storage)

#### Potential Health Effects

##### Inhalation:

No adverse health effects via inhalation.

##### Ingestion:

Not expected to be a health hazard via ingestion.

##### Skin Contact:

Not expected to be a health hazard from skin exposure.

##### Eye Contact:

Not expected to be a health hazard.

##### Chronic Exposure:

No adverse health effects expected.

##### Aggravation of Pre-existing Conditions:

No information found.

### 4. First Aid Measures

#### Inhalation:

Not expected to require first aid measures. Remove to fresh air. Get medical attention for any breathing difficulty.

#### Ingestion:

Not expected to require first aid measures. If large amounts were swallowed, give water to drink and get medical advice.

#### Skin Contact:

Not expected to require first aid measures. Wash exposed area with soap and water. Get medical advice if irritation develops.

#### Eye Contact:

Not expected to require first aid measures. Wash thoroughly with running water. Get medical advice if irritation develops.

## 5. Fire Fighting Measures

**Fire:**

Not considered to be a fire hazard.

**Explosion:**

Not considered to be an explosion hazard.

**Fire Extinguishing Media:**

Use any means suitable for extinguishing surrounding fire.

**Special Information:**

Use protective clothing and breathing equipment appropriate for the surrounding fire.

---

## 6. Accidental Release Measures

Ventilate area of leak or spill. Wear appropriate personal protective equipment as specified in Section 8. Spills: Sweep up and containerize for reclamation or disposal. Vacuuming or wet sweeping may be used to avoid dust dispersal.

---

## 7. Handling and Storage

Keep in a tightly closed container, stored in a cool, dry, ventilated area. Protect against physical damage. Containers of this material may be hazardous when empty since they retain product residues (dust, solids); observe all warnings and precautions listed for the product.

---

## 8. Exposure Controls/Personal Protection

**Airborne Exposure Limits:**

None established.

**Ventilation System:**

Not expected to require any special ventilation.

**Personal Respirators (NIOSH Approved):**

Not expected to require personal respirator usage.

**Skin Protection:**

Wear protective gloves and clean body-covering clothing.

**Eye Protection:**

Use chemical safety goggles. Maintain eye wash fountain and quick-drench facilities in work area.

---

## 9. Physical and Chemical Properties

**Appearance:**

Transparent strips, or thin translucent membranous pieces, or white to pale buff fine or coarse powder.

**Odor:**

Odorless.

**Solubility:**

Negligible (< 0.1%)

**Specific Gravity:**

No information found.

**pH:**

No information found.

**% Volatiles by volume @ 21C (70F):**

0

**Boiling Point:**

No information found.

**Melting Point:**

No information found.

**Vapor Density (Air=1):**

Not applicable.

**Vapor Pressure (mm Hg):**

Not applicable.

**Evaporation Rate (BuAc=1):**

No information found.

---

## 10. Stability and Reactivity

**Stability:**

Stable under ordinary conditions of use and storage.

**Hazardous Decomposition Products:**

Carbon dioxide and carbon monoxide may form when heated to decomposition.

**Hazardous Polymerization:**

Will not occur.

**Incompatibilities:**

Strong oxidizers.

**Conditions to Avoid:**

Moisture and incompatibles.

---

## 11. Toxicological Information

Agar: 11 gm/kg rat oral LD50. Investigated as a tumorigen.

```

-----\Cancer Lists\-----
Ingredient                ---NTP Carcinogen---
                          Known      Anticipated      IARC Category
-----
Agar (9002-18-0)         No           No                None
    
```

## 12. Ecological Information

**Environmental Fate:**  
No information found.  
**Environmental Toxicity:**  
No information found.

## 13. Disposal Considerations

Whatever cannot be saved for recovery or recycling should be managed in an appropriate and approved waste disposal facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

## 14. Transport Information

Not regulated.

## 15. Regulatory Information

```

-----\Chemical Inventory Status - Part 1\-----
Ingredient                TSCA  EC   Japan  Australia
-----
Agar (9002-18-0)         Yes  Yes  No     Yes
    
```

```

-----\Chemical Inventory Status - Part 2\-----
Ingredient                --Canada--
                          Korea  DSL   NDSL  Phil.
-----
Agar (9002-18-0)         Yes   Yes  No    Yes
    
```

```

-----\Federal, State & International Regulations - Part 1\-----
Ingredient                -SARA 302-  -SARA 313-
                          RQ   TPQ   List  Chemical Catg.
-----
Agar (9002-18-0)         No   No    No    No
    
```

```

-----\Federal, State & International Regulations - Part 2\-----
Ingredient                -RCRA-  -TSCA-
                          261.33  8(d)
-----
Agar (9002-18-0)         No      No     No
    
```

Chemical Weapons Convention: No    TSCA 12(b): No    CDTA: No  
SARA 311/312: Acute: No    Chronic: No    Fire: No    Pressure: No  
Reactivity: No    (Pure / Solid)

**Australian Hazchem Code:** None allocated.  
**Poison Schedule:** None allocated.

**WHMIS:**

This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

## 16. Other Information

**NFPA Ratings:** Health: 0 Flammability: 0 Reactivity: 0

**Label Hazard Warning:**

As part of good industrial and personal hygiene and safety procedure, avoid all unnecessary exposure to the chemical substance and ensure prompt removal from skin, eyes and clothing.

**Label Precautions:**

None.

**Label First Aid:**

Not applicable.

**Product Use:**

Laboratory Reagent.

**Revision Information:**

MSDS Section(s) changed since last revision of document include: 3.

**Disclaimer:**



\*\*\*\*\*

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\*\*\*\*\*

**Prepared by:** Environmental Health & Safety  
Phone Number: (314) 654-1600 (U.S.A.)

MSDS Number: A2760 \* \* \* \* \* Effective Date: 02/03/09 \* \* \* \* \* Supersedes: 05/19/08

<b>MSDS</b> Material Safety Data Sheet	24 Hour Emergency Telephone: 908-859-2151 CHEMTREC: 1-800-424-9300
	National Response In Canada CANUTEC: 613-996-6666
From: Mallinckrodt Baker, Inc. 222 Red School Lane Phillipsburg, NJ 08865	Outside U.S. and Canada Chemtrec: 703-527-3887
 	NOTE: CHEMTREC, CANUTEC and National Response Center emergency numbers to be used only in the event of chemical emergencies involving a spill, leak, fire, exposure or accident involving chemicals.
All non-emergency questions should be directed to Customer Service (1-800-582-2537) for assistance.	

## ALUMINUM AMMONIUM SULFATE

### 1. Product Identification

**Synonyms:** Aluminum ammonium disulfate dodecahydrate; Aluminum ammonium disulfate, 12-hydrate; Ammonium alum; sulfuric acid aluminum ammonium salt (2:1:1), dodecahydrate  
**CAS No.:** 7784-25-0 (Anhydrous) 7784-26-1 (Dodecahydrate)  
**Molecular Weight:** 453.32  
**Chemical Formula:** AlNH<sub>4</sub>(SO<sub>4</sub>)<sub>2</sub> · 12H<sub>2</sub>O  
**Product Codes:**  
 J.T. Baker: 0484  
 Mallinckrodt: 3212

### 2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
Sulfuric Acid, Aluminum Ammonium Salt (2:1:1)	7784-25-0	98 - 100%	Yes

### 3. Hazards Identification

#### Emergency Overview

**WARNING! HARMFUL IF SWALLOWED OR INHALED. CAUSES IRRITATION TO SKIN, EYES AND RESPIRATORY TRACT.**

SAF-T-DATA<sup>(tm)</sup> Ratings (Provided here for your convenience)

Health Rating: 2 - Moderate  
 Flammability Rating: 0 - None  
 Reactivity Rating: 1 - Slight  
 Contact Rating: 2 - Moderate  
 Lab Protective Equip: GOGGLES; LAB COAT; VENT HOOD; PROPER GLOVES  
 Storage Color Code: Green (General Storage)

#### Potential Health Effects

This material hydrolyzes in water to form sulfuric acid, which is responsible for the irritating effects given below.

#### Inhalation:

Causes irritation to the respiratory tract. Symptoms may include coughing, shortness of breath.

#### Ingestion:

Causes irritation to the gastrointestinal tract. Symptoms may include nausea, vomiting and diarrhea. There have been two cases of fatal human poisonings from ingestion of 30 grams of alum.

#### Skin Contact:

Causes irritation to skin. Symptoms include redness, itching, and pain.

#### Eye Contact:

Causes irritation, redness, and pain.

#### Chronic Exposure:

No information found.

#### Aggravation of Pre-existing Conditions:

No information found.

### 4. First Aid Measures

#### Inhalation:

Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

#### Ingestion:

If swallowed, DO NOT INDUCE VOMITING. Give large quantities of water. Never give anything by mouth to an unconscious person. Get medical attention immediately.



**Skin Contact:**

Wipe off excess material from skin then immediately flush skin with plenty of water for at least 15 minutes. Remove contaminated clothing and shoes. Get medical attention. Wash clothing before reuse. Thoroughly clean shoes before reuse.

**Eye Contact:**

Immediately flush eyes with plenty of water for at least 15 minutes, lifting upper and lower eyelids occasionally. Get medical attention.

---

## 5. Fire Fighting Measures

**Fire:**

Not considered to be a fire hazard. May release flammable ammonia if involved in a fire.

**Explosion:**

Not considered to be an explosion hazard. Sealed containers may rupture when heated.

**Fire Extinguishing Media:**

Use any means suitable for extinguishing surrounding fire. Keep in mind that addition of water can cause the formation of sulfuric acid.

**Special Information:**

In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode.

---

## 6. Accidental Release Measures

Cover spill with sodium bicarbonate or soda ash and mix. Ventilate area of leak or spill. Keep unnecessary and unprotected people away from area of spill. Wear appropriate personal protective equipment as specified in Section 8. Spills: Pick up and place in a suitable container for reclamation or disposal, using a method that does not generate dust.

---

## 7. Handling and Storage

Keep in a tightly closed container, stored in a cool, dry, ventilated area. Protect against physical damage. Isolate from incompatible substances. Containers of this material may be hazardous when empty since they retain product residues (dust, solids); observe all warnings and precautions listed for the product.

---

## 8. Exposure Controls/Personal Protection

**Airborne Exposure Limits:**

-OSHA Permissible Exposure Limit (PEL):

15 mg/m<sup>3</sup> (TWA) total dust and 5 mg/m<sup>3</sup> (TWA)

respirable fraction for Aluminum metal as Al.

-ACGIH Threshold Limit Value (TLV):

1 mg/m<sup>3</sup> respirable fraction (TWA), Aluminum metal and Insoluble compounds, A4.

**Ventilation System:**

A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, *Industrial Ventilation, A Manual of Recommended Practices*, most recent edition, for details.

**Personal Respirators (NIOSH Approved):**

If the exposure limit is exceeded, a half-face dust/mist respirator may be worn for up to ten times the exposure limit or the maximum use concentration specified by the appropriate regulatory agency or respirator supplier, whichever is lowest. A full-face piece dust/mist respirator may be worn up to 50 times the exposure limit, or the maximum use concentration specified by the appropriate regulatory agency, or respirator supplier, whichever is lowest. For emergencies or instances where the exposure levels are not known, use a full-facepiece positive-pressure, air-supplied respirator. WARNING: Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.

**Skin Protection:**

Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact.

**Eye Protection:**

Use chemical safety goggles and/or full face shield where dusting or splashing of solutions is possible. Maintain eye wash fountain and quick-drench facilities in work area.

---

## 9. Physical and Chemical Properties

**Appearance:**

Colorless crystals.

**Odor:**

Odorless.

**Solubility:**

14% in water, 200% in boiling water

**Density:**

1.65

**pH:**

4.6 (0.05M solution)

**% Volatiles by volume @ 21C (70F):**

0

**Boiling Point:**

280C (536F) Decomposes.

**Melting Point:**

94.5C (201F)

**Vapor Density (Air=1):**

No information found.

**Vapor Pressure (mm Hg):**

No information found.

**Evaporation Rate (BuAc=1):**

No information found.

---

## 10. Stability and Reactivity

**Stability:**

Stable under ordinary conditions of use and storage.

**Hazardous Decomposition Products:**

Toxic oxides of nitrogen, sulfur dioxide, ammonia, and sulfur trioxide may form at elevated temperatures. Hydrolyzes to form sulfuric acid.

**Hazardous Polymerization:**

Will not occur.

**Incompatibilities:**

Contact with alkalis may release ammonia gas. Corrosive to metals in the presence of water.

**Conditions to Avoid:**

Moisture and incompatibles.

## 11. Toxicological Information

No LD50/LC50 information found relating to normal routes of occupational exposure.

-----\Cancer Lists\-----			
Ingredient	---NTP Carcinogen---		IARC Category
	Known	Anticipated	
Sulfuric Acid, Aluminum Ammonium Salt (2:1:1) (7784-25-0)	No	No	None

## 12. Ecological Information

**Environmental Fate:**

No information found.

**Environmental Toxicity:**

No information found.

## 13. Disposal Considerations

Whatever cannot be saved for recovery or recycling should be managed in an appropriate and approved waste disposal facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

## 14. Transport Information

Not regulated.

## 15. Regulatory Information

-----\Chemical Inventory Status - Part 1\-----				
Ingredient	TSCA	EC	Japan	Australia
Sulfuric Acid, Aluminum Ammonium Salt (2:1:1) (7784-25-0)	Yes	Yes	Yes	Yes

-----\Chemical Inventory Status - Part 2\-----				
Ingredient	Korea	--Canada--		
		DSL	NDSL	Phil.
Sulfuric Acid, Aluminum Ammonium Salt (2:1:1) (7784-25-0)	Yes	Yes	No	No

-----\Federal, State & International Regulations - Part 1\-----				
Ingredient	-SARA 302-		-SARA 313-	
	RQ	TPQ	List	Chemical Catg.
Sulfuric Acid, Aluminum Ammonium Salt (2:1:1) (7784-25-0)	No	No	No	No

-----\Federal, State & International Regulations - Part 2\-----			
Ingredient	CERCLA	-RCRA-	-TSCA-
		261.33	8 (d)
Sulfuric Acid, Aluminum Ammonium Salt (2:1:1) (7784-25-0)	No	No	No

Chemical Weapons Convention: No TSCA 12(b): No CDTA: No  
 SARA 311/312: Acute: Yes Chronic: No Fire: No Pressure: No  
 Reactivity: No (Pure / Solid)

**Australian Hazchem Code:** None allocated.

**Poison Schedule:** None allocated.

**WHMIS:**

This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

## 16. Other Information

**NFPA Ratings:** Health: 1 Flammability: 0 Reactivity: 0

**Label Hazard Warning:**

WARNING! HARMFUL IF SWALLOWED OR INHALED. CAUSES IRRITATION TO SKIN, EYES AND RESPIRATORY TRACT.

**Label Precautions:**

Avoid breathing dust.

Keep container closed.

Use only with adequate ventilation.

Wash thoroughly after handling.

Avoid contact with eyes, skin and clothing.

**Label First Aid:**

If swallowed, DO NOT INDUCE VOMITING. Give large quantities of water. Never give anything by mouth to an unconscious person. If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. In case of contact, wipe off excess material from skin then immediately flush eyes or skin with plenty of water for at least 15 minutes. Remove contaminated clothing and shoes. Wash clothing before reuse. In all cases, get medical attention.

**Product Use:**

Laboratory Reagent.

**Revision Information:**

MSDS Section(s) changed since last revision of document include: 8.

**Disclaimer:**

\*\*\*\*\*

**Mallinckrodt Baker, Inc. provides the information contained herein in good faith but makes no representation as to its comprehensiveness or accuracy.**

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**Individuals receiving the information must exercise their independent judgment in determining its appropriateness for a particular purpose.**

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\*\*\*\*\*

**Prepared by:** Environmental Health & Safety

Phone Number: (314) 654-1600 (U.S.A.)

# FLINN SCIENTIFIC INC.

"Your Safer Source for Science Supplies"

## Material Safety Data Sheet (MSDS)

MSDS #: 36.00

Revision Date: November 25, 2002

---

### Section 1 — Chemical Product and Company Identification

---

## Aluminum Chloride

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### Section 2 — Composition, Information on Ingredients

---

Aluminum Chloride

Synonym: Hexahydrate Aluminum Trichloride

CAS#: 7784-13-6

---

### Section 3 — Hazards Identification

---

Moist, white crystals.

Slightly toxic by ingestion. Body tissue irritant. Avoid all body tissue contact.

#### FLINN AT-A-GLANCE

Health-1

Flammability-0

Reactivity-1

Exposure-1

Storage-1

0 is low hazard, 3 is high hazard

---

### Section 4 — First Aid Measures

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash continuously with fresh water for 15 minutes.

Internal: Rinse out mouth, give 1 to 2 cups of water or milk, induce vomiting. After vomiting, give mixture of 2 Tbs. of activated charcoal mixed with one cup of water. Call a physician or poison control at once.

---

### Section 5 — Fire Fighting Measures

---

Non-flammable solid.

**Fire Fighting Instructions:** Use triclass, dry chemical fire extinguisher. Firefighters should wear PPE and SCBA with full facepiece operated in positive pressure mode.

#### NFPA CODE

None Established

---

### Section 6 — Accidental Release Measures

---

Restrict unprotected personnel from area. Sweep up, place in sealed bag or container and dispose. Ventilate area and wash spill site after material pickup is complete. See Sections 8 and 13 for further information.

---

### Section 7 — Handling and Storage

---

Flinn Suggested Chemical Storage Pattern: Inorganic #2. Store with acetates, halides, sulfates, sulfites, thiosulfates and phosphates.

Deliquescent. Store in a Chem-Saf bag. Store in a cool dry place.

---

### Section 8 — Exposure Controls, Personal Protection

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron. Always wear a NIOSH-approved respirator with proper cartridges or a positive pressure, air-supplied respirator when handling this material in emergency situations (spill or fire).

---

### Section 9 — Physical and Chemical Properties

---

Moist, white crystals.  
Solubility: Water.  
Formula:  $\text{AlCl}_3 \cdot 6\text{H}_2\text{O}$   
Formula Weight: 241.43

Specific Gravity: 2.4

---

### Section 10 — Stability and Reactivity

---

Avoid contact with strong acids.  
Shelf life: Poor; deliquescent. Store in a Chem-Saf bag.

---

### Section 11 — Toxicological Information

---

Acute effects: dust is an irritant.  
Chronic effects: N.A.  
Target organs: N.A.

ORL-RAT LD50: 3311 mg/kg  
IHL-RAT LC50: N.A.  
SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

---

### Section 12 — Ecological Information

---

Data not yet available.

---

### Section 13 — Disposal Considerations

---

Please consult with state and local regulations.  
Flinn Suggested Disposal Method #26a is one option.

---

### Section 14 — Transport Information

---

Shipping Name: Not regulated  
Hazard Class: N/A  
UN Number: N/A

N/A = Not applicable

---

### Section 15 — Regulatory Information

---

TSCA-listed, EINECS-listed (231-208-1).

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### Section 16 — Other Information

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Consult your copy of the Flinn Scientific Catalog/Reference Manual for additional information about laboratory chemicals. This Material Safety Data Sheet (MSDS) is for guidance and is based upon information and tests believed to be reliable. Flinn Scientific Inc. makes no guarantee of the accuracy or completeness of the data and shall not be liable for any damages relating thereto. The data is offered solely for your consideration, investigation, and verification. Flinn Scientific Inc. assumes no legal responsibility for use or reliance upon this data.



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MSDS Number: A2914 \* \* \* \* \* Effective Date: 02/03/09 \* \* \* \* \* Supersedes: 05/19/08

<b>MSDS</b>	<b>Material Safety Data Sheet</b>		24 Hour Emergency Telephone: 908-859-2151 CHEMTREC: 1-800-424-9300
			National Response In Canada CANUTEC: 613-996-6666
From: Mallinckrodt Baker, Inc. 222 Red School Lane Phillipsburg, NJ 08865		 	Outside U.S. and Canada Chemtrec: 703-527-3887
			NOTE: CHEMTREC, CANUTEC and National Response Center emergency numbers to be used only in the event of chemical emergencies involving a spill, leak, fire, exposure or accident involving chemicals.
All non-emergency questions should be directed to Customer Service (1-800-582-2537) for assistance.			

## ALUMINUM SULFATE

### 1. Product Identification

**Synonyms:** Sulfuric acid, aluminum salt (3:2), octadeca hydrate; Cake alum; Patent alum  
**CAS No.:** 10043-01-3 (Anhydrous) 7784-31-8 (Octadecahydrate)  
**Molecular Weight:** 666.44  
**Chemical Formula:** Al<sub>2</sub>(SO<sub>4</sub>)<sub>3</sub>·18H<sub>2</sub>O  
**Product Codes:**  
 J.T. Baker: 0564  
 Mallinckrodt: 3208

### 2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
Aluminum Sulfate	10043-01-3	98 - 100%	Yes

### 3. Hazards Identification

#### Emergency Overview

**WARNING! HARMFUL IF SWALLOWED OR INHALED. CAUSES IRRITATION TO SKIN, EYES AND RESPIRATORY TRACT.**

SAF-T-DATA<sup>(tm)</sup> Ratings (Provided here for your convenience)

Health Rating: 2 - Moderate  
 Flammability Rating: 0 - None  
 Reactivity Rating: 1 - Slight  
 Contact Rating: 2 - Moderate  
 Lab Protective Equip: GOGGLES; LAB COAT; VENT HOOD; PROPER GLOVES  
 Storage Color Code: Green (General Storage)

#### Potential Health Effects

This material hydrolyzes in water to form sulfuric acid, which is responsible for the irritating effects given below.

##### Inhalation:

Causes irritation to the respiratory tract. Symptoms may include coughing, shortness of breath.

##### Ingestion:

Causes irritation to the gastrointestinal tract. Symptoms may include nausea, vomiting and diarrhea. There have been two cases of fatal human poisonings from ingestion of 30 grams of alum.

##### Skin Contact:

Causes irritation to skin. Symptoms include redness, itching, and pain.

##### Eye Contact:

Causes irritation, redness, and pain.

##### Chronic Exposure:

No information found.

##### Aggravation of Pre-existing Conditions:

No information found.

### 4. First Aid Measures

#### Inhalation:

Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

#### Ingestion:

If swallowed, DO NOT INDUCE VOMITING. Give large quantities of water. Never give anything by mouth to an unconscious person. Get medical attention immediately.

#### Skin Contact:

Wipe off excess material from skin then immediately flush skin with plenty of water for at least 15 minutes. Remove contaminated clothing and shoes. Get

medical attention. Wash clothing before reuse. Thoroughly clean shoes before reuse.

**Eye Contact:**

Immediately flush eyes with plenty of water for at least 15 minutes, lifting upper and lower eyelids occasionally. Get medical attention.

---

## 5. Fire Fighting Measures

**Fire:**

Not considered to be a fire hazard.

**Explosion:**

Not considered to be an explosion hazard.

**Fire Extinguishing Media:**

Keep in mind that addition of water can cause the formation of sulfuric acid.

**Special Information:**

In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode.

---

## 6. Accidental Release Measures

Ventilate area of leak or spill. Keep unnecessary and unprotected people away from area of spill. Wear appropriate personal protective equipment as specified in Section 8. Spills: Pick up and place in a suitable container for reclamation or disposal, using a method that does not generate dust. Cover spill with sodium bicarbonate or soda ash and mix. US Regulations (CERCLA) require reporting spills and releases to soil, water and air in excess of reportable quantities. The toll free number for the US Coast Guard National Response Center is (800) 424-8802.

---

## 7. Handling and Storage

Keep in a tightly closed container, stored in a cool, dry, ventilated area. Protect against physical damage. Isolate from incompatible substances. Aluminum sulfate absorbs moisture and becomes a safety hazard when spilled because it absorbs moisture and becomes slippery. Containers of this material may be hazardous when empty since they retain product residues (dust, solids); observe all warnings and precautions listed for the product.

---

## 8. Exposure Controls/Personal Protection

**Airborne Exposure Limits:**

-OSHA Permissible Exposure Limit (PEL):

15 mg/m<sup>3</sup> (TWA) total dust and 5 mg/m<sup>3</sup> (TWA)

respirable fraction for Aluminum metal as Al.

-ACGIH Threshold Limit Value (TLV):

1 mg/m<sup>3</sup> respirable fraction (TWA), Aluminum metal and Insoluble compounds, A4.

**Ventilation System:**

A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, *Industrial Ventilation, A Manual of Recommended Practices*, most recent edition, for details.

**Personal Respirators (NIOSH Approved):**

If the exposure limit is exceeded and engineering controls are not feasible, a half facepiece particulate respirator (NIOSH type N95 or better filters) may be worn for up to ten times the exposure limit or the maximum use concentration specified by the appropriate regulatory agency or respirator supplier, whichever is lowest. A full-face piece particulate respirator (NIOSH type N100 filters) may be worn up to 50 times the exposure limit, or the maximum use concentration specified by the appropriate regulatory agency, or respirator supplier, whichever is lowest. If oil particles (e.g. lubricants, cutting fluids, glycerine, etc.) are present, use a NIOSH type R or P filter. For emergencies or instances where the exposure levels are not known, use a full-facepiece positive-pressure, air-supplied respirator. **WARNING:** Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.

**Skin Protection:**

Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact.

**Eye Protection:**

Use chemical safety goggles and/or full face shield where dusting or splashing of solutions is possible. Maintain eye wash fountain and quick-drench facilities in work area.

---

## 9. Physical and Chemical Properties

**Appearance:**

Colorless crystals.

**Odor:**

Odorless.

**Solubility:**

87 g/100 cc water @ 0C (32F).

**Specific Gravity:**

1.69 @ 17C/4C

**pH:**

No information found.

**% Volatiles by volume @ 21C (70F):**

0

**Boiling Point:**

No information found.

**Melting Point:**

87C (189F) Decomposes.

**Vapor Density (Air=1):**

No information found.

**Vapor Pressure (mm Hg):**

No information found.

**Evaporation Rate (BuAc=1):**

No information found.

---

## 10. Stability and Reactivity

### Stability:

Stable under ordinary conditions of use and storage.

### Hazardous Decomposition Products:

Hydrolyzes to form dilute sulfuric acid. Toxic and corrosive oxides of sulfur may be formed when heated to decomposition.

### Hazardous Polymerization:

Will not occur.

### Incompatibilities:

Corrosive to metals in the presence of water.

### Conditions to Avoid:

Moisture and incompatibles.

## 11. Toxicological Information

Anhydrous Material: Oral mouse LD50: 6207 mg/kg; Irritation eyes rabbit: 10 mg/24H severe; investigated as a mutagen and reproductive effector.

18-Hydrate: Oral mouse LD50: > 9 gm/kg; investigated as a mutagen.

Ingredient	---NTP Carcinogen---		IARC Category
	Known	Anticipated	
Aluminum Sulfate (10043-01-3)	No	No	None

## 12. Ecological Information

### Environmental Fate:

No information found.

### Environmental Toxicity:

No information found.

## 13. Disposal Considerations

Whatever cannot be saved for recovery or recycling should be managed in an appropriate and approved waste disposal facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

## 14. Transport Information

Not regulated.

## 15. Regulatory Information

Ingredient	-----\Chemical Inventory Status - Part 1\-----			
	TSCA	EC	Japan	Australia
Aluminum Sulfate (10043-01-3)	Yes	Yes	Yes	Yes

Ingredient	-----\Chemical Inventory Status - Part 2\-----			
	Korea	--Canada-- DSL	NDSL	Phil.
Aluminum Sulfate (10043-01-3)	Yes	Yes	No	No

Ingredient	-----\Federal, State & International Regulations - Part 1\-----			
	-SARA 302- RQ	TPQ	-SARA 313- List	Chemical Catg.
Aluminum Sulfate (10043-01-3)	No	No	No	No

Ingredient	-----\Federal, State & International Regulations - Part 2\-----		
	CERCLA	-RCRA- 261.33	-TSCA- 8 (d)
Aluminum Sulfate (10043-01-3)	5000	No	No

Chemical Weapons Convention: No TSCA 12(b): No CDTA: No  
 SARA 311/312: Acute: Yes Chronic: No Fire: No Pressure: No  
 Reactivity: No (Mixture / Solid)

**Australian Hazchem Code:** None allocated.

**Poison Schedule:** None allocated.

### WHMIS:

This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

## 16. Other Information



**NFPA Ratings:** Health: 2 Flammability: 0 Reactivity: 0

**Label Hazard Warning:**

WARNING! HARMFUL IF SWALLOWED OR INHALED. CAUSES IRRITATION TO SKIN, EYES AND RESPIRATORY TRACT.

**Label Precautions:**

Avoid breathing dust.

Keep container closed.

Use only with adequate ventilation.

Wash thoroughly after handling.

Avoid contact with eyes, skin and clothing.

**Label First Aid:**

If swallowed, DO NOT INDUCE VOMITING. Give large quantities of water. Never give anything by mouth to an unconscious person. If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. In case of contact, wipe off excess material from skin then immediately flush eyes or skin with plenty of water for at least 15 minutes. Remove contaminated clothing and shoes. Wash clothing before reuse. In all cases, get medical attention.

**Product Use:**

Laboratory Reagent.

**Revision Information:**

MSDS Section(s) changed since last revision of document include: 8.

**Disclaimer:**

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**Individuals receiving the information must exercise their independent judgment in determining its appropriateness for a particular purpose.**

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**Prepared by:** Environmental Health & Safety

Phone Number: (314) 654-1600 (U.S.A.)

MSDS Number: A2705 \* \* \* \* \* Effective Date: 02/03/09 \* \* \* \* \* Supersedes: 05/17/07



From: Mallinckrodt Baker, Inc.  
222 Red School Lane  
Phillipsburg, NJ 08865



All non-emergency questions should be directed to Customer Service (1-800-562-2537) for assistance.

24 Hour Emergency Telephone: 908-859-2151  
CHEMTREC: 1-800-424-9300

National Response in Canada  
CANUTEC: 613-996-6666

Outside U.S. And Canada  
Chemtrec: 703-527-3887

NOTE: CHEMTREC, CANUTEC and National Response Center emergency numbers to be used only in the event of chemical emergencies involving a spill, leak, fire, exposure or accident involving chemicals.

## ALUMINUM METAL (WIRE, FOIL, SHOT)

### 1. Product Identification

**Synonyms:** Aluminum wire; Aluminum foil; Aluminum shot; Aluminum uncrated nonpyrophoric  
**CAS No.:** 7429-90-5  
**Molecular Weight:** 26.98  
**Chemical Formula:** Al  
**Product Codes:** 0449, 0456

### 2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
Aluminum Metal	7429-90-5	95 - 100%	Yes

### 3. Hazards Identification

#### Emergency Overview

As part of good industrial and personal hygiene and safety procedure, avoid all unnecessary exposure to the chemical substance and ensure prompt removal from skin, eyes and clothing.

SAF-T-DATA<sup>(tm)</sup> Ratings (Provided here for your convenience)

Health Rating: 0 - None  
Flammability Rating: 0 - None  
Reactivity Rating: 1 - Slight  
Contact Rating: 0 - None  
Lab Protective Equip: GOGGLES; LAB COAT; PROPER GLOVES  
Storage Color Code: Green (General Storage)

#### Potential Health Effects

##### Inhalation:

Not expected to be a health hazard.

##### Ingestion:

Not expected to be a health hazard.

##### Skin Contact:

No adverse effects expected.

##### Eye Contact:

No adverse effects expected.

##### Chronic Exposure:

No adverse effects expected.

##### Aggravation of Pre-existing Conditions:

No adverse health effects expected.

### 4. First Aid Measures

#### Inhalation:

Not expected to require first aid measures.

#### Ingestion:

Not expected to require first aid measures.

#### Skin Contact:

Not expected to require first aid measures.

#### Eye Contact:

Not expected to require first aid measures.

## 5. Fire Fighting Measures

**Fire:**

Not considered to be a fire hazard.

**Explosion:**

Not considered to be an explosion hazard.

**Fire Extinguishing Media:**

Use any means suitable for extinguishing surrounding fire.

**Special Information:**

Use protective clothing and breathing equipment appropriate for the surrounding fire.

---

## 6. Accidental Release Measures

Sweep, scoop or pick up spilled material. Package for reclamation or recovery. Package unreclaimable material for disposal in an approved waste disposal facility.

---

## 7. Handling and Storage

Keep in a tightly closed container, stored in a cool, dry, ventilated area. Protect against physical damage. Isolate from incompatible substances. Containers of this material may be hazardous when empty since they retain product residues (dust, solids); observe all warnings and precautions listed for the product.

---

## 8. Exposure Controls/Personal Protection

**Airborne Exposure Limits:**

-OSHA Permissible Exposure Limit (PEL):

15 mg/m<sup>3</sup> (TWA) total dust and 5 mg/m<sup>3</sup> (TWA)

respirable fraction for Aluminum metal as Al.

-ACGIH Threshold Limit Value (TLV):

1 mg/m<sup>3</sup> respirable fraction (TWA), Aluminum metal and Insoluble compounds, A4.

**Ventilation System:**

In general, dilution ventilation is a satisfactory health hazard control for this substance. However, if conditions of use create discomfort to the worker, a local exhaust system should be considered.

**Personal Respirators (NIOSH Approved):**

Not expected to require personal respirator usage.

**Skin Protection:**

Wear protective gloves and clean body-covering clothing.

**Eye Protection:**

Safety glasses.

---

## 9. Physical and Chemical Properties

**Appearance:**

Bright, silver-white metal.

**Odor:**

Odorless.

**Solubility:**

Insoluble in water.

**Density:**

2.70

**pH:**

No information found.

**% Volatiles by volume @ 21C (70F):**

0

**Boiling Point:**

2327C (4221F)

**Melting Point:**

660C (1220F)

**Vapor Density (Air=1):**

No information found.

**Vapor Pressure (mm Hg):**

1 @ 1284C (2343F)

**Evaporation Rate (BuAc=1):**

No information found.

---

## 10. Stability and Reactivity

**Stability:**

Stable under ordinary conditions of use and storage.

**Hazardous Decomposition Products:**

Toxic metal fumes may form when heated to decomposition.

**Hazardous Polymerization:**

Will not occur.

**Incompatibilities:**

Mercury, halocarbons, halogens, water (with bulk aluminum powder) strong oxidizing agents, some acids, bases and many other materials.

**Conditions to Avoid:**

Incompatibles.

---

## 11. Toxicological Information

No LD50/LC50 information found relating to normal routes of occupational exposure.

-----\Cancer Lists\-----			
Ingredient	---NTP Carcinogen---		IARC Category
	Known	Anticipated	
Aluminum Metal (7429-90-5)	No	No	None

## 12. Ecological Information

**Environmental Fate:**

No information found.

**Environmental Toxicity:**

No information found.

## 13. Disposal Considerations

Whatever cannot be saved for recovery or recycling should be managed in an appropriate and approved waste disposal facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

## 14. Transport Information

Not regulated.

## 15. Regulatory Information

-----\Chemical Inventory Status - Part 1\-----				
Ingredient	TSCA	EC	Japan	Australia
Aluminum Metal (7429-90-5)	Yes	Yes	No	Yes

-----\Chemical Inventory Status - Part 2\-----				
Ingredient	Korea	--Canada--		Phil.
		DSL	NDSL	
Aluminum Metal (7429-90-5)	Yes	Yes	No	Yes

-----\Federal, State & International Regulations - Part 1\-----				
Ingredient	-SARA 302-		-SARA 313-	
	RQ	TPQ	List	Chemical Catg.
Aluminum Metal (7429-90-5)	No	No	Yes	No

-----\Federal, State & International Regulations - Part 2\-----			
Ingredient	CERCLA	-RCRA-	-TSCA-
		261.33	8(d)
Aluminum Metal (7429-90-5)	No	No	No

Chemical Weapons Convention: No TSCA 12(b): No CDTA: No  
 SARA 311/312: Acute: No Chronic: No Fire: No Pressure: No  
 Reactivity: No (Pure / Solid)

**Australian Hazchem Code:** None allocated.

**Poison Schedule:** None allocated.

**WHMIS:**

This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

## 16. Other Information

**NFPA Ratings:** Health: 0 Flammability: 0 Reactivity: 0

**Label Hazard Warning:**

As part of good industrial and personal hygiene and safety procedure, avoid all unnecessary exposure to the chemical substance and ensure prompt removal from skin, eyes and clothing.

**Label Precautions:**

None.

**Label First Aid:**

Not applicable.

**Product Use:**

Laboratory Reagent.

**Revision Information:**

MSDS Section(s) changed since last revision of document include: 8.

**Disclaimer:**

\*\*\*\*\*

Mallinckrodt Baker, Inc. provides the information contained herein in good faith but makes no representation as to its comprehensiveness or accuracy.

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Individuals receiving the information must exercise their independent judgment in determining its appropriateness for a particular purpose.

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\*\*\*\*\*

**Prepared by:** Environmental Health & Safety  
Phone Number: (314) 654-1600 (U.S.A.)

MSDS Number: A5616 \* \* \* \* \* Effective Date: 01/24/07 \* \* \* \* \* Supersedes: 08/10/04

<b>MSDS</b>	<b>Material Safety Data Sheet</b>		24 Hour Emergency Telephone: 908-859-2151 CHEMTREC: 1-800-424-9300
	From: Mallinckrodt Baker, Inc. 222 Red School Lane Phillipsburg, NJ 08865		National Response In Canada CANUTEC: 613-996-6666
Outside U.S. and Canada Chemtrec: 703-527-3887			NOTE: CHEMTREC, CANUTEC and National Response Center emergency numbers to be used only in the event of chemical emergencies involving a spill, leak, fire, exposure or accident involving chemicals.
		All non-emergency questions should be directed to Customer Service (1-800-582-2537) for assistance.	

## AMMONIUM BICARBONATE

### 1. Product Identification

**Synonyms:** Ammonium hydrogen carbonate; Ammonium acid carbonate  
**CAS No.:** 1066-33-7  
**Molecular Weight:** 79.06  
**Chemical Formula:** NH<sub>4</sub>HCO<sub>3</sub>  
**Product Codes:**  
 J.T. Baker: 3003  
 Mallinckrodt: 0155, 3281

### 2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
Ammonium Bicarbonate	1066-33-7	99 - 100%	Yes

### 3. Hazards Identification

#### Emergency Overview

**WARNING! HARMFUL IF INHALED. MAY CAUSE IRRITATION TO SKIN, EYES, AND RESPIRATORY TRACT.**

SAF-T-DATA<sup>(tm)</sup> Ratings (Provided here for your convenience)

Health Rating: 1 - Slight  
 Flammability Rating: 0 - None  
 Reactivity Rating: 1 - Slight  
 Contact Rating: 2 - Moderate  
 Lab Protective Equip: GOGGLES; LAB COAT; PROPER GLOVES  
 Storage Color Code: Green (General Storage)

#### Potential Health Effects

##### Inhalation:

Dust may cause irritation of the nose, throat, and lungs. Ammonia vapors released upon decomposition may cause irritation of the upper respiratory tract, with coughing, vomiting, and redness to the mucous membranes. Higher concentrations (> 1000 ppm) may cause restlessness, tightness in the chest, pulmonary edema, weak pulse, and cyanosis.

##### Ingestion:

Large oral doses may cause irritation to the gastrointestinal tract.

##### Skin Contact:

May cause irritation with redness and pain.

##### Eye Contact:

May cause irritation, redness and pain.

##### Chronic Exposure:

No information found.

##### Aggravation of Pre-existing Conditions:

No information found.

### 4. First Aid Measures

#### Inhalation:

Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

#### Ingestion:

Give several glasses of water to drink to dilute. If large amounts were swallowed, get medical advice.

#### Skin Contact:

Immediately flush skin with plenty of soap and water for at least 15 minutes. Remove contaminated clothing and shoes. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention if irritation develops.

#### Eye Contact:

Immediately flush eyes with plenty of water for at least 15 minutes, lifting upper and lower eyelids occasionally. Get medical attention if irritation persists.

---

## 5. Fire Fighting Measures

**Fire:**

Not considered to be a fire hazard. Irritating and toxic ammonia gas may form in fires.

**Explosion:**

Not considered to be an explosion hazard.

**Fire Extinguishing Media:**

Use any means suitable for extinguishing surrounding fire.

**Special Information:**

In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode.

---

## 6. Accidental Release Measures

Ventilate area of leak or spill. Wear appropriate personal protective equipment as specified in Section 8. Spills: Sweep up and containerize for reclamation or disposal. Vacuuming or wet sweeping may be used to avoid dust dispersal. US Regulations (CERCLA) require reporting spills and releases to soil, water and air in excess of reportable quantities. The toll free number for the US Coast Guard National Response Center is (800) 424-8802.

---

## 7. Handling and Storage

Keep in a tightly closed container, stored in a cool, dry, ventilated area. Protect against physical damage. Store at temperatures below 80F (27C) to minimize decomposition.

Containers of this material may be hazardous when empty since they retain product residues (dust, solids); observe all warnings and precautions listed for the product.

---

## 8. Exposure Controls/Personal Protection

**Airborne Exposure Limits:**

None established.

**Ventilation System:**

A system of local and/or general exhaust is recommended to keep employee exposures as low as possible. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, *Industrial Ventilation, A Manual of Recommended Practices*, most recent edition, for details.

**Personal Respirators (NIOSH Approved):**

For conditions of use where exposure to dust or mist is apparent and engineering controls are not feasible, a particulate respirator (NIOSH type N95 or better filters) may be worn. If oil particles (e.g. lubricants, cutting fluids, glycerine, etc.) are present, use a NIOSH type R or P filter. For emergencies or instances where the exposure levels are not known, use a full-face positive-pressure, air-supplied respirator. WARNING: Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.

**Skin Protection:**

Wear protective gloves and clean body-covering clothing.

**Eye Protection:**

Use chemical safety goggles and/or full face shield where dusting or splashing of solutions is possible. Maintain eye wash fountain and quick-drench facilities in work area.

---

## 9. Physical and Chemical Properties

**Appearance:**

Fine white crystals.

**Odor:**

Slight ammonia odor.

**Solubility:**

17.4% @ 20C (68F) in water.

**Specific Gravity:**

1.59

**pH:**

7.8

**% Volatiles by volume @ 21C (70F):**

0

**Boiling Point:**

Not applicable.

**Melting Point:**

107.5C (226F) (Decomposes 36-60C)

**Vapor Density (Air=1):**

No information found.

**Vapor Pressure (mm Hg):**

No information found.

**Evaporation Rate (BuAc=1):**

No information found.

---

## 10. Stability and Reactivity

**Stability:**

Stable under ordinary conditions of use and storage.

**Hazardous Decomposition Products:**

Burning may produce ammonia, nitrogen oxides. Burning may produce ammonia, carbon monoxide, carbon dioxide, nitrogen oxides.

---

**Hazardous Polymerization:**

Will not occur.

**Incompatibilities:**

Can react dangerously with acids, caustic alkalis and strong oxidizing agents.

**Conditions to Avoid:**

Heat, incompatibles.

**11. Toxicological Information**

No LD50/LC50 information found relating to normal routes of occupational exposure.

Ingredient	---NTP Carcinogen---		IARC Category
	Known	Anticipated	
Ammonium Bicarbonate (1066-33-7)	No	No	None

**12. Ecological Information****Environmental Fate:**

No information found.

**Environmental Toxicity:**

No information found.

**13. Disposal Considerations**

Whatever cannot be saved for recovery or recycling should be managed in an appropriate and approved waste disposal facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

**14. Transport Information**

Not regulated.

**15. Regulatory Information**

Ingredient	-----\Chemical Inventory Status - Part 1\-----			
	TSCA	EC	Japan	Australia
Ammonium Bicarbonate (1066-33-7)	Yes	Yes	Yes	Yes

Ingredient	-----\Chemical Inventory Status - Part 2\-----			
	Korea	DSL	NDSL	Phil.
Ammonium Bicarbonate (1066-33-7)	Yes	Yes	No	Yes

Ingredient	-----\Federal, State & International Regulations - Part 1\-----			
	-SARA 302- RQ	TPQ	List	-SARA 313- Chemical Catg.
Ammonium Bicarbonate (1066-33-7)	No	No	No	No

Ingredient	-----\Federal, State & International Regulations - Part 2\-----		
	CERCLA	-RCRA- 261.33	-TSCA- 8(d)
Ammonium Bicarbonate (1066-33-7)	5000	No	No

Chemical Weapons Convention: No TSCA 12(b): No CDTA: No  
 SARA 311/312: Acute: Yes Chronic: No Fire: No Pressure: No  
 Reactivity: No (Pure / Solid)

**Australian Hazchem Code:** None allocated.**Poison Schedule:** None allocated.**WHMIS:**

This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

**16. Other Information****NFPA Ratings:** Health: 1 Flammability: 0 Reactivity: 0**Label Hazard Warning:**

WARNING! HARMFUL IF INHALED. MAY CAUSE IRRITATION TO SKIN, EYES, AND RESPIRATORY TRACT.

**Label Precautions:**

Avoid contact with eyes, skin and clothing.

Avoid breathing dust.

Wash thoroughly after handling.

Keep container closed.



Use only with adequate ventilation.

**Label First Aid:**

If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention. In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes. Get medical attention if irritation develops or persists.

**Product Use:**

Laboratory Reagent.

**Revision Information:**

MSDS Section(s) changed since last revision of document include: 3.

**Disclaimer:**

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\*\*\*\*\*

**Prepared by:** Environmental Health & Safety

Phone Number: (314) 654-1600 (U.S.A.)

MSDS Number: A5688 \* \* \* \* \* Effective Date: 02/15/08 \* \* \* \* \* Supersedes: 04/15/05

<b>MSDS</b>	<b>Material Safety Data Sheet</b>		24 Hour Emergency Telephone: 908-859-2151 CHEMTREC: 1-800-424-9300
	From: Mallinckrodt Baker, Inc. 222 Red School Lane Phillipsburg, NJ 08865		National Response In Canada CANUTEC: 613-996-6666
NOTE: CHEMTREC, CANUTEC and National Response Center emergency numbers to be used only in the event of chemical emergencies involving a spill, leak, fire, exposure or accident involving chemicals.			Outside U.S. and Canada Chemtrec: 703-527-3887
		All non-emergency questions should be directed to Customer Service (1-800-582-2537) for assistance.	

## Ammonium Carbonate

### 1. Product Identification

**Synonyms:** Carbonic Acid,Diammonium Salt; Diammonium Carbonate;Crystal Ammonia  
**CAS No.:** 506-87-6  
**Molecular Weight:** 96.09  
**Chemical Formula:** (NH<sub>4</sub>)<sub>2</sub>CO<sub>3</sub>  
**Product Codes:**  
 J.T. Baker: 0642, 0647, 0650, 0651  
 Mallinckrodt: 3330, 3352

### 2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
Ammonium Carbonate	506-87-6	100%	Yes

### 3. Hazards Identification

#### Emergency Overview

**WARNING! HARMFUL IF SWALLOWED OR INHALED. CAUSES IRRITATION TO SKIN, EYES AND RESPIRATORY TRACT.**

**SAF-T-DATA<sup>(tm)</sup>** Ratings (Provided here for your convenience)

Health Rating: 2 - Moderate  
 Flammability Rating: 1 - Slight  
 Reactivity Rating: 2 - Moderate  
 Contact Rating: 3 - Severe  
 Lab Protective Equip: GOGGLES & SHIELD; LAB COAT & APRON; VENT HOOD; PROPER GLOVES  
 Storage Color Code: Green (General Storage)

#### Potential Health Effects

##### Inhalation:

Dust may cause irritation of the nose, throat, and lungs. Ammonia vapors released upon decomposition may cause irritation of the upper respiratory tract, with coughing, vomiting, and redness to the mucous membranes. Higher concentrations (> 1000 ppm) may cause restlessness, tightness in the chest, pulmonary edema, weak pulse, and cyanosis.

##### Ingestion:

Causes irritation to the gastrointestinal tract. Symptoms may include nausea, vomiting and diarrhea.

##### Skin Contact:

Causes irritation to skin. Symptoms include redness, itching, and pain. Causes burning or serious burns if decontamination is delayed.

##### Eye Contact:

Causes irritation, redness, and pain. Causes burning or serious burns if decontamination is delayed.

##### Chronic Exposure:

No information found.

##### Aggravation of Pre-existing Conditions:

Persons with pre-existing lung disease may be more susceptible to the effects of this substance.

### 4. First Aid Measures

#### Inhalation:

Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

#### Ingestion:

Induce vomiting immediately as directed by medical personnel. Never give anything by mouth to an unconscious person.

#### Skin Contact:

Immediately flush skin with plenty of water for at least 15 minutes. Remove contaminated clothing and shoes. Get medical attention. Wash clothing before reuse. Thoroughly clean shoes before reuse.

#### Eye Contact:

Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention immediately.

---

## 5. Fire Fighting Measures

**Fire:**

Not considered to be a fire hazard.

**Explosion:**

Generation of ammonia gas may be an explosion hazard.

**Fire Extinguishing Media:**

Use any means suitable for extinguishing surrounding fire.

**Special Information:**

In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode.

---

## 6. Accidental Release Measures

Ventilate area of leak or spill. Keep unnecessary and unprotected people away from area of spill. Wear appropriate personal protective equipment as specified in Section 8. Spills: Pick up and place in a suitable container for reclamation or disposal, using a method that does not generate dust. US Regulations (CERCLA) require reporting spills and releases to soil, water and air in excess of reportable quantities. The toll free number for the US Coast Guard National Response Center is (800) 424-8802.

---

## 7. Handling and Storage

Keep in a tightly closed container, stored in a cool, dry, ventilated area. Protect against physical damage. Isolate from incompatible substances. Store below 30C. Containers of this material may be hazardous when empty since they retain product residues (dust, solids); observe all warnings and precautions listed for the product.

---

## 8. Exposure Controls/Personal Protection

**Airborne Exposure Limits:**

For Ammonia:

- OSHA Permissible Exposure Limit (PEL) -

50 ppm

- ACGIH Threshold Limit Value (TLV) -

25 ppm (TWA), 35 ppm (STEL)

**Ventilation System:**

A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, *Industrial Ventilation, A Manual of Recommended Practices*, most recent edition, for details.

**Personal Respirators (NIOSH Approved):**

If the exposure limit is exceeded and engineering controls are not feasible, a full facepiece respirator with an ammonia/methylamine cartridge may be worn up to 50 times the exposure limit or the maximum use concentration specified by the appropriate regulatory agency or respirator supplier, whichever is lowest. For emergencies or instances where the exposure levels are not known, use a full-facepiece positive-pressure, air-supplied respirator. WARNING: Air purifying respirators do not protect workers in oxygen-deficient atmospheres.

**Skin Protection:**

Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact.

**Eye Protection:**

Use chemical safety goggles and/or full face shield where dusting or splashing of solutions is possible. Maintain eye wash fountain and quick-drench facilities in work area.

---

## 9. Physical and Chemical Properties

**Appearance:**

Colorless crystal or white powder.

**Odor:**

Strong ammonia-like odor.

**Solubility:**

Soluble in water, decomposes in hot water

**Specific Gravity:**

1.50 @ 20C/4C

**pH:**

9.0 (100g/L H<sub>2</sub>O)

**% Volatiles by volume @ 21C (70F):**

0

**Boiling Point:**

@ 760 mm Hg (Decomposes)

**Melting Point:**

58C (136F)

**Vapor Density (Air=1):**

No information found.

**Vapor Pressure (mm Hg):**

760 @ 60C (140F)

**Evaporation Rate (BuAc=1):**

No information found.

---

## 10. Stability and Reactivity

**Stability:**

Stable under ordinary conditions of use and storage. Becomes unstable upon exposure to air and converts into ammonium bicarbonate. This process liberates ammonia and carbon dioxide.

**Hazardous Decomposition Products:**

Burning may produce ammonia, carbon monoxide, carbon dioxide, nitrogen oxides. Contact with water or prolonged contact with air may liberate ammonia.

**Hazardous Polymerization:**

Will not occur.

**Incompatibilities:**

Sodium hypochlorate, acids and acid salts, iron salts, zinc, alkaloids, aluminum and calomel, sodium nitrate and nitrites. Corrosive to nickel, copper and other alloys.

**Conditions to Avoid:**

Exposure to heat, prolonged exposure to air, contact with water, and incompatibles.

**11. Toxicological Information**

For Ammonium Carbonate, Oral rat LD50: 2150 mg/kg

-----\Cancer Lists\-----			
Ingredient	---NTP Carcinogen---		IARC Category
	Known	Anticipated	
Ammonium Carbonate (506-87-6)	No	No	None

**12. Ecological Information****Environmental Fate:**

No information found.

**Environmental Toxicity:**

96 Hr LC50 fathead minnow: 37 mg/L

**13. Disposal Considerations**

Whatever cannot be saved for recovery or recycling should be managed in an appropriate and approved waste facility. Although not a listed RCRA hazardous waste, this material may exhibit one or more characteristics of a hazardous waste and require appropriate analysis to determine specific disposal requirements. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

**14. Transport Information**

Not regulated.

**15. Regulatory Information**

-----\Chemical Inventory Status - Part 1\-----				
Ingredient	TSCA	EC	Japan	Australia
Ammonium Carbonate (506-87-6)	Yes	Yes	Yes	Yes

-----\Chemical Inventory Status - Part 2\-----				
Ingredient	Korea	--Canada--		
		DSL	NDSL	Phil.
Ammonium Carbonate (506-87-6)	Yes	Yes	No	Yes

-----\Federal, State & International Regulations - Part 1\-----				
Ingredient	-SARA 302-		-----SARA 313-----	
	RQ	TPQ	List	Chemical Catg.
Ammonium Carbonate (506-87-6)	No	No	No	No

-----\Federal, State & International Regulations - Part 2\-----			
Ingredient	CERCLA	-RCRA-	-TSCA-
		261.33	8 (d)
Ammonium Carbonate (506-87-6)	5000	No	No

Chemical Weapons Convention: No TSCA 12(b): No CDTA: No  
 SARA 311/312: Acute: Yes Chronic: No Fire: No Pressure: No  
 Reactivity: No (Pure / Solid)

**Australian Hazchem Code:** None allocated.

**Poison Schedule:** None allocated.

**WHMIS:**

This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

**16. Other Information**

**NFPA Ratings:** Health: 2 Flammability: 0 Reactivity: 2

**Label Hazard Warning:**

WARNING! HARMFUL IF SWALLOWED OR INHALED. CAUSES IRRITATION TO SKIN, EYES AND RESPIRATORY TRACT.

**Label Precautions:**

- Avoid contact with eyes, skin and clothing.
- Wash thoroughly after handling.
- Avoid breathing dust or vapors.
- Keep container closed.
- Use only with adequate ventilation.

**Label First Aid:**

If swallowed, induce vomiting immediately as directed by medical personnel. Never give anything by mouth to an unconscious person. If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes. Remove contaminated clothing and shoes. Wash clothing before reuse. In all cases, get medical attention.

**Product Use:**

Laboratory Reagent.

**Revision Information:**

No Changes.

**Disclaimer:**



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\*\*\*\*\*

**Prepared by:** Environmental Health & Safety  
Phone Number: (314) 654-1600 (U.S.A.)

MSDS Number: A5724 \* \* \* \* \* Effective Date: 08/23/07 \* \* \* \* \* Supersedes: 08/18/05

<b>MSDS</b> Material Safety Data Sheet From: Mallinckrodt Baker, Inc. 222 Red School Lane Phillipsburg, NJ 08865	 Mallinckrodt CHEMICALS	 J.T. Baker	24 Hour Emergency Telephone: 908-859-2151 CHEMTREC: 1-800-424-9300
			National Response In Canada CANUTEC: 613-996-6666
			Outside U.S. and Canada Chemtrec: 703-527-3887
NOTE: CHEMTREC, CANUTEC and National Response Center emergency numbers to be used only in the event of chemical emergencies involving a spill, leak, fire, exposure or accident involving chemicals.			
All non-emergency questions should be directed to Customer Service (1-800-582-2537) for assistance.			

## AMMONIUM CHLORIDE

### 1. Product Identification

**Synonyms:** Sal ammoniac; Ammonium muriate  
**CAS No.:** 12125-02-9  
**Molecular Weight:** 53.49  
**Chemical Formula:** NH<sub>4</sub>Cl  
**Product Codes:**  
 J.T. Baker: 0660  
 Mallinckrodt: 1614, 3355, 3363, 3364, 3384

### 2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
Ammonium Chloride	12125-02-9	99 - 100%	Yes

### 3. Hazards Identification

#### Emergency Overview

**WARNING! CAUSES IRRITATION TO SKIN, EYES AND RESPIRATORY TRACT. HARMFUL IF SWALLOWED OR INHALED.**

SAF-T-DATA<sup>(tm)</sup> Ratings (Provided here for your convenience)

Health Rating: 2 - Moderate  
 Flammability Rating: 0 - None  
 Reactivity Rating: 2 - Moderate  
 Contact Rating: 2 - Moderate  
 Lab Protective Equip: GOGGLES & SHIELD; LAB COAT & APRON; VENT HOOD; PROPER GLOVES  
 Storage Color Code: Green (General Storage)

#### Potential Health Effects

##### Inhalation:

Causes irritation to the respiratory tract. Symptoms may include coughing, shortness of breath.

##### Ingestion:

Causes irritation to the gastrointestinal tract. Symptoms may include nausea, vomiting and diarrhea.

##### Skin Contact:

Causes irritation to skin. Symptoms include redness, itching, and pain.

##### Eye Contact:

Causes irritation, redness, and pain.

##### Chronic Exposure:

No information found.

##### Aggravation of Pre-existing Conditions:

No information found.

### 4. First Aid Measures

#### Inhalation:

Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

#### Ingestion:

Induce vomiting immediately as directed by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention.

#### Skin Contact:

Immediately flush skin with plenty of water for at least 15 minutes. Remove contaminated clothing and shoes. Get medical attention. Wash clothing before reuse. Thoroughly clean shoes before reuse.

#### Eye Contact:

Immediately flush eyes with plenty of water for at least 15 minutes, lifting upper and lower eyelids occasionally. Get medical attention.

---

## 5. Fire Fighting Measures

**Fire:**

Not considered to be a fire hazard.

At fire temperatures ammonium chloride begins to corrode metals and may dissociate into ammonia and hydrogen chloride. Mixtures of about 16% to 25% (by volume) ammonia gas in air are flammable.

**Explosion:**

Not considered to be an explosion hazard.

**Fire Extinguishing Media:**

Use any means suitable for extinguishing surrounding fire. Water spray may be used to keep fire exposed containers cool.

**Special Information:**

In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode.

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## 6. Accidental Release Measures

Ventilate area of leak or spill. Wear appropriate personal protective equipment as specified in Section 8. Spills: Sweep up and containerize for reclamation or disposal. Vacuuming or wet sweeping may be used to avoid dust dispersal. US Regulations (CERCLA) require reporting spills and releases to soil, water and air in excess of reportable quantities. The toll free number for the US Coast Guard National Response Center is (800) 424-8802.

---

## 7. Handling and Storage

Keep in a tightly closed container. Protect from physical damage. Store in a cool, dry, ventilated area away from sources of heat, moisture and incompatibilities. Containers of this material may be hazardous when empty since they retain product residues (dust, solids); observe all warnings and precautions listed for the product.

---

## 8. Exposure Controls/Personal Protection

**Airborne Exposure Limits:**

Ammonium chloride:

-ACGIH Threshold Limit Value (TLV):

10 mg/m<sup>3</sup> (TWA); 20 mg/m<sup>3</sup> (STEL) Fume

**Ventilation System:**

A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, *Industrial Ventilation, A Manual of Recommended Practices*, most recent edition, for details.

**Personal Respirators (NIOSH Approved):**

If the exposure limit is exceeded and engineering controls are not feasible, a half facepiece particulate respirator (NIOSH type N95 or better filters) may be worn for up to ten times the exposure limit or the maximum use concentration specified by the appropriate regulatory agency or respirator supplier, whichever is lowest. A full-face piece particulate respirator (NIOSH type N100 filters) may be worn up to 50 times the exposure limit, or the maximum use concentration specified by the appropriate regulatory agency, or respirator supplier, whichever is lowest. If oil particles (e.g. lubricants, cutting fluids, glycerine, etc.) are present, use a NIOSH type R or P filter. For emergencies or instances where the exposure levels are not known, use a full-facepiece positive-pressure, air-supplied respirator. WARNING: Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.

**Skin Protection:**

Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact.

**Eye Protection:**

Use chemical safety goggles and/or full face shield where dusting or splashing of solutions is possible. Maintain eye wash fountain and quick-drench facilities in work area.

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## 9. Physical and Chemical Properties

**Appearance:**

White powder.

**Odor:**

Odorless.

**Solubility:**

29.7g/100g water @ 0C (32F)

**Specific Gravity:**

1.53

**pH:**

5.5 (1% aq.sol.); 5.1 (3% aq.sol.); 5.0 (10% aq.sol.)

**% Volatiles by volume @ 21C (70F):**

0

**Boiling Point:**

520C (968F)

**Melting Point:**

338C (640F) Sublimes.

**Vapor Density (Air=1):**

1.9

**Vapor Pressure (mm Hg):**

1.0 @ 160C (320F)

**Evaporation Rate (BuAc=1):**

No information found.

---

## 10. Stability and Reactivity

**Stability:**

Stable under ordinary conditions of use and storage.

**Hazardous Decomposition Products:**

Involvement in a fire causes decomposition to form hydrogen chloride and ammonia.

**Hazardous Polymerization:**

Will not occur.

**Incompatibilities:**

Concentrated acids, strong bases, silver salts, potassium chlorate, ammonium nitrate, bromine trifluoride and iodine heptafluoride. Ammonium chloride reacts explosively with potassium chlorate or bromine trifluoride, and violently with bromine pentafluoride, ammonium compounds, nitrates, and iodine heptafluoride. Explosive nitrogen trichloride may result from reaction of ammonium chloride and hydrogen cyanide.

**Conditions to Avoid:**

Heat, moisture, incompatibles.

## 11. Toxicological Information

Oral rat LD50 : 1650 mg/kg Investigated as a mutagen.

-----\Cancer Lists\-----			
Ingredient	---NTP Carcinogen---		IARC Category
	Known	Anticipated	
Ammonium Chloride (12125-02-9)	No	No	None

## 12. Ecological Information

**Environmental Fate:**

No information found.

**Environmental Toxicity:**

24 Hr LC50 Lepomis macrochirus (bluegill): 725 mg/L

96 Hr LC50 Cyprinus carpio (carp): 209 mg/L [static]

24 Hr EC50 water flea: 202 mg/L

## 13. Disposal Considerations

Whatever cannot be saved for recovery or recycling should be managed in an appropriate and approved waste disposal facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

## 14. Transport Information

Not regulated.

## 15. Regulatory Information

-----\Chemical Inventory Status - Part 1\-----				
Ingredient	TSCA	EC	Japan	Australia
Ammonium Chloride (12125-02-9)	Yes	Yes	Yes	Yes

-----\Chemical Inventory Status - Part 2\-----				
Ingredient	Korea	--Canada--		
		DSL	NDSL	Phil.
Ammonium Chloride (12125-02-9)	Yes	Yes	No	Yes

-----\Federal, State & International Regulations - Part 1\-----				
Ingredient	-SARA 302-		-SARA 313-	
	RQ	TPQ	List	Chemical Catg.
Ammonium Chloride (12125-02-9)	No	No	No	No

-----\Federal, State & International Regulations - Part 2\-----			
Ingredient	CERCLA	-RCRA-	-TSCA-
		261.33	8(d)
Ammonium Chloride (12125-02-9)	5000	No	No

Chemical Weapons Convention: No TSCA 12(b): No CDTA: No  
 SARA 311/312: Acute: Yes Chronic: No Fire: No Pressure: No  
 Reactivity: No (Pure / Solid)

**Australian Hazchem Code:** None allocated.

**Poison Schedule:** None allocated.

**WHMIS:**

This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

## 16. Other Information



**NFPA Ratings:** Health: 2 Flammability: 0 Reactivity: 0

**Label Hazard Warning:**

WARNING! CAUSES IRRITATION TO SKIN, EYES AND RESPIRATORY TRACT. HARMFUL IF SWALLOWED OR INHALED.

**Label Precautions:**

Avoid contact with eyes, skin and clothing.

Avoid breathing dust.

Wash thoroughly after handling.

Keep container closed.

Use only with adequate ventilation.

**Label First Aid:**

In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes. Remove contaminated clothing and shoes. Wash clothing before reuse. If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. If swallowed, induce vomiting immediately as directed by medical personnel. Never give anything by mouth to an unconscious person. In all cases, get medical attention.

**Product Use:**

Laboratory Reagent.

**Revision Information:**

MSDS Section(s) changed since last revision of document include: 12.

**Disclaimer:**

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**This document is intended only as a guide to the appropriate precautionary handling of the material by a properly trained person using this product.**

**Individuals receiving the information must exercise their independent judgment in determining its appropriateness for a particular purpose.**

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\*\*\*\*\*

**Prepared by:** Environmental Health & Safety

Phone Number: (314) 654-1600 (U.S.A.)

MSDS Number: A5736 \* \* \* \* \* Effective Date: 11/21/08 \* \* \* \* \* Supersedes: 02/22/06

**MSDS****Material Safety Data Sheet**From: Mallinckrodt Baker, Inc.  
222 Red School Lane  
Phillipsburg, NJ 0886524 Hour Emergency Telephone: 908-859-2151  
CHEMTREC: 1-800-424-9300National Response In Canada  
CANUTEC: 613-996-6666Outside U.S. and Canada  
Chemtrec: 703-527-3887

NOTE: CHEMTREC, CANUTEC and National Response Center emergency numbers to be used only in the event of chemical emergencies involving a spill, leak, fire, exposure or accident involving chemicals.

All non-emergency questions should be directed to Customer Service (1-800-582-2537) for assistance.

## AMMONIA CITRATE DIBASIC

### 1. Product Identification

**Synonyms:** Diammonium hydrogen citrate; Citric acid diammonium salt; 1,2,3-Propanetricarboxylic acid,2-hydroxy-,diammonium salt

**CAS No.:** 3012-65-5

**Molecular Weight:** 226.19

**Chemical Formula:** (NH<sub>4</sub>)<sub>2</sub>HC<sub>6</sub>H<sub>5</sub>O<sub>7</sub>

**Product Codes:**

J.T. Baker: 0682

Mallinckrodt: 0644

### 2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
Ammonium Citrate Dibasic	3012-65-5	98 - 100%	Yes

### 3. Hazards Identification

#### Emergency Overview

**WARNING! HARMFUL IF SWALLOWED OR INHALED. CAUSES IRRITATION TO SKIN, EYES AND RESPIRATORY TRACT.**

**SAF-T-DATA<sup>(tm)</sup>** Ratings (Provided here for your convenience)

Health Rating: 1 - Slight

Flammability Rating: 1 - Slight

Reactivity Rating: 0 - None

Contact Rating: 2 - Moderate

Lab Protective Equip: GOGGLES; LAB COAT; PROPER GLOVES

Storage Color Code: Green (General Storage)

#### Potential Health Effects

##### Inhalation:

Causes irritation to the respiratory tract. Symptoms may include coughing, shortness of breath. Higher concentrations may cause severe irritation.

##### Ingestion:

Causes irritation to the gastrointestinal tract. Symptoms may include nausea, vomiting and diarrhea.

##### Skin Contact:

Causes irritation to skin. Symptoms include redness, itching, and pain.

##### Eye Contact:

Causes irritation, redness, and pain.

##### Chronic Exposure:

No information found.

##### Aggravation of Pre-existing Conditions:

Persons with impaired respiratory function may be more susceptible to the effects of the substance.

### 4. First Aid Measures

#### Inhalation:

Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

#### Ingestion:

Give large amounts of water to drink. Never give anything by mouth to an unconscious person. Get medical attention.

#### Skin Contact:

Wipe off excess material from skin then immediately flush skin with plenty of water for at least 15 minutes. Remove contaminated clothing and shoes. Get medical attention. Wash clothing before reuse. Thoroughly clean shoes before reuse.

#### Eye Contact:

Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention immediately.

---

## 5. Fire Fighting Measures

**Fire:**

As with most organic solids, fire is possible at elevated temperatures or by contact with an ignition source.

**Explosion:**

Fine dust dispersed in air in sufficient concentrations, and in the presence of an ignition source is a potential dust explosion hazard.

**Fire Extinguishing Media:**

Water spray, dry chemical, alcohol foam, or carbon dioxide.

**Special Information:**

In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode.

---

## 6. Accidental Release Measures

Remove all sources of ignition. Ventilate area of leak or spill. Keep unnecessary and unprotected people away from area of spill. Wear appropriate personal protective equipment as specified in Section 8. Spills: Pick up and place in a suitable container for reclamation or disposal, using a method that does not generate dust. US Regulations (CERCLA) require reporting spills and releases to soil, water and air in excess of reportable quantities. The toll free number for the US Coast Guard National Response Center is (800) 424-8802.

---

## 7. Handling and Storage

Keep in a tightly closed container. Store in a cool, dry, ventilated area away from sources of heat or ignition. Protect against physical damage. Store separately from reactive or combustible materials, and out of direct sunlight. Containers of this material may be hazardous when empty since they retain product residues (dust, solids); observe all warnings and precautions listed for the product.

---

## 8. Exposure Controls/Personal Protection

**Airborne Exposure Limits:**

None established.

**Ventilation System:**

A system of local and/or general exhaust is recommended to keep employee exposures as low as possible. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, *Industrial Ventilation, A Manual of Recommended Practices*, most recent edition, for details.

**Personal Respirators (NIOSH Approved):**

For conditions of use where exposure to dust or mist is apparent and engineering controls are not feasible, a particulate respirator (NIOSH type N95 or better filters) may be worn. If oil particles (e.g. lubricants, cutting fluids, glycerine, etc.) are present, use a NIOSH type R or P filter. For emergencies or instances where the exposure levels are not known, use a full-face positive-pressure, air-supplied respirator. WARNING: Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.

**Skin Protection:**

Wear protective gloves and clean body-covering clothing.

**Eye Protection:**

Use chemical safety goggles and/or full face shield where dusting or splashing of solutions is possible. Maintain eye wash fountain and quick-drench facilities in work area.

---

## 9. Physical and Chemical Properties

**Appearance:**

White granules or powder.

**Odor:**

Slight ammonia odor.

**Solubility:**

ca. 100 gm/100 gm water

**Specific Gravity:**

1.48 @ 25C/4C

**pH:**

4.3

**% Volatiles by volume @ 21C (70F):**

0

**Boiling Point:**

No information found.

**Melting Point:**

No information found.

**Vapor Density (Air=1):**

No information found.

**Vapor Pressure (mm Hg):**

No information found.

**Evaporation Rate (BuAc=1):**

No information found.

---

## 10. Stability and Reactivity

**Stability:**

Stable under ordinary conditions of use and storage.

**Hazardous Decomposition Products:**

Burning may produce ammonia, carbon monoxide, carbon dioxide, nitrogen oxides.

**Hazardous Polymerization:**

Will not occur.

**Incompatibilities:**

No incompatibility data found.

**Conditions to Avoid:**

No information found.

## 11. Toxicological Information

No LD50/LC50 information found relating to normal routes of occupational exposure.

-----\Cancer Lists\-----			
Ingredient	---NTP Carcinogen---		IARC Category
	Known	Anticipated	
Ammonium Citrate Dibasic (3012-65-5)	No	No	None

## 12. Ecological Information

**Environmental Fate:**

When released into water, this material may biodegrade to a moderate extent. This material is not expected to significantly bioaccumulate.

**Environmental Toxicity:**

No information found.

## 13. Disposal Considerations

Whatever cannot be saved for recovery or recycling should be managed in an appropriate and approved waste disposal facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

## 14. Transport Information

Not regulated.

## 15. Regulatory Information

-----\Chemical Inventory Status - Part 1\-----				
Ingredient	TSCA	EC	Japan	Australia
Ammonium Citrate Dibasic (3012-65-5)	Yes	Yes	No	Yes

-----\Chemical Inventory Status - Part 2\-----				
Ingredient	Korea	--Canada--		
		DSL	NDSL	Phil.
Ammonium Citrate Dibasic (3012-65-5)	Yes	Yes	No	Yes

-----\Federal, State & International Regulations - Part 1\-----				
Ingredient	-SARA 302-		-SARA 313-	
	RQ	TPQ	List	Chemical Catg.
Ammonium Citrate Dibasic (3012-65-5)	No	No	No	No

-----\Federal, State & International Regulations - Part 2\-----			
Ingredient	CERCLA	-RCRA-	-TSCA-
		261.33	8 (d)
Ammonium Citrate Dibasic (3012-65-5)	5000	No	No

Chemical Weapons Convention: No TSCA 12(b): No CDTA: No  
 SARA 311/312: Acute: Yes Chronic: No Fire: No Pressure: No  
 Reactivity: No (Pure / Solid)

**Australian Hazchem Code:** None allocated.**Poison Schedule:** None allocated.**WHMIS:**

This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

## 16. Other Information

**NFPA Ratings:** Health: 1 Flammability: 1 Reactivity: 0**Label Hazard Warning:**

WARNING! HARMFUL IF SWALLOWED OR INHALED. CAUSES IRRITATION TO SKIN, EYES AND RESPIRATORY TRACT.

**Label Precautions:**

Avoid contact with eyes, skin and clothing.

Wash thoroughly after handling.

Avoid breathing dust.

Keep container closed.

Use only with adequate ventilation.

**Label First Aid:**

In case of contact, wipe off excess material from skin then immediately flush eyes or skin with plenty of water for at least 15 minutes. Remove contaminated clothing and shoes. Wash clothing before reuse. If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. If swallowed, give large amounts of water to drink. Never give anything by mouth to an unconscious person. In all cases, get medical attention.

**Product Use:**

Laboratory Reagent.

**Revision Information:**

No Changes.

**Disclaimer:**

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**Mallinckrodt Baker, Inc. provides the information contained herein in good faith but makes no representation as to its comprehensiveness or accuracy.**

**This document is intended only as a guide to the appropriate precautionary handling of the material by a properly trained person using this product.**

**Individuals receiving the information must exercise their independent judgment in determining its appropriateness for a particular purpose.**



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\*\*\*\*\*

**Prepared by:** Environmental Health & Safety

Phone Number: (314) 654-1600 (U.S.A.)

MSDS Number: A5916 \* \* \* \* \* Effective Date: 06/05/08 \* \* \* \* \* Supersedes: 05/04/07

<b>MSDS</b>	<b>Material Safety Data Sheet</b>		24 Hour Emergency Telephone: 908-859-2151 CHEMTREC: 1-800-424-9300
	From: Mallinckrodt Baker, Inc. 222 Red School Lane Phillipsburg, NJ 08865		National Response In Canada CANUTEC: 613-996-6666
Outside U.S. and Canada Chemtrec: 703-527-3887			NOTE: CHEMTREC, CANUTEC and National Response Center emergency numbers to be used only in the event of chemical emergencies involving a spill, leak, fire, exposure or accident involving chemicals.
 		All non-emergency questions should be directed to Customer Service (1-800-582-2537) for assistance.	

## AMMONIUM HYDROXIDE (10 - 35% NH3)

### 1. Product Identification

**Synonyms:** Ammonium hydroxide solutions; ammonia aqueous; ammonia solutions

**CAS No.:** 1336-21-6

**Molecular Weight:** 35.05

**Chemical Formula:** NH<sub>4</sub>OH in H<sub>2</sub>O

**Product Codes:**

J.T. Baker: 4807, 5204, 5224, 5350, 5358, 5604, 5817, 5820, 5851, 5852, 5891, 5893, 5993, 7847, 9718, 9719, 9721, 9730, 9731, 9733, 9741, 9742, 9743

Mallinckrodt: 0124, 0127, 1177, 3256, 3258, 5318, 6665, H010, H893, H894, V592, V649, V893, XL002, XM-187, XM-189

### 2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
Ammonium Hydroxide	1336-21-6	21 - 72%	Yes
Water	7732-18-5	28 - 79%	No
Contains between 10 and 35% ammonia.			

### 3. Hazards Identification

#### Emergency Overview

**POISON! DANGER! CORROSIVE. MAY BE FATAL IF SWALLOWED OR INHALED. MIST AND VAPOR CAUSE BURNS TO EVERY AREA OF CONTACT.**

**SAF-T-DATA<sup>(tm)</sup>** Ratings (Provided here for your convenience)

Health Rating: 3 - Severe (Poison)

Flammability Rating: 0 - None

Reactivity Rating: 1 - Slight

Contact Rating: 4 - Extreme (Corrosive)

Lab Protective Equip: GOGGLES & SHIELD; LAB COAT & APRON; VENT HOOD; PROPER GLOVES

Storage Color Code: White Stripe (Store Separately)

#### Potential Health Effects

##### Inhalation:

Vapors and mists cause irritation to the respiratory tract. Higher concentrations can cause burns, pulmonary edema and death. Brief exposure to 5000 ppm can be fatal.

##### Ingestion:

Toxic! May cause corrosion to the esophagus and stomach with perforation and peritonitis. Symptoms may include pain in the mouth, chest, and abdomen, with coughing, vomiting and collapse. Ingestion of as little as 3-4 mL may be fatal.

##### Skin Contact:

Causes irritation and burns to the skin.

##### Eye Contact:

Vapors cause irritation. Splashes cause severe pain, eye damage, and permanent blindness.

##### Chronic Exposure:

Repeated exposure may cause damage to the tissues of the mucous membranes, upper respiratory tract, eyes and skin.

##### Aggravation of Pre-existing Conditions:

Persons with pre-existing eye disorders or impaired respiratory function may be more susceptible to the effects of this material.

### 4. First Aid Measures

#### Inhalation:

Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician immediately.

#### Ingestion:

If swallowed, DO NOT INDUCE VOMITING. Give large quantities of water. Never give anything by mouth to an unconscious person. Get medical attention immediately.

**Skin Contact:**

Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Call a physician, immediately. Wash clothing before reuse.

**Eye Contact:**

Immediately flush eyes with gentle but large stream of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Call a physician immediately. Immediate action is critical to minimize possibility of blindness.

---

## 5. Fire Fighting Measures

**Fire:**

Autoignition temperature: 651C (1204F)

Flammable limits in air % by volume:

lcl: 16; ucl: 25

**Explosion:**

Flammable vapors may accumulate in confined spaces.

**Fire Extinguishing Media:**

Use any means suitable for extinguishing surrounding fire. Use water spray to blanket fire, cool fire exposed containers, and to flush non-ignited spills or vapors away from fire.

**Special Information:**

In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode.

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## 6. Accidental Release Measures

Ventilate area of leak or spill. Keep unnecessary and unprotected people away from area of spill. Wear appropriate personal protective equipment as specified in Section 8. Contain and recover liquid when possible. Do not flush caustic residues to the sewer. Residues from spills can be diluted with water, neutralized with dilute acid such as acetic, hydrochloric or sulfuric. Absorb neutralized caustic residue on clay, vermiculite or other inert substance and package in a suitable container for disposal.

US Regulations (CERCLA) require reporting spills and releases to soil, water and air in excess of reportable quantities. The toll free number for the US Coast Guard National Response Center is (800) 424-8802.

J. T. Baker NEUTRACIT®-2 or BuCAIM® caustic neutralizers are recommended for spills of this product.

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## 7. Handling and Storage

Keep in a tightly closed container, stored in a cool, dry, ventilated area. Protect against physical damage. Separate from incompatibilities. Store below 25C. Protect from direct sunlight. Containers of this material may be hazardous when empty since they retain product residues (vapors, liquid); observe all warnings and precautions listed for the product.

---

## 8. Exposure Controls/Personal Protection

**Airborne Exposure Limits:**

-OSHA Permissible Exposure Limit (PEL):

50 ppm (NH3)

-ACGIH Threshold Limit Value (TLV):

25 ppm (NH3) (TWA) 35 ppm (STEL)

**Ventilation System:**

A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, *Industrial Ventilation, A Manual of Recommended Practices*, most recent edition, for details.

**Personal Respirators (NIOSH Approved):**

If the exposure limit is exceeded and engineering controls are not feasible, a full facepiece respirator with an ammonia/methylamine cartridge may be worn up to 50 times the exposure limit or the maximum use concentration specified by the appropriate regulatory agency or respirator supplier, whichever is lowest. For emergencies or instances where the exposure levels are not known, use a full-facepiece positive-pressure, air-supplied respirator. WARNING: Air purifying respirators do not protect workers in oxygen-deficient atmospheres.

**Skin Protection:**

Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact. Neoprene and nitrile rubber are recommended materials. Polyvinyl alcohol is not recommended.

**Eye Protection:**

Use chemical safety goggles and/or full face shield where dusting or splashing of solutions is possible. Maintain eye wash fountain and quick-drench facilities in work area.

---

## 9. Physical and Chemical Properties

**Appearance:**

Clear, colorless solution.

**Odor:**

Ammonia odor.

**Solubility:**

Infinitely soluble.

**Specific Gravity:**

0.9 (28% NH4OH)

**pH:**

13.8 (29% solution).

**% Volatiles by volume @ 21C (70F):**

No information found.

**Boiling Point:**

ca. 36C (ca. 97F)

**Melting Point:**

-72C (-98F)

**Vapor Density (Air=1):**

0.60 NH3

**Vapor Pressure (mm Hg):**

115 @ 20C for 10% solution; 580 @ 20C for 28% solution.

**Evaporation Rate (BuAc=1):**

No information found.

## 10. Stability and Reactivity

**Stability:**

Stable under ordinary conditions of use and storage.

**Hazardous Decomposition Products:**

Burning may produce ammonia, nitrogen oxides.

**Hazardous Polymerization:**

Will not occur.

**Incompatibilities:**

Acids, acrolein, dimethyl sulfate, halogens, silver nitrate, propylene oxide, nitromethane, silver oxide, silver permanganate, oleum, beta-propiolactone. Most common metals.

**Conditions to Avoid:**

Heat, sunlight, incompatibles, sources of ignition.

## 11. Toxicological Information

For ammonium hydroxide:

oral rat LD50: 350 mg/kg; eye, rabbit, standard Draize, 250 ug; severe, investigated as a mutagen.

For ammonia:

inhalation rat LC50: 2000 ppm/4-hr; investigated as a tumorigen, mutagen.

-----\Cancer Lists\-----			
Ingredient	---NTP Carcinogen---		IARC Category
	Known	Anticipated	
Ammonium Hydroxide (1336-21-6)	No	No	None
Water (7732-18-5)	No	No	None

## 12. Ecological Information

**Environmental Fate:**

This material is not expected to significantly bioaccumulate.

**Environmental Toxicity:**

24 Hr LC50 rainbow trout: 0.008 mg/L;

96 Hr LC50 fathead minnow: 8.2 mg/L;

48 Hr LC50 bluegill: 0.024 mg/L;

48 Hr EC50 water flea: 0.66 mg/L

## 13. Disposal Considerations

Whatever cannot be saved for recovery or recycling should be managed in an appropriate and approved waste facility. Although not a listed RCRA hazardous waste, this material may exhibit one or more characteristics of a hazardous waste and require appropriate analysis to determine specific disposal requirements. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

## 14. Transport Information

**Domestic (Land, D.O.T.)****Proper Shipping Name:** AMMONIA SOLUTIONS (WITH 10-35% AMMONIA)**Hazard Class:** 8**UN/NA:** UN2672**Packing Group:** III**Information reported for product/size:** 385LB**International (Water, I.M.O.)****Proper Shipping Name:** AMMONIA SOLUTIONS (WITH 10-35% AMMONIA)**Hazard Class:** 8**UN/NA:** UN2672**Packing Group:** III**Information reported for product/size:** 385LB

## 15. Regulatory Information

WHMIS Classification: D1B, E

-----\Chemical Inventory Status - Part 1\-----				
Ingredient	TSCA	EC	Japan	Australia
Ammonium Hydroxide (1336-21-6)	Yes	Yes	Yes	Yes
Water (7732-18-5)	Yes	Yes	Yes	Yes



-----\Chemical Inventory Status - Part 2\-----				
Ingredient	--Canada--			
	Korea	DSL	NDSL	Phil.
Ammonium Hydroxide (1336-21-6)	Yes	Yes	No	Yes
Water (7732-18-5)	Yes	Yes	No	Yes

-----\Federal, State & International Regulations - Part 1\-----				
Ingredient	-SARA 302-		-SARA 313-	
	RQ	TPQ	List	Chemical Catg.
Ammonium Hydroxide (1336-21-6)	No	No	No	No
Water (7732-18-5)	No	No	No	No

-----\Federal, State & International Regulations - Part 2\-----			
Ingredient	CERCLA	-RCRA-	-TSCA-
		261.33	8(d)
Ammonium Hydroxide (1336-21-6)	1000	No	No
Water (7732-18-5)	No	No	No

Chemical Weapons Convention: No TSCA 12(b): No CDTA: No  
 SARA 311/312: Acute: Yes Chronic: Yes Fire: No Pressure: No  
 Reactivity: No (Mixture / Liquid)

**Australian Hazchem Code: 2P**

**Poison Schedule: S6**

**WHMIS:**

This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

## 16. Other Information

**NFPA Ratings:** Health: 3 Flammability: 1 Reactivity: 0

**Label Hazard Warning:**

POISON! DANGER! CORROSIVE. MAY BE FATAL IF SWALLOWED OR INHALED. MIST AND VAPOR CAUSE BURNS TO EVERY AREA OF CONTACT.

**Label Precautions:**

Do not get in eyes, on skin, or on clothing.

Do not breathe vapor or mist.

Keep container closed.

Use only with adequate ventilation.

Wash thoroughly after handling.

**Label First Aid:**

If swallowed, DO NOT INDUCE VOMITING. Give large quantities of water. Never give anything by mouth to an unconscious person. If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. IMMEDIATE ACTION IS ESSENTIAL FOR EYE EXPOSURES. In all cases call a physician immediately.

**Product Use:**

Laboratory Reagent.

**Revision Information:**

MSDS Section(s) changed since last revision of document include: 15.

**Disclaimer:**

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**Mallinckrodt Baker, Inc. provides the information contained herein in good faith but makes no representation as to its comprehensiveness or accuracy.**

**This document is intended only as a guide to the appropriate precautionary handling of the material by a properly trained person using this product.**

**Individuals receiving the information must exercise their independent judgment in determining its appropriateness for a particular purpose.**



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**Prepared by:** Environmental Health & Safety

Phone Number: (314) 654-1600 (U.S.A.)

MSDS Number: A5988 \* \* \* \* \* Effective Date: 05/04/07 \* \* \* \* \* Supersedes: 07/26/04

<b>MSDS</b>	<b>Material Safety Data Sheet</b>		24 Hour Emergency Telephone: 908-659-2151 CHEMTREC: 1-800-424-9300
	From: Mallinckrodt Baker, Inc. 222 Red School Lane Phillipsburg, NJ 08865		National Response In Canada CANUTEC: 613-996-6666
Outside U.S. and Canada Chemtrec: 703-527-3887			
From: Mallinckrodt Baker, Inc.      		NOTE: CHEMTREC, CANUTEC and National Response Center emergency numbers to be used only in the event of chemical emergencies involving a spill, leak, fire, exposure or accident involving chemicals.	
All non-emergency questions should be directed to Customer Service (1-800-582-2537) for assistance.			

## AMMONIUM MOLYBDATE

### 1. Product Identification

**Synonyms:** Molybdic acid hexammonium salt tetrahydrate; ammonium molybdate tetrahydrate; ammonium heptamolybdate, tetrahydrate  
**CAS No.:** 12027-67-7 (Anhydrous); 12054-85-2 (Tetrahydrate)  
**Molecular Weight:** 1235.86  
**Chemical Formula:** (NH<sub>4</sub>)<sub>6</sub>Mo<sub>7</sub>O<sub>24</sub>·4H<sub>2</sub>O  
**Product Codes:**  
 J.T. Baker: 0716  
 Mallinckrodt: 3420

### 2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
Hexaammonium Molybdate	12027-67-7	100%	Yes

### 3. Hazards Identification

#### Emergency Overview

**WARNING! HARMFUL IF SWALLOWED OR INHALED. CAUSES IRRITATION TO SKIN, EYES AND RESPIRATORY TRACT. AFFECTS KIDNEYS AND BLOOD.**

SAF-T-DATA<sup>(tm)</sup> Ratings (Provided here for your convenience)

Health Rating: 2 - Moderate (Life)  
 Flammability Rating: 0 - None  
 Reactivity Rating: 1 - Slight  
 Contact Rating: 2 - Moderate  
 Lab Protective Equip: GOGGLES; LAB COAT; VENT HOOD; PROPER GLOVES  
 Storage Color Code: Green (General Storage)

#### Potential Health Effects

##### Inhalation:

Irritant for the upper respiratory system. Pungent taste in mouth and throat, coughing, labored breathing. Can be a route of absorption by the body with symptoms like ingestion.

##### Ingestion:

Irritant to the digestive system. Symptoms of sore throat, abdominal pain, nausea may occur. May cause anemia, gout, headaches, weight loss, joint pain, and liver or kidney damage.

##### Skin Contact:

Causes irritation to skin. Symptoms include redness, itching, and pain.

##### Eye Contact:

Causes irritation, redness, and pain.

##### Chronic Exposure:

Prolonged or repeated exposure to this product may cause symptoms similar to ingestion.

##### Aggravation of Pre-existing Conditions:

Persons with pre-existing skin disorders, blood disorders or eye problems, or impaired liver, kidney or respiratory function may be more susceptible to the effects of the substance.

### 4. First Aid Measures

#### Inhalation:

Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

#### Ingestion:

Induce vomiting immediately as directed by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention.

#### Skin Contact:

Immediately flush skin with plenty of water for at least 15 minutes. Remove contaminated clothing and shoes. Get medical attention. Wash clothing before reuse.

Thoroughly clean shoes before reuse.

**Eye Contact:**

Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention immediately.

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## 5. Fire Fighting Measures

**Fire:**

Not considered to be a fire hazard.

**Explosion:**

Not considered to be an explosion hazard.

**Fire Extinguishing Media:**

Use any means suitable for extinguishing surrounding fire.

**Special Information:**

In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode. Water spray may be used to keep fire exposed containers cool.

---

## 6. Accidental Release Measures

Ventilate area of leak or spill. Wear appropriate personal protective equipment as specified in Section 8. Spills: Pick up and place in a suitable container for reclamation or disposal, using a method that does not generate dust.

---

## 7. Handling and Storage

Keep in a tightly closed container. Protect from physical damage. Store in a cool, dry, ventilated area away from sources of heat, moisture and incompatibilities. Containers of this material may be hazardous when empty since they retain product residues (dust, solids); observe all warnings and precautions listed for the product.

---

## 8. Exposure Controls/Personal Protection

**Airborne Exposure Limits:**

-OSHA Permissible Exposure Limit (PEL):

5 mg/m<sup>3</sup> for soluble molybdenum compounds as Mo

15 mg/m<sup>3</sup> for insoluble molybdenum compounds as Mo

-ACGIH Threshold Limit Value (TLV):

Molybdenum, metal and insoluble compounds, inhalable fraction, as Mo: 10 mg/m<sup>3</sup>

Molybdenum, metal and insoluble compounds, respirable fraction, as Mo: 3 mg/m<sup>3</sup>

Molybdenum, soluble compounds, respirable fraction, as Mo: 0.5 mg/m<sup>3</sup>, A3 - Confirmed animal carcinogen with unknown relevance to humans

**Ventilation System:**

A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, *Industrial Ventilation, A Manual of Recommended Practices*, most recent edition, for details.

**Personal Respirators (NIOSH Approved):**

If the exposure limit is exceeded and engineering controls are not feasible, a half facepiece particulate respirator (NIOSH type N95 or better filters) may be worn for up to ten times the exposure limit or the maximum use concentration specified by the appropriate regulatory agency or respirator supplier, whichever is lowest. A full-face piece particulate respirator (NIOSH type N100 filters) may be worn up to 50 times the exposure limit, or the maximum use concentration specified by the appropriate regulatory agency, or respirator supplier, whichever is lowest. If oil particles (e.g. lubricants, cutting fluids, glycerine, etc.) are present, use a NIOSH type R or P filter. For emergencies or instances where the exposure levels are not known, use a full-facepiece positive-pressure, air-supplied respirator. WARNING: Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.

**Skin Protection:**

Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact.

**Eye Protection:**

Use chemical safety goggles and/or full face shield where dusting or splashing of solutions is possible. Maintain eye wash fountain and quick-drench facilities in work area.

---

## 9. Physical and Chemical Properties

**Appearance:**

White to yellow-green crystals

**Odor:**

Odorless.

**Solubility:**

43 g / 100 cc cold water.

**Density:**

2.498

**pH:**

5.0 - 5.5

**% Volatiles by volume @ 21C (70F):**

0

**Boiling Point:**

190C (374F) Decomposes.

**Melting Point:**

90C (194F) Loses 1 water @ this temperature.

**Vapor Density (Air=1):**

No information found.

**Vapor Pressure (mm Hg):**

No information found.

**Evaporation Rate (BuAc=1):**

No information found.

## 10. Stability and Reactivity

### Stability:

Stable under ordinary conditions of use and storage.

### Hazardous Decomposition Products:

Burning may produce ammonia, nitrogen oxides and metal fumes.

### Hazardous Polymerization:

Will not occur.

### Incompatibilities:

Alkali metals

### Conditions to Avoid:

Incompatibles.

## 11. Toxicological Information

Anhydrous: Oral rat LD50: 333 mg/kg. Investigated as a mutagen.

-----\Cancer Lists\-----			
Ingredient	---NTP Carcinogen---		IARC Category
	Known	Anticipated	
Hexaammonium Molybdate (12027-67-7)	No	No	None

## 12. Ecological Information

### Environmental Fate:

No information found.

### Environmental Toxicity:

No information found.

## 13. Disposal Considerations

Whatever cannot be saved for recovery or recycling should be managed in an appropriate and approved waste disposal facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

## 14. Transport Information

Not regulated.

## 15. Regulatory Information

-----\Chemical Inventory Status - Part 1\-----				
Ingredient	TSCA	EC	Japan	Australia
Hexaammonium Molybdate (12027-67-7)	Yes	Yes	Yes	Yes

-----\Chemical Inventory Status - Part 2\-----				
Ingredient	Korea	--Canada--		
		DSL	NDSL	Phil.
Hexaammonium Molybdate (12027-67-7)	Yes	Yes	No	Yes

-----\Federal, State & International Regulations - Part 1\-----				
Ingredient	-SARA 302-		-----SARA 313-----	
	RQ	TPQ	List	Chemical Catg.
Hexaammonium Molybdate (12027-67-7)	No	No	No	No

-----\Federal, State & International Regulations - Part 2\-----			
Ingredient	CERCLA	-RCRA-	-TSCA-
		261.33	8 (d)
Hexaammonium Molybdate (12027-67-7)	No	No	No

Chemical Weapons Convention: No TSCA 12(b): No CDTA: No  
 SARA 311/312: Acute: Yes Chronic: Yes Fire: No Pressure: No  
 Reactivity: No (Pure / Solid)

**Australian Hazchem Code:** None allocated.

**Poison Schedule:** None allocated.

### WHMIS:

This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

## 16. Other Information

**NFPA Ratings:** Health: 2 Flammability: 0 Reactivity: 0

**Label Hazard Warning:**

WARNING! HARMFUL IF SWALLOWED OR INHALED. CAUSES IRRITATION TO SKIN, EYES AND RESPIRATORY TRACT. AFFECTS KIDNEYS AND BLOOD.

**Label Precautions:**

Avoid contact with eyes, skin and clothing.

Avoid breathing dust.

Keep container closed.

Use only with adequate ventilation.

Wash thoroughly after handling.

**Label First Aid:**

If swallowed, induce vomiting immediately as directed by medical personnel. Never give anything by mouth to an unconscious person. In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes. Remove contaminated clothing and shoes. Wash clothing before reuse. If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. In all cases, get medical attention.

**Product Use:**

Laboratory Reagent.

**Revision Information:**

MSDS Section(s) changed since last revision of document include: 3, 11, 16.

**Disclaimer:**

\*\*\*\*\*

**Mallinckrodt Baker, Inc. provides the information contained herein in good faith but makes no representation as to its comprehensiveness or accuracy.**

**This document is intended only as a guide to the appropriate precautionary handling of the material by a properly trained person using this product.**

**Individuals receiving the information must exercise their independent judgment in determining its appropriateness for a particular purpose.**

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\*\*\*\*\*

**Prepared by:** Environmental Health & Safety

Phone Number: (314) 654-1600 (U.S.A.)

MSDS Number: A6048 \* \* \* \* \* Effective Date: 05/04/07 \* \* \* \* \* Supersedes: 07/21/04

<b>MSDS</b>	<b>Material Safety Data Sheet</b>		24 Hour Emergency Telephone: 908-859-2151 CHEMTREC: 1-800-424-9300
	From: Mallinckrodt Baker, Inc. 222 Red School Lane Phillipsburg, NJ 08865		National Response In Canada CANUTEC: 613-996-6666
NOTE: CHEMTREC, CANUTEC and National Response Center emergency numbers to be used only in the event of chemical emergencies involving a spill, leak, fire, exposure or accident involving chemicals.			Outside U.S. and Canada Chemtrec: 703-527-3887
		All non-emergency questions should be directed to Customer Service (1-800-582-2537) for assistance.	

## AMMONIUM NITRATE

### 1. Product Identification

**Synonyms:** Nitric acid, ammonium salt  
**CAS No.:** 6484-52-2  
**Molecular Weight:** 80.04  
**Chemical Formula:** NH<sub>4</sub>NO<sub>3</sub>  
**Product Codes:**  
 J.T. Baker: 0729, 0731, 0829  
 Mallinckrodt: 3436

### 2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
Ammonium Nitrate	6484-52-2	99 - 100%	Yes

### 3. Hazards Identification

#### Emergency Overview

**DANGER! STRONG OXIDIZER. CONTACT WITH OTHER MATERIAL MAY CAUSE FIRE OR EXPLOSION. MAY BE HARMFUL IF SWALLOWED OR INHALED. CAUSES IRRITATION TO SKIN, EYES AND RESPIRATORY TRACT.**

SAF-T-DATA<sup>(tm)</sup> Ratings (Provided here for your convenience)

Health Rating: 2 - Moderate  
 Flammability Rating: 1 - Slight  
 Reactivity Rating: 3 - Severe (Oxidizer)  
 Contact Rating: 2 - Moderate  
 Lab Protective Equip: GOGGLES & SHIELD; LAB COAT & APRON; VENT HOOD; PROPER GLOVES  
 Storage Color Code: Yellow (Reactive)

#### Potential Health Effects

##### Inhalation:

May cause irritation to the respiratory tract; symptoms may include coughing, sore throat, and shortness of breath. At high temperatures, exposure to toxic nitrogen oxides decomposition products can quickly cause acute respiratory problems. Inhalation of large amounts causes systemic acidosis and abnormal hemoglobin.

##### Ingestion:

Large oral doses of nitrates may cause dizziness, abdominal pain, vomiting, bloody diarrhea, weakness, convulsions, and collapse. Harmful if swallowed. May cause methemoglobinemia resulting in cyanosis.

##### Skin Contact:

Causes irritation to skin. Symptoms include redness, itching, and pain.

##### Eye Contact:

Causes irritation, redness, and pain.

##### Chronic Exposure:

Small repeated oral doses of nitrates may cause weakness, depression, headache, and mental impairment.

##### Aggravation of Pre-existing Conditions:

No information found.

### 4. First Aid Measures

#### Inhalation:

Remove to fresh air. Get medical attention for any breathing difficulty.

#### Ingestion:

If swallowed, DO NOT INDUCE VOMITING. Give large quantities of water. Never give anything by mouth to an unconscious person. Get medical attention

immediately.

**Skin Contact:**

Remove any contaminated clothing. Wash skin with soap and water for at least 15 minutes. Get medical attention if irritation develops or persists.

**Eye Contact:**

Wash thoroughly with running water. Get medical advice if irritation develops.

---

## 5. Fire Fighting Measures

**Fire:**

Not combustible, but substance is a strong oxidizer and its heat of reaction with reducing agents or combustibles may cause ignition. May support combustion in an existing fire.

**Explosion:**

Contact with oxidizable substances may cause extremely violent combustion. Sealed containers may rupture when heated. Sensitive to mechanical impact.

**Fire Extinguishing Media:**

Use flooding amounts of water in early stages of fire involving ammonium nitrate. Use any means suitable for extinguishing surrounding fire.

**Special Information:**

In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode.

---

## 6. Accidental Release Measures

Remove sources of heat and ignition.

Collected waste may be transferred to a closed, preferably metal, container and sent to a RCRA approved waste disposal facility.

Alternatively, sweep spill into noncombustible container and dissolve in large amount of water. Add soda ash. Mix and neutralize with 6M-HCl. Neutralized sludge may be sent to an approved waste disposal facility.

---

## 7. Handling and Storage

Keep in a tightly closed container, stored in a cool, dry, ventilated area. Protect against physical damage. Store in a dry location separate from combustible, organic or other readily oxidizable materials. Avoid storage on wood floors. Remove and dispose of any spilled dichromates; do not return to original containers. Do not store above 54C (130F) preferably below 30C (86F). Containers of this material may be hazardous when empty since they retain product residues (dust, solids); observe all warnings and precautions listed for the product.

---

## 8. Exposure Controls/Personal Protection

**Airborne Exposure Limits:**

None established.

**Ventilation System:**

A system of local and/or general exhaust is recommended to keep employee exposures as low as possible. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, *Industrial Ventilation, A Manual of Recommended Practices*, most recent edition, for details.

**Personal Respirators (NIOSH Approved):**

For conditions of use where exposure to dust or mist is apparent and engineering controls are not feasible, a particulate respirator (NIOSH type N95 or better filters) may be worn. If oil particles (e.g. lubricants, cutting fluids, glycerine, etc.) are present, use a NIOSH type R or P filter. For emergencies or instances where the exposure levels are not known, use a full-face positive-pressure, air-supplied respirator. WARNING: Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.

**Skin Protection:**

Wear protective gloves and clean body-covering clothing.

**Eye Protection:**

Use chemical safety goggles. Maintain eye wash fountain and quick-drench facilities in work area.

---

## 9. Physical and Chemical Properties

**Appearance:**

Colorless crystals.

**Odor:**

Odorless.

**Solubility:**

118g/100g water @ 0C (32F).

**Specific Gravity:**

1.73 @ 23C (77F)

**pH:**

5.4

**% Volatiles by volume @ 21C (70F):**

0

**Boiling Point:**

210C (410F) Decomposes.

**Melting Point:**

170C (338F)

**Vapor Density (Air=1):**

No information found.

**Vapor Pressure (mm Hg):**

No information found.

**Evaporation Rate (BuAc=1):**

No information found.

---

## 10. Stability and Reactivity

### Stability:

Stable under ordinary conditions of use and storage. Hygroscopic.

### Hazardous Decomposition Products:

Emits nitrous oxides when heated to decomposition. Liberates ammonia in reaction with strong alkalis.

### Hazardous Polymerization:

Will not occur.

### Incompatibilities:

Aluminum, antimony, chromium, copper, iron, lead, magnesium, manganese, nickel, zinc, brass, oil, charcoal, organic material, acetic acid, ammonium chloride, bismuth, cadmium, chlorides, cobalt, phosphorus, potassium and ammonium sulfate, sodium, sodium hypochlorite, sodium perchlorate, sodium-potassium alloy, and sulfur.

### Conditions to Avoid:

Heat, flame, ignition sources, dusting and incompatibles. Moisture and combustible materials. Shock sensitive.

## 11. Toxicological Information

Oral rat LD50: 2217 mg/kg.

-----\Cancer Lists\-----			
Ingredient	---NTP Carcinogen---		IARC Category
	Known	Anticipated	
Ammonium Nitrate (6484-52-2)	No	No	None

## 12. Ecological Information

### Environmental Fate:

When released into the soil, this material is expected to leach into groundwater. When released into the soil, this material is not expected to evaporate significantly. When released into water, this material is expected to readily biodegrade.

### Environmental Toxicity:

No information found.

## 13. Disposal Considerations

Whatever cannot be saved for recovery or recycling should be handled as hazardous waste and sent to a RCRA approved waste facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

## 14. Transport Information

### Domestic (Land, D.O.T.)

Proper Shipping Name: AMMONIUM NITRATE

Hazard Class: 5.1

UN/NA: UN1942

Packing Group: III

Information reported for product/size: 50KG

### International (Water, I.M.O.)

Proper Shipping Name: AMMONIUM NITRATE

Hazard Class: 5.1

UN/NA: UN1942

Packing Group: III

Information reported for product/size: 50KG

## 15. Regulatory Information

-----\Chemical Inventory Status - Part 1\-----				
Ingredient	TSCA	EC	Japan	Australia
Ammonium Nitrate (6484-52-2)	Yes	Yes	Yes	Yes

-----\Chemical Inventory Status - Part 2\-----				
Ingredient	Korea	--Canada--		
		DSL	NDSL	Phil.
Ammonium Nitrate (6484-52-2)	Yes	Yes	No	Yes

-----\Federal, State & International Regulations - Part 1\-----				
Ingredient	-SARA 302-		-----SARA 313-----	
	RQ	TPQ	List	Chemical Catg.
Ammonium Nitrate (6484-52-2)	No	No	No	Nitrate cmpd

-----\Federal, State & International Regulations - Part 2\-----			
Ingredient	CERCLA	-RCRA-	-TSCA-
		261.33	8 (d)
Ammonium Nitrate (6484-52-2)	No	No	No

Chemical Weapons Convention: No TSCA 12(b): No CDTA: No



SARA 311/312: Acute: Yes Chronic: No Fire: No Pressure: No  
Reactivity: Yes (Pure / Solid)

**Australian Hazchem Code:** 1[S]

**Poison Schedule:** None allocated.

**WHMIS:**

This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

## 16. Other Information

**NFPA Ratings:** Health: **0** Flammability: **0** Reactivity: **3** Other: **Oxidizer**

**Label Hazard Warning:**

DANGER! STRONG OXIDIZER. CONTACT WITH OTHER MATERIAL MAY CAUSE FIRE OR EXPLOSION. MAY BE HARMFUL IF SWALLOWED OR INHALED. CAUSES IRRITATION TO SKIN, EYES AND RESPIRATORY TRACT.

**Label Precautions:**

Keep from contact with clothing and other combustible materials.

Do not store near combustible materials.

Store in a tightly closed container.

Avoid breathing dust.

Avoid contact with eyes, skin and clothing.

Remove and wash contaminated clothing promptly.

Use only with adequate ventilation.

Wash thoroughly after handling.

Store preferably below 30C

**Label First Aid:**

If inhaled, remove to fresh air. Get medical attention for any breathing difficulty. In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes. If swallowed, DO NOT INDUCE VOMITING. Give large quantities of water. Never give anything by mouth to an unconscious person. In all cases, get medical attention.

**Product Use:**

Laboratory Reagent.

**Revision Information:**

No Changes.

**Disclaimer:**

\*\*\*\*\*

**Mallinckrodt Baker, Inc. provides the information contained herein in good faith but makes no representation as to its comprehensiveness or accuracy.**

**This document is intended only as a guide to the appropriate precautionary handling of the material by a properly trained person using this product.**

**Individuals receiving the information must exercise their independent judgment in determining its appropriateness for a particular purpose.**

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**INFORMATION.**

\*\*\*\*\*

**Prepared by:** Environmental Health & Safety

Phone Number: (314) 654-1600 (U.S.A.)

# FLINN SCIENTIFIC INC.

"Your Safer Source for Science Supplies"

## Material Safety Data Sheet (MSDS)

MSDS #: 62.00

Revision Date: November 25, 2002

---

### Section 1 — Chemical Product and Company Identification

---

#### Ammonium Oxalate

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### Section 2 — Composition, Information on Ingredients

---

Ammonium Oxalate

Synonym: Ethanedioic Acid Diammonium Salt

CAS#: 6009-70-7

---

### Section 3 — Hazards Identification

---

White odorless powder.

Toxic by ingestion and inhalation. Can cause severe kidney damage. Moderately corrosive to body tissues. Avoid body tissue contact.

#### FLINN AT-A-GLANCE

Health-2

Flammability-0

Reactivity-1

Exposure-2

Storage-0

0 is low hazard, 3 is high hazard

---

### Section 4 — First Aid Measures

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash continuously with fresh water for 15 minutes.

Internal: Give large quantities of water. Call a physician or poison control at once.

---

### Section 5 — Fire Fighting Measures

---

Non-flammable solid.

When heated to decomposition, emits toxic fumes of ammonia and oxalic acid.

**Fire Fighting Instructions:** Use triclass, dry chemical fire extinguisher. Firefighters should wear PPE and SCBA with full facepiece operated in positive pressure mode.

#### NFPA CODE

None Established

---

### Section 6 — Accidental Release Measures

---

Restrict unprotected personnel from area. Sweep up, place in sealed bag or container and dispose. Ventilate area and wash spill site after material pickup is complete. See Sections 8 and 13 for further information.

---

### Section 7 — Handling and Storage

---

Flinn Suggested Chemical Storage Pattern: Inorganic #2. Store with acetates, halides, sulfates, sulfites, thiosulfates and phosphates.

Use and dispense in a hood. Store in a cool dry place.

---

### Section 8 — Exposure Controls, Personal Protection

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron.

Use exhaust ventilation to keep airborne concentrations low.

### Section 9 — Physical and Chemical Properties

White odorless powder.

Solubility: Water soluble (2.54 g/100 ml).

Formula:  $(\text{NH}_4)_2\text{C}_2\text{O}_4 \cdot \text{H}_2\text{O}$

Formula Weight: 142.11

Specific Gravity: 1.5

Melting Point: 133 C (dec.)

### Section 10 — Stability and Reactivity

May react violently with NaOCl and ammonium acetate.

Shelf life: indefinite

### Section 11 — Toxicological Information

Acute effects: Corrosive, toxic, irritant

Chronic effects: N.A.

Target organs: Kidneys, nerves

ORL-RAT LD50: N.A.

IHL-RAT LC50: N.A.

SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

### Section 12 — Ecological Information

Data not yet available.

### Section 13 — Disposal Considerations

Please consult with state and local regulations.

Flinn Suggested Disposal Method #26a is one option.

### Section 14 — Transport Information

Shipping Name: Not Regulated

Hazard Class: N/A

UN Number: N/A

N/A = Not applicable

### Section 15 — Regulatory Information

Not listed.

### Section 16 — Other Information

Consult your copy of the Flinn Scientific Catalog/Reference Manual for additional information about laboratory chemicals. This Material Safety Data Sheet (MSDS) is for guidance and is based upon information and tests believed to be reliable. Flinn Scientific Inc. makes no guarantee of the accuracy or completeness of the data and shall not be liable for any damages relating thereto. The data is offered solely for your consideration, investigation, and verification. Flinn Scientific Inc. assumes no legal responsibility for use or reliance upon this data.

**FLINN SCIENTIFIC INC.**

"Your Safer Source for Science Supplies"

*Flinn--"Your Safer Source for Chemicals"*

flinn@flinnsci.com www.flinnsci.com  
P.O. Box 219 Batavia IL 60510  
(800) 452-1261 Fax (866) 452-1436

# FLINN SCIENTIFIC INC.

"Your Safer Source for Science Supplies"

## Material Safety Data Sheet (MSDS)

MSDS #: 67.00

Revision Date: March 7, 2001

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### Section 1 — Chemical Product and Company Identification

---

#### Ammonium Sulfate and Solutions

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### Section 2 — Composition, Information on Ingredients

---

Ammonium Sulfate and Solutions: Ammonium Sulfate (7783-20-2) 1-13%, Water (7732-18-5) 87-99%

CAS#: 7783-20-2

---

### Section 3 — Hazards Identification

---

White, odorless crystals or clear, colorless solution.

Slightly toxic by ingestion. Irritating to body tissues. Avoid body tissue contact.

#### FLINN AT-A-GLANCE

Health-1

Flammability-0

Reactivity-1

Exposure-1

Storage-0

0 is low hazard, 3 is high hazard

---

### Section 4 — First Aid Measures

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash continuously with fresh water for 15 minutes.

Internal: Give large quantities of water. Call a physician or poison control at once.

---

### Section 5 — Fire Fighting Measures

---

Non-flammable, non-combustible solid and solutions.

When heated to decomposition, emits very toxic fumes of NO<sub>x</sub>, NH<sub>3</sub>, and SO<sub>x</sub>.

**Fire Fighting Instructions:** Use triclass, dry chemical fire extinguisher. Firefighters should wear PPE and SCBA with full facepiece operated in positive pressure mode.

#### NFPA CODE

None established.

---

### Section 6 — Accidental Release Measures

---

Restrict unprotected personnel from area. Sweep up, place in sealed bag or container and dispose. Ventilate area and wash spill site after material pickup is complete. See Sections 8 and 13 for further information.

---

### Section 7 — Handling and Storage

---

Flinn Suggested Chemical Storage Pattern: Inorganic #2. Store with acetates, halides, sulfates, sulfites, thiosulfates and phosphates.

Store in a cool dry place.

---

### Section 8 — Exposure Controls, Personal Protection

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron.

Use exhaust ventilation to keep airborne concentrations low.

### Section 9 — Physical and Chemical Properties

White, odorless crystals.  
Solubility: Soluble in water (44 %).  
Formula:  $(\text{NH}_4)_2\text{SO}_4$   
Formula Weight: 132.16

Specific Gravity: 1.77  
Melting Point: 235 C (dec.)

### Section 10 — Stability and Reactivity

May explode if mixed with oxidizers. Contact with caustic liberates ammonia.  
Avoid contact with strong oxidizers and bases. Incompatible with  $(\text{K}+\text{NH}_4\text{NO}_3)$ ,  $\text{KNO}_2$ ,  $(\text{NaK}+\text{NH}_4\text{NO}_3)$ .  
Shelf life: Indefinite.

### Section 11 — Toxicological Information

Acute effects: Irritant.  
Chronic effects: N.A.  
Target organs: N.A.

ORL-RAT LD50: 2840 mg/kg  
IHL-RAT LC50: N.A.  
SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

### Section 12 — Ecological Information

Data not yet available.

### Section 13 — Disposal Considerations

Please consult with state and local regulations.  
Flinn Suggested Disposal Method #26a is one option.

### Section 14 — Transport Information

Shipping Name: Not regulated.  
Hazard Class: N/A  
UN Number: N/A

N/A = Not applicable

### Section 15 — Regulatory Information

TSCA-listed, EINECS-listed (231-984-1).

### Section 16 — Other Information

Consult your copy of the Flinn Scientific Catalog/Reference Manual for additional information about laboratory chemicals. This Material Safety Data Sheet (MSDS) is for guidance and is based upon information and tests believed to be reliable. Flinn Scientific Inc. makes no guarantee of the accuracy or completeness of the data and shall not be liable for any damages relating thereto. The data is offered solely for your consideration, investigation, and verification. Flinn Scientific Inc. assumes no legal responsibility for use or reliance upon this data.

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(800) 452-1261 Fax (866) 452-1436

MSDS Number: A7608 \* \* \* \* \* Effective Date: 05/19/08 \* \* \* \* \* Supersedes: 08/18/05

<b>MSDS</b>	<b>Material Safety Data Sheet</b>		24 Hour Emergency Telephone: 908-859-2151 CHEMTREC: 1-800-424-9300
	From: Mallinckrodt Baker, Inc. 222 Red School Lane Phillipsburg, NJ 08865		National Response In Canada CANUTEC: 613-996-6666
Outside U.S. and Canada Chemtrec: 703-527-3887			NOTE: CHEMTREC, CANUTEC and National Response Center emergency numbers to be used only in the event of chemical emergencies involving a spill, leak, fire, exposure or accident involving chemicals.

All non-emergency questions should be directed to Customer Service (1-800-582-2637) for assistance.

## ASCORBIC ACID

### 1. Product Identification

**Synonyms:** L-ascorbic acid; vitamin C; L-3-Ketothreohexuronic acid lactone

**CAS No.:** 50-81-7

**Molecular Weight:** 176.13

**Chemical Formula:** C<sub>6</sub>H<sub>8</sub>O<sub>6</sub>

**Product Codes:**

J.T. Baker: 0936, 0937, 0938, 0939, B581

Mallinckrodt: 1852, 4407, 8829

### 2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
L-Ascorbic Acid	50-81-7	100%	Yes

### 3. Hazards Identification

#### Emergency Overview

As part of good industrial and personal hygiene and safety procedure, avoid all unnecessary exposure to the chemical substance and ensure prompt removal from skin, eyes and clothing.

SAF-T-DATA<sup>(tm)</sup> Ratings (Provided here for your convenience)

Health Rating: 1 - Slight

Flammability Rating: 1 - Slight

Reactivity Rating: 1 - Slight

Contact Rating: 1 - Slight

Lab Protective Equip: GOGGLES; LAB COAT; VENT HOOD; PROPER GLOVES; CLASS A EXTINGUISHER

Storage Color Code: Green (General Storage)

#### Potential Health Effects

Ascorbic acid is relatively non-hazardous in routine industrial situations. It is not expected to present significant health risks to the workers who use it.

#### Inhalation:

May cause mild irritation to the respiratory tract.

#### Ingestion:

Large oral doses may cause gastrointestinal disturbances.

#### Skin Contact:

May cause mild irritation.

#### Eye Contact:

May cause mild irritation.

#### Chronic Exposure:

No information found.

#### Aggravation of Pre-existing Conditions:

No information found.

### 4. First Aid Measures

#### Inhalation:

If inhaled, remove to fresh air. Get medical attention for any breathing difficulty.

#### Ingestion:

Give several glasses of water to drink to dilute. If large amounts were swallowed, get medical advice.

#### Skin Contact:

Wash exposed area with soap and water. Get medical advice if irritation develops.

#### Eye Contact:

Wash thoroughly with running water. Get medical advice if irritation develops.

---

## 5. Fire Fighting Measures

**Fire:**

As with most organic solids, fire is possible at elevated temperatures or by contact with an ignition source.

**Explosion:**

Not considered to be an explosion hazard.

**Fire Extinguishing Media:**

Use any means suitable for extinguishing surrounding fire.

**Special Information:**

In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode.

---

## 6. Accidental Release Measures

Ventilate area of leak or spill. Wear appropriate personal protective equipment as specified in Section 8. Spills: Pick up and place in a suitable container for reclamation or disposal, using a method that does not generate dust.

---

## 7. Handling and Storage

Keep in a tightly closed container, stored in a cool, dry, ventilated area. Protect against physical damage. Isolate from any source of heat or ignition. Isolate from incompatible substances. Containers of this material may be hazardous when empty since they retain product residues (dust, solids); observe all warnings and precautions listed for the product.

---

## 8. Exposure Controls/Personal Protection

**Airborne Exposure Limits:**

None established.

**Ventilation System:**

A system of local and/or general exhaust is recommended to keep employee exposures as low as possible. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, *Industrial Ventilation, A Manual of Recommended Practices*, most recent edition, for details.

**Personal Respirators (NIOSH Approved):**

For conditions of use where exposure to dust or mist is apparent and engineering controls are not feasible, a particulate respirator (NIOSH type N95 or better filters) may be worn. If oil particles (e.g. lubricants, cutting fluids, glycerine, etc.) are present, use a NIOSH type R or P filter. For emergencies or instances where the exposure levels are not known, use a full-face positive-pressure, air-supplied respirator. WARNING: Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.

**Skin Protection:**

Wear protective gloves and clean body-covering clothing.

**Eye Protection:**

Use chemical safety goggles. Maintain eye wash fountain and quick-drench facilities in work area.

---

## 9. Physical and Chemical Properties

**Appearance:**

White crystals.

**Odor:**

Odorless.

**Solubility:**

33g/100g water.

**Density:**

1.65

**pH:**

3 for 5mg/L aqueous solution; 2 for 50mg/L aqueous solution.

**% Volatiles by volume @ 21C (70F):**

0

**Boiling Point:**

Not applicable.

**Melting Point:**

192C (378F) Slightly decomposes.

**Vapor Density (Air=1):**

No information found.

**Vapor Pressure (mm Hg):**

No information found.

**Evaporation Rate (BuAc=1):**

No information found.

---

## 10. Stability and Reactivity

**Stability:**

Stable under ordinary conditions of use and storage. Aqueous solutions are rapidly oxidized by air.

**Hazardous Decomposition Products:**

May produce acrid smoke and irritating fumes when heated to decomposition.

**Hazardous Polymerization:**

Will not occur.

**Incompatibilities:**

Strong oxidizers and alkali hydroxides, alkalis, iron, copper, sodium salicylate, sodium nitrite, theobromine and methenamine.

**Conditions to Avoid:**

No information found.

## 11. Toxicological Information

Oral (rat) LD50 11,900 mg/kg . Investigated as a tumorigen, mutagen, and reproductive effector.

Ingredient	---NTP Carcinogen---		IARC Category
	Known	Anticipated	
L-Ascorbic Acid (50-81-7)	No	No	None

## 12. Ecological Information

**Environmental Fate:**

No information found.

**Environmental Toxicity:**

No information found.

## 13. Disposal Considerations

Whatever cannot be saved for recovery or recycling should be managed in an appropriate and approved waste disposal facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

## 14. Transport Information

Not regulated.

## 15. Regulatory Information

Ingredient	-----\Chemical Inventory Status - Part 1\-----			
	TSCA	EC	Japan	Australia
L-Ascorbic Acid (50-81-7)	Yes	Yes	Yes	Yes

Ingredient	-----\Chemical Inventory Status - Part 2\-----			
	Korea	---Canada--- DSL	NDSL	Phil.
L-Ascorbic Acid (50-81-7)	Yes	Yes	No	Yes

Ingredient	-----\Federal, State & International Regulations - Part 1\-----			
	-SARA 302-		-SARA 313-	
	RQ	TPQ	List	Chemical Catg.
L-Ascorbic Acid (50-81-7)	No	No	No	No

Ingredient	-----\Federal, State & International Regulations - Part 2\-----		
	CERCLA	-RCRA-	-TSCA-
		261.33	8(d)
L-Ascorbic Acid (50-81-7)	No	No	No

Chemical Weapons Convention: No TSCA 12(b): No CDTA: No  
 SARA 311/312: Acute: No Chronic: No Fire: No Pressure: No  
 Reactivity: No (Pure / Solid)

**Australian Hazchem Code:** None allocated.

**Poison Schedule:** None allocated.

**WHMIS:**

This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

## 16. Other Information

**NFPA Ratings:** Health: 1 Flammability: 0 Reactivity: 0

**Label Hazard Warning:**

As part of good industrial and personal hygiene and safety procedure, avoid all unnecessary exposure to the chemical substance and ensure prompt removal from skin, eyes and clothing.

**Label Precautions:**

None.

**Label First Aid:**

Not applicable.

**Product Use:**

Laboratory Reagent.

**Revision Information:**



No Changes.

**Disclaimer:**

\*\*\*\*\*

**Mallinckrodt Baker, Inc. provides the information contained herein in good faith but makes no representation as to its comprehensiveness or accuracy. This document is intended only as a guide to the appropriate precautionary handling of the material by a properly trained person using this product. Individuals receiving the information must exercise their independent judgment in determining its appropriateness for a particular purpose. MALLINCKRODT BAKER, INC. MAKES NO REPRESENTATIONS OR WARRANTIES, EITHER EXPRESS OR IMPLIED, INCLUDING WITHOUT LIMITATION ANY WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE WITH RESPECT TO THE INFORMATION SET FORTH HEREIN OR THE PRODUCT TO WHICH THE INFORMATION REFERS. ACCORDINGLY, MALLINCKRODT BAKER, INC. WILL NOT BE RESPONSIBLE FOR DAMAGES RESULTING FROM USE OF OR RELIANCE UPON THIS INFORMATION.**

\*\*\*\*\*

**Prepared by:** Environmental Health & Safety  
Phone Number: (314) 654-1600 (U.S.A.)

# FLINN SCIENTIFIC INC.

"Your Safer Source for Science Supplies"

## Material Safety Data Sheet (MSDS)

MSDS #: 95.00

Revision Date: November 25, 2002

---

### Section 1 — Chemical Product and Company Identification

---

## Barium Hydroxide and Solutions

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### Section 2 — Composition, Information on Ingredients

---

Barium Hydroxide And Solutions: Barium Hydroxide (12230-71-6) 3% and Water (7732-18-5) 97%

CAS#: 12230-71-6

---

### Section 3 — Hazards Identification

---

White crystalline powder or clear colorless liquid.

Toxic by ingestion as barium. Ingestion could be fatal. All soluble barium compounds are poisonous if swallowed and cause nausea, vomiting, stomach pains and diarrhea.

#### FLINN AT-A-GLANCE

Health-3  
Flammability-0  
Reactivity-0  
Exposure-3  
Storage-1

0 is low hazard, 3 is high hazard

---

### Section 4 — First Aid Measures

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash continuously with fresh water for 15 minutes.

Internal: Induce vomiting. After vomiting, give a mixture of 1 Tbs. magnesium sulfate in one cup of water. Call a physician or poison control at once.

---

### Section 5 — Fire Fighting Measures

---

Non-flammable solid or liquid.

**Fire Fighting Instructions:** Use triclass, dry chemical fire extinguisher. Firefighters should wear PPE and SCBA with full facepiece operated in positive pressure mode.

#### NFPA CODE

None Established

---

### Section 6 — Accidental Release Measures

---

If liquid: Restrict unprotected personnel from area and ventilate area. Contain spill with sand or absorbent material; deposit in sealed bag or container. See Sections 8 and 13 for further information.

If solid: Restrict unprotected personnel from area. Sweep up, place in sealed bag or container and dispose. Ventilate area and wash spill site after material pickup is complete. See Sections 8 and 13 for further information.

---

### Section 7 — Handling and Storage

---

Flinn Suggested Chemical Storage Pattern: Inorganic #4. Store with hydroxides, oxides, silicates and carbonates.

Use and dispense in a hood. Store in a cool dry place.

Keep container tightly closed. Store in Flinn ChemSaf Bag.

---

### Section 8 — Exposure Controls, Personal Protection

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron.

Use ventilation to keep airborne concentrations below exposure limits. Always wear a NIOSH-approved respirator with proper cartridges or a positive pressure, air-supplied respirator when handling this material in emergency situations (spill or fire).

Exposure guidelines: TWA 0.5 mg/m<sup>3</sup> (Ba) (OSHA, ACGIH)

### Section 9 — Physical and Chemical Properties

White crystalline powder.  
0.1M Barium Hydroxide CAS# 12230-71-6 3.2%  
Solubility: Soluble in water and alcohol.

Formula: Ba(OH)<sub>2</sub> 8H<sub>2</sub>O  
Formula Weight: 315.50  
Specific Gravity: 2.2

### Section 10 — Stability and Reactivity

Avoid contact with acids.  
Shelf life: Poor; absorbs CO<sub>2</sub> from the air.

### Section 11 — Toxicological Information

Acute effects: highly toxic, corrosive  
Chronic effects: N.A.  
Target organs: heart, kidneys, GI system, bone marrow, spleen,  
liver

ORL-RAT LD50: N.A.  
IHL-RAT LC50: N.A.  
SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

### Section 12 — Ecological Information

Data not yet available.

### Section 13 — Disposal Considerations

Please consult with state and local regulations.  
Flinn Suggested Disposal Method #27h is one option.

### Section 14 — Transport Information

Shipping Name: Barium Compounds, n.o.s.  
Hazard Class: 6.1, keep away from food  
UN Number: UN1564

N/A = Not applicable

### Section 15 — Regulatory Information

TSCA-listed, EINECS-listed (241-234-5), RCRA D002, D005.

### Section 16 — Other Information

Consult your copy of the Flinn Scientific Catalog/Reference Manual for additional information about laboratory chemicals. This Material Safety Data Sheet (MSDS) is for guidance and is based upon information and tests believed to be reliable. Flinn Scientific Inc. makes no guarantee of the accuracy or completeness of the data and shall not be liable for any damages relating thereto. The data is offered solely for your consideration, investigation, and verification. Flinn Scientific Inc. assumes no legal responsibility for use or reliance upon this data.

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"Your Safer Source for Science Supplies"

*Flinn--"Your Safer Source for Chemicals"*

flinn@flinnsci.com www.flinnsci.com  
P.O. Box 219 Batavia IL 60510  
(800) 452-1261 Fax (866) 452-1436

# FLINN SCIENTIFIC INC.

"Your Safer Source for Science Supplies"

## Material Safety Data Sheet (MSDS)

MSDS #: 94.00

Revision Date: November 25, 2002

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### Section 1 — Chemical Product and Company Identification

---

#### Barium Chloride

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### Section 2 — Composition, Information on Ingredients

---

Barium Chloride

CAS#: 10326-27-9

---

### Section 3 — Hazards Identification

---

White odorless powder.

Highly toxic by ingestion and inhalation. All soluble barium compounds are poisonous if swallowed and cause nausea, vomiting, stomach pains and diarrhea.

#### FLINN AT-A-GLANCE

Health-3  
Flammability-0  
Reactivity-0  
Exposure-3  
Storage-1

0 is low hazard, 3 is high hazard

---

### Section 4 — First Aid Measures

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash continuously with fresh water for 15 minutes.

Internal: Induce vomiting. After vomiting, give a mixture of 1 Tbs. magnesium sulfate in one cup of water. Call a physician or poison control at once.

---

### Section 5 — Fire Fighting Measures

---

Non-flammable solid.

**Fire Fighting Instructions:** Use triclass, dry chemical fire extinguisher. Firefighters should wear PPE and SCBA with full facepiece operated in positive pressure mode.

#### NFPA CODE

None Established

---

### Section 6 — Accidental Release Measures

---

Restrict unprotected personnel from area. Sweep up, place in sealed bag or container and dispose. Ventilate area and wash spill site after material pickup is complete. See Sections 8 and 13 for further information.

---

### Section 7 — Handling and Storage

---

Flinn Suggested Chemical Storage Pattern: Inorganic #2. Store with acetates, halides, sulfates, sulfites, thiosulfates and phosphates. Store in a Flinn Chem-Saf Bag.

Store in a cool dry place. Use and dispense in a hood.

---

### Section 8 — Exposure Controls, Personal Protection

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron.

Use ventilation to keep airborne concentrations below exposure limits. Always wear a NIOSH-approved respirator with proper cartridges or a positive pressure, air-supplied respirator when handling this material in emergency situations (spill or fire).

Exposure guidelines: TWA 0.5 mg/m<sup>3</sup> (Ba) (OSHA, ACGIH)

### Section 9 — Physical and Chemical Properties

White odorless powder.  
Solubility: Soluble in water. (39.3 grams/100 ml).

Formula: BaCl<sub>2</sub> 2H<sub>2</sub>O  
Formula Weight: 244.28  
Specific Gravity: 3.1

### Section 10 — Stability and Reactivity

Avoid contact with strong oxidizers.  
Shelf life: Indefinite.

### Section 11 — Toxicological Information

Acute effects: highly toxic, irritant, stomach pains, vomiting, diarrhea  
Chronic effects: N.A.  
Target organs: heart, nerves, kidneys, GI system, bone marrow, spleen, liver

ORL-RAT LD50: 118 mg/kg  
IHL-RAT LC50: N.A.  
SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

### Section 12 — Ecological Information

Data not yet available.

### Section 13 — Disposal Considerations

Please consult with state and local regulations.  
Flinn Suggested Disposal Method #27h is one option.

### Section 14 — Transport Information

Shipping Name: Barium Compounds, n.o.s.  
Hazard Class: 6.1, keep away from foods.  
UN Number: UN1564

N/A = Not applicable

### Section 15 — Regulatory Information

TSCA-listed, EINECS-listed (233-788-1), RCRA D005.

### Section 16 — Other Information

Consult your copy of the Flinn Scientific Catalog/Reference Manual for additional information about laboratory chemicals. This Material Safety Data Sheet (MSDS) is for guidance and is based upon information and tests believed to be reliable. Flinn Scientific Inc. makes no guarantee of the accuracy or completeness of the data and shall not be liable for any damages relating thereto. The data is offered solely for your consideration, investigation, and verification. Flinn Scientific Inc. assumes no legal responsibility for use or reliance upon this data.

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MSDS Number: **B0432** \* \* \* \* \* Effective Date: **06/13/07** \* \* \* \* \* Supersedes: **05/07/07**

<b>MSDS</b>	<b>Material Safety Data Sheet</b>		24 Hour Emergency Telephone: 908-859-2151 CHEMTREC: 1-800-424-9300
	From: Mallinckrodt Baker, Inc. 222 Red School Lane Phillipsburg, NJ 08865		National Response In Canada CANUTEC: 613-996-6666
NOTE: CHEMTREC, CANUTEC and National Response Center emergency numbers to be used only in the event of chemical emergencies involving a spill, leak, fire, exposure or accident involving chemicals.			Outside U.S. and Canada Chemtrec: 703-527-3887
		All non-emergency questions should be directed to Customer Service (1-800-582-2637) for assistance.	

## BARIUM NITRATE

### 1. Product Identification

**Synonyms:** Barium dinitrate; nitric acid, barium salt; nitrobarite  
**CAS No.:** 10022-31-8  
**Molecular Weight:** 261.34  
**Chemical Formula:** Ba(NO<sub>3</sub>)<sub>2</sub>  
**Product Codes:**  
 J.T. Baker: 1018  
 Mallinckrodt: 3788

### 2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
Barium Nitrate	10022-31-8	99 - 100%	Yes

### 3. Hazards Identification

#### Emergency Overview

**DANGER! STRONG OXIDIZER. CONTACT WITH OTHER MATERIAL MAY CAUSE FIRE. MAY BE FATAL IF SWALLOWED. HARMFUL IF INHALED. CAUSES IRRITATION TO SKIN, EYES AND RESPIRATORY TRACT. AFFECTS MUSCLES (INCLUDING THE HEART), AND CENTRAL NERVOUS SYSTEM.**

SAF-T-DATA<sup>(tm)</sup> Ratings (Provided here for your convenience)

Health Rating: 3 - Severe (Poison)  
 Flammability Rating: 1 - Slight  
 Reactivity Rating: 3 - Severe (Oxidizer)  
 Contact Rating: 2 - Moderate  
 Lab Protective Equip: GOGGLES & SHIELD; LAB COAT & APRON; VENT HOOD; PROPER GLOVES  
 Storage Color Code: Yellow (Reactive)

#### Potential Health Effects

##### Inhalation:

Causes irritation to the respiratory tract. Symptoms may include coughing, shortness of breath. Systemic poisoning may occur with symptoms similar to those of ingestion.

##### Ingestion:

Toxic! May cause tightness of the muscles of the face and neck, vomiting, diarrhea, abdominal pain, muscular tremors, anxiety, weakness, labored breathing, cardiac irregularity, convulsions, and death from cardiac and respiratory failure. Estimated lethal dose lies between 1 to 15 grams. Death may occur within hours or up to a few days. May cause kidney damage.

##### Skin Contact:

Causes irritation to skin. Symptoms include redness, itching, and pain.

##### Eye Contact:

Causes irritation, redness, and pain.

##### Chronic Exposure:

No information found.

##### Aggravation of Pre-existing Conditions:

Persons with pre-existing skin and nervous system disorders or impaired respiratory or kidney function may be more susceptible to the effects of this substance.

### 4. First Aid Measures

#### Inhalation:

Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

#### Ingestion:

Get medical attention immediately. Induce vomiting immediately as directed by medical personnel. Never give anything by mouth to an unconscious person. After vomiting, a mixture of 1 tablespoon of sodium or magnesium sulfate (Epsom salts) dissolved in 8 oz. of water to drink maybe indicated to precipitate the

barium as the nontoxic and insoluble barium sulfate.

**Skin Contact:**

Immediately flush skin with plenty of water for at least 15 minutes. Remove contaminated clothing and shoes. Get medical attention. Wash clothing before reuse. Thoroughly clean shoes before reuse.

**Eye Contact:**

Immediately flush eyes with plenty of water for at least 15 minutes, lifting upper and lower eyelids occasionally. Get medical attention.

**Note to Physician:**

Monitor patients with significant ingestion for respiratory, cardiovascular, and blood pressure status. Watch for cardiac arrhythmias, respiratory failure due to flaccid paralysis of respiratory muscles, pulmonary edema, vocal cord paralysis, severe hypertension, and late effect kidney failure. Acute barium poisoning results in hypokalemia. The administration of fluids containing dilute concentrations of potassium salts may be indicated.

---

## 5. Fire Fighting Measures

**Fire:**

Not combustible, but substance is a strong oxidizer and its heat of reaction with reducing agents or combustibles may cause ignition.

**Explosion:**

Contact with oxidizable substances may cause extremely violent combustion. See section 10. Sensitive to mechanical impact.

**Fire Extinguishing Media:**

Use flooding amounts of water in early stages of fire. Foam, dry chemical, or carbon dioxide may also be used. Do not use water on molten material. Emits nitrogen oxides when heated to decomposition.

**Special Information:**

In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode. Do not release runoff from fire control methods to sewers or waterways.

---

## 6. Accidental Release Measures

Ventilate area of leak or spill. Keep unnecessary and unprotected people away from area of spill. Wear appropriate personal protective equipment as specified in Section 8. Spills: Pick up and place in a suitable container for reclamation or disposal, using a method that does not generate dust.

---

## 7. Handling and Storage

Keep in a tightly closed container, stored in a cool, dry, ventilated area. Protect against physical damage. Isolate from incompatible substances. Separate from combustibles, organic or other readily oxidizable materials. Avoid storage on wood floors. Containers of this material may be hazardous when empty since they retain product residues (dust, solids); observe all warnings and precautions listed for the product.

---

## 8. Exposure Controls/Personal Protection

**Airborne Exposure Limits:**

For Soluble Barium Compounds:

OSHA Permissible Exposure Limit (PEL):

0.5 mg (Ba)/m<sup>3</sup>

ACGIH Threshold Limit Value (TLV):

0.5 mg (Ba)/m<sup>3</sup> A4 - not classifiable as a human carcinogen

**Ventilation System:**

A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, *Industrial Ventilation, A Manual of Recommended Practices*, most recent edition, for details.

**Personal Respirators (NIOSH Approved):**

If the exposure limit is exceeded, a full facepiece respirator with dust/mist filter may be worn up to 50 times the exposure limit or the maximum use concentration specified by the appropriate regulatory agency or respirator supplier, whichever is lowest. For emergencies or instances where the exposure levels are not known, use a full-facepiece positive-pressure, air-supplied respirator. WARNING: Air purifying respirators do not protect workers in oxygen-deficient atmospheres.

**Skin Protection:**

Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact.

**Eye Protection:**

Use chemical safety goggles. Maintain eye wash fountain and quick-drench facilities in work area.

---

## 9. Physical and Chemical Properties

**Appearance:**

White crystals.

**Odor:**

Odorless.

**Solubility:**

8.7 grams/100 g water @ 20C (68F).

**Density:**

3.24 @ 23C (73F)

**pH:**

No information found.

**% Volatiles by volume @ 21C (70F):**

0

**Boiling Point:**

Decomposes.

**Melting Point:**

592C (1098F)

**Vapor Density (Air=1):**

No information found.

**Vapor Pressure (mm Hg):**

No information found.

**Evaporation Rate (BuAc=1):**

No information found.

## 10. Stability and Reactivity

### Stability:

Stable under ordinary conditions of use and storage.

### Hazardous Decomposition Products:

Oxides of nitrogen and toxic metal fumes may form when heated to decomposition.

### Hazardous Polymerization:

Will not occur.

### Incompatibilities:

Magnesium plus barium oxide plus zinc, aluminum and magnesium alloys, combustibles (paper, oil, wood), acids, and oxidizers. Mixtures with finely divided aluminum-magnesium alloys are easily ignitable and extremely sensitive to friction or impact.

### Conditions to Avoid:

Heat, dusting, contact with combustibles and incompatibles.

## 11. Toxicological Information

For Barium Nitrate: Oral rat LD50: 355 mg/kg. Irritation Data: Skin rabbit 500 mg/24H mild. Eye rabbit 100 mg/24H moderate.

-----\Cancer Lists\-----			
Ingredient	---NTP Carcinogen---		IARC Category
	Known	Anticipated	
Barium Nitrate (10022-31-8)	No	No	None

## 12. Ecological Information

### Environmental Fate:

This material may bioaccumulate to some extent.

### Environmental Toxicity:

No information found.

## 13. Disposal Considerations

Whatever cannot be saved for recovery or recycling should be managed in an appropriate and approved waste facility. Although not a listed RCRA hazardous waste, this material may exhibit one or more characteristics of a hazardous waste and require appropriate analysis to determine specific disposal requirements. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

## 14. Transport Information

### Domestic (Land, D.O.T.)

-----  
**Proper Shipping Name:** BARIUM NITRATE

**Hazard Class:** 5.1, 6.1

**UN/NA:** UN1446

**Packing Group:** II

**Information reported for product/size:** 100LB

### International (Water, I.M.O.)

-----  
**Proper Shipping Name:** BARIUM NITRATE

**Hazard Class:** 5.1, 6.1

**UN/NA:** UN1446

**Packing Group:** II

**Information reported for product/size:** 100LB

## 15. Regulatory Information

-----\Chemical Inventory Status - Part 1\-----				
Ingredient	TSCA	EC	Japan	Australia
Barium Nitrate (10022-31-8)	Yes	Yes	Yes	Yes

-----\Chemical Inventory Status - Part 2\-----				
Ingredient	Korea	--Canada--		
		DSL	NDSL	Phil.
Barium Nitrate (10022-31-8)	Yes	Yes	No	Yes

-----\Federal, State & International Regulations - Part 1\-----				
Ingredient	-SARA 302-		-----SARA 313-----	
	RQ	TPQ	List	Chemical Catg.
Barium Nitrate (10022-31-8)	No	No	No	Barium compo

-----\Federal, State & International Regulations - Part 2\-----			
Ingredient	CERCLA	-RCRA-	-TSCA-
		261.33	8 (d)
Barium Nitrate (10022-31-8)			



Barium Nitrate (10022-31-8)

No

No

No

Chemical Weapons Convention: No TSCA 12(b): No CDTA: No  
SARA 311/312: Acute: Yes Chronic: Yes Fire: No Pressure: No  
Reactivity: No (Pure / Solid)

**Australian Hazchem Code: 2W****Poison Schedule: S6****WHMIS:**

This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

## 16. Other Information

**NFPA Ratings:** Health: 3 Flammability: 0 Reactivity: 0 Other: Oxidizer**Label Hazard Warning:**

DANGER! STRONG OXIDIZER. CONTACT WITH OTHER MATERIAL MAY CAUSE FIRE. MAY BE FATAL IF SWALLOWED. HARMFUL IF INHALED. CAUSES IRRITATION TO SKIN, EYES AND RESPIRATORY TRACT. AFFECTS MUSCLES (INCLUDING THE HEART), AND CENTRAL NERVOUS SYSTEM.

**Label Precautions:**

Keep from contact with clothing and other combustible materials.

Avoid breathing dust.

Avoid contact with eyes, skin and clothing.

Store in a tightly closed container.

Use only with adequate ventilation.

Wash thoroughly after handling.

**Label First Aid:**

If swallowed, induce vomiting immediately as directed by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention immediately. If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes. In all cases call a physician.

**Product Use:**

Laboratory Reagent.

**Revision Information:**

MSDS Section(s) changed since last revision of document include: 3.

**Disclaimer:**

\*\*\*\*\*

**Mallinckrodt Baker, Inc. provides the information contained herein in good faith but makes no representation as to its comprehensiveness or accuracy.**

**This document is intended only as a guide to the appropriate precautionary handling of the material by a properly trained person using this product.**

**Individuals receiving the information must exercise their independent judgment in determining its appropriateness for a particular purpose.**

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\*\*\*\*\*

**Prepared by:** Environmental Health & Safety

Phone Number: (314) 654-1600 (U.S.A.)

## **MATERIAL SAFETY DATA SHEET**

BENEDICT'S REAGENT  
CAROLINA BIOLOGICAL

Revised: 05/15/08  
Replaces: 07/10/07  
Printed: 05/20/08

---

### **1. PRODUCT DESCRIPTION**

Product Name: Benedict Reagent  
Product Code(s): 84-7091, 85-0090  
Size: N/A  
Chemical Name: Benedict Reagent  
CAS Number: See section 2  
Formula: See section 2  
Synonyms: None known  
Distributor: Carolina Biological Supply Company  
2700 York Road  
Burlington, NC 27215

Chemical Information: 800-227-1150 (8am-5pm (ET) M-F)  
Chemtrec (Transportation Spill Response 24 hours): 800-424-9300

### **2. COMPOSITION/INFORMATION ON INGREDIENTS**

Principal Hazardous Components:  
Sodium Carbonate (CAS#497-19-8) 35%  
Cupric Sulfate (CAS#7758-99-8) 6%  
Sodium Citrate (CAS#6132-04-3) 59%  
TLV and PEL units: None established for Sodium Carbonate and Sodium Citrate. For Cupric Sulfate, both OSHA PEL and ACGIH TLV are 1 mg/m<sup>3</sup> (TWA) for copper dusts and mists (as Cu).

### **3. HAZARD IDENTIFICATION**

Emergency Overview: Harmful if inhaled or swallowed.  
Potential Health Effects:  
Eyes: May cause irritation.  
Skin: May cause irritation.  
Ingestion: May cause gastrointestinal discomfort.  
Inhalation: May cause irritation to respiratory tract.

### **4. FIRST AID MEASURES**

Emergency and First Aid Procedures:  
Eyes - Flush thoroughly with plenty of water. Get medical attention if irritation persists.  
Skin - Thoroughly wash exposed area with soap and water. Get medical attention if irritation persists.  
Ingestion - If swallowed, if conscious, give plenty of water to dilute. If large amounts were ingested, get medical attention.  
Inhalation - Move to fresh air. Get medical attention if breathing is difficult.

### **5. FIREFIGHTING PROCEDURES**

Flash Point(Method Used): None  
NFPA Rating (est): Health: 1  
Fire: 0  
Reactivity: 0

Extinguisher Media:

Use media suitable to extinguish surrounding fire.

Flammable Limits in Air % by Volume: N/A

Autoignition Temperature: N/A

Special Firefighting Procedures:

Firefighters should wear full protective equipment and NIOSH approved self-contained breathing apparatus.

Unusual Fire and Explosion Hazards: Thermal decomposition produces

## **MATERIAL SAFETY DATA SHEET**

BENEDICT'S REAGENT  
CAROLINA BIOLOGICAL

Revised: 05/15/08  
Replaces: 07/10/07  
Printed: 05/20/08

---

toxic fumes.

### **6. SPILL OR LEAK PROCEDURES**

Steps to be Taken in Case Material is Released or Spilled:

Ventilate area of spill. Clean-up personnel should wear proper protective equipment. Avoid creating dust. Sweep or scoop up and containerize for disposal.

### **7. SPECIAL PRECAUTIONS**

Precautions to be Taken in Handling or Storing: Keep container tightly closed and store in cool dry area.

Other Precautions: Do not breathe dust. Wash thoroughly after handling.

### **8. SPECIAL PROTECTION INFORMATION**

Respiratory Protection(Specify Type):

None needed under normal conditions of use with adequate ventilation.

NIOSH approved equipment should be worn if PELs are exceeded.

Ventilation:

Local Exhaust: Yes

Mechanical(General): Yes

Special: No

Other: No

Protective Gloves:

Rubber, neoprene, PVC, or equivalent.

Eye Protection:

Splash proof chemical safety goggles should be worn at all times.

Other Protective Clothing or Equipment:

Lab apron, eye wash, and safety shower.

### **9. PHYSICAL DATA**

Molecular Weight: No data available

Melting Point: No data available

Boiling Point: No data available

Vapor Pressure: No data available

Vapor Density(Air=1): No data available

Specific Gravity(H2O=1): No data available

Percent Volatile by Volume: No data available

Evaporation Rate(H2O=1): No data available

Solubility in Water: Soluble

Appearance and Odor: Blue powder

### **10. REACTIVITY DATA**

Stability: Stable

Conditions to Avoid: High temperatures and contact with strong acids

Incompatibility(Materials to Avoid): Acids and Oxidizers

Hazardous Decomposition Products: SO<sub>x</sub>, CO<sub>x</sub>

Hazardous Polymerization: Will not occur

### **11. TOXICITY DATA**

Toxicity Data:

Cupric Sulfate: orl-rat LD50: 300 mg/kg

Sodium Carbonate: orl-rat LD50: 4090 mg/kg

Sodium Citrate: Not available

Effects of Overexposure:

Acute: See section 3

Chronic: Cupric Sulfate: Tests on laboratory animals indicate

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BENEDICT'S REAGENT  
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material may produce adverse mutagenic and reproductive effects.  
Sodium Carbonate and Sodium Citrate: None  
Conditions Aggravated by Overexposure: No data available  
Target Organs: No data available  
Primary Route(s) of Entry: Inhalation, ingestion

### **12. ECOLOGICAL DATA**

EPA Waste Numbers: None

### **13. DISPOSAL INFORMATION**

Waste Disposal Methods: Dispose in accordance with all applicable  
Federal, State and Local regulations.  
Always contact a permitted waste disposer (TSD) to assure compliance.

### **14. TRANSPORT INFORMATION**

Not regulated

### **15. REGULATORY INFORMATION**

EPA TSCA Status: On TSCA Inventory

Hazard Category for SARA Section 311/312 Reporting: Acute

Product or Components	SARA EHS Sec. 302 TPQ	SARA Sec. 313 Chemicals		CERCLA Sec. 103 RQ lbs.	RCRA Sec. 261.33
		Name List	Chemical Category		
Sodium Carbonate	No	No	No	No	No
Cupric Sulfate	No	No	No	10	No
Sodium Citrate	No	No	No	No	No

### **16. ADDITIONAL INFORMATION**

The information provided in this Material Safety Data Sheet represents a compilation of data drawn directly from various sources available to us. Carolina Biological Supply makes no representation or guarantee as to the suitability of this information to a particular application of the substance covered in the Material Safety Data Sheet. Any employer must carefully assess the applicability of any information contained herein in regards to the particular use to which the employer puts the material.

Glossary

ACGIH.....American Conference of Governmental Industrial Hygienists

CAS Number..Chemical Abstracts Service Number

CERCLA.....Comprehensive Environmental Response, Compensation, and Liability Act

DOT.....U.S. Department of Transportation

IARC.....International Agency of Research on Cancer

mppcf.....million particles per cubic foot

N/A.....Not Available

NTP.....National Toxicology Program

OSHA.....Occupational Safety and Health Administration

PEL.....Permissible Exposure Limit

ppm.....parts per million

RCRA.....Resource Conservation and Recovery Act

SARA.....Superfund Amendments and Reauthorization Act

TLV.....Threshold Limit Value

TSCA.....Toxic Substances Control Act

## **MATERIAL SAFETY DATA SHEET**

BENEDICT'S REAGENT  
CAROLINA BIOLOGICAL

Revised: 05/15/08  
Replaces: 07/10/07  
Printed: 05/20/08

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# FLINN SCIENTIFIC INC.

"Your Safer Source for Science Supplies"

## Material Safety Data Sheet (MSDS)

MSDS #: 106.00

Revision Date: March 14, 2001

---

### Section 1 — Chemical Product and Company Identification

---

#### Benzoic Acid

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### Section 2 — Composition, Information on Ingredients

---

Benzoic Acid

Synonym: benzene carboxylic acid

CAS#: 65-85-0

---

### Section 3 — Hazards Identification

---

White crystalline powder with a maple syrup-like odor.

Slightly toxic by ingestion. Severe irritant. Avoid contact with skin, eyes and respiratory tract.

Combustible solid.

#### FLINN AT-A-GLANCE

Health-1

Flammability-1

Reactivity-1

Exposure-1

Storage-0

0 is low hazard, 3 is high hazard

---

### Section 4 — First Aid Measures

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash continuously with fresh water for 15 minutes.

Internal: Give large quantities of water. Call a physician or poison control at once.

---

### Section 5 — Fire Fighting Measures

---

Combustible solid.

Flash Point: 250 F Autoignition Temperature: 1061 F

When heated to decomposition, emits acrid smoke and irritating fumes.

**Fire Fighting Instructions:** Use triclass, dry chemical fire extinguisher. Firefighters should wear PPE and SCBA with full facepiece operated in positive pressure mode.

#### NFPA CODE

H-2

F-1

R-1

---

### Section 6 — Accidental Release Measures

---

Restrict unprotected personnel from area. Remove all ignition sources and water. Sweep up, place in sealed bag or container and dispose. Ventilate area and wash spill site after material pickup is complete. See Sections 8 and 13 for further information.

---

### Section 7 — Handling and Storage

---

Flinn suggested chemical storage pattern: Organic #1. Store with acids, anhydrides and peracids.

Store in a cool dry place. Use and dispense in a hood.

---

### Section 8 — Exposure Controls, Personal Protection

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron. Use exhaust ventilation to keep airborne concentrations low.

### Section 9 — Physical and Chemical Properties

White crystalline powder with a maple syrup-like odor.  
Solubility: Soluble in alcohol, slightly in water.  
Formula: C<sub>6</sub>H<sub>5</sub>COOH  
Formula Weight: 122.13

Specific Gravity: 1.27  
Boiling Point: 249 C  
Vapor Density: 4.21

### Section 10 — Stability and Reactivity

Avoid contact with heat, strong oxidizers, bases and reducing agents. Combustible.  
Shelf life: Indefinite.

### Section 11 — Toxicological Information

Acute effects: Severe irritant, sensitizer  
Chronic effects: N.A.  
Target organs: N.A.

ORL-RAT LD50: 1700 mg/kg  
IHL-RAT LC50: N.A.  
SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

### Section 12 — Ecological Information

Data not yet available.

### Section 13 — Disposal Considerations

Please consult with state and local regulations.  
Flinn Suggested Disposal Method #24a is one option.

### Section 14 — Transport Information

Shipping Name: Not regulated  
Hazard Class: N/A  
UN Number: N/A

N/A = Not applicable

### Section 15 — Regulatory Information

TSCA-listed, EINECS-listed (200-618-2).

### Section 16 — Other Information

Consult your copy of the Flinn Scientific Catalog/Reference Manual for additional information about laboratory chemicals. This Material Safety Data Sheet (MSDS) is for guidance and is based upon information and tests believed to be reliable. Flinn Scientific Inc. makes no guarantee of the accuracy or completeness of the data and shall not be liable for any damages relating thereto. The data is offered solely for your consideration, investigation, and verification. Flinn Scientific Inc. assumes no legal responsibility for use or reliance upon this data.

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# FLINN SCIENTIFIC INC.

"Your Safer Source for Science Supplies"

## Material Safety Data Sheet (MSDS)

MSDS #: 120.00

Revision Date: March 7, 2001

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### Section 1 — Chemical Product and Company Identification

---

#### Biuret

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### Section 2 — Composition, Information on Ingredients

---

Biuret

CAS#: 108-19-0

---

### Section 3 — Hazards Identification

---

White powder. Odor of vomit.

May be a slight irritant to skin.

Substance not considered hazardous. However, not all health aspects of this substance have been thoroughly investigated.

#### FLINN AT-A-GLANCE

Health-0

Flammability-0

Reactivity-0

Exposure-0

Storage-2

0 is low hazard, 3 is high hazard

---

### Section 4 — First Aid Measures

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash continuously with fresh water for 15 minutes.

Internal: Give large quantities of water. Call a physician or poison control at once.

---

### Section 5 — Fire Fighting Measures

---

Non-flammable solid.

#### NFPA CODE

None established

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### Section 6 — Accidental Release Measures

---

Restrict unprotected personnel from area. Sweep up, place in sealed bag or container and dispose. Ventilate area and wash spill site after material pickup is complete. See Sections 8 and 13 for further information.

---

### Section 7 — Handling and Storage

---

Flinn Suggested Chemical Storage Pattern: Organic #2. Store with alcohols, glycols, amines and amides.

Store in a cool dry place. Loses waters of hydration at elevated room temperatures; Store in a Flinn Chem-Saf bag and then inside a Flinn Saf-Stor can.

---

### Section 8 — Exposure Controls, Personal Protection

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron.



### Section 9 — Physical and Chemical Properties

White powder

Solubility: Slightly in water (2g/100mL).

Formula: NH<sub>2</sub>CONHCONH<sub>2</sub>

Formula Weight: 103.94

Specific Gravity: 1.5

Melting Point: 190 C

### Section 10 — Stability and Reactivity

Avoid contact with strong oxidizers and bases.

Shelf life: Poor. Loses waters of hydration at elevated room temperature.

### Section 11 — Toxicological Information

Acute effects: Irritant

Chronic effects: N.A.

Target organs: N.A.

ORL-RAT LD50: N.A.

IHL-RAT LC50: N.A.

SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

### Section 12 — Ecological Information

Data not yet available.

### Section 13 — Disposal Considerations

Please consult with state and local regulations.

Flinn Suggested Disposal Method 18b is one option.

### Section 14 — Transport Information

Shipping Name: Not regulated

Hazard Class: N/A

UN Number: N/A

N/A = Not applicable

### Section 15 — Regulatory Information

TSCA-listed, EINECS-listed (203-559-0).

### Section 16 — Other Information

Consult your copy of the Flinn Scientific Catalog/Reference Manual for additional information about laboratory chemicals. This Material Safety Data Sheet (MSDS) is for guidance and is based upon information and tests believed to be reliable. Flinn Scientific Inc. makes no guarantee of the accuracy or completeness of the data and shall not be liable for any damages relating thereto. The data is offered solely for your consideration, investigation, and verification. Flinn Scientific Inc. assumes no legal responsibility for use or reliance upon this data.

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# **MATERIAL SAFETY DATA SHEET**

BIURET POWDER, POSITIVE TEST  
CAROLINA BIOLOGICAL

Revised: 15/05/08  
Replaces: 10/07/07  
Printed: 20/05/08

---

## **1. PRODUCT DESCRIPTION**

Product Name: Biuret Powder Reagent  
Product Code(s): 84-8200  
Size: 25 g  
Chemical Name: Biuret  
CAS Number: 108-19-0  
Formula: C<sub>2</sub>H<sub>5</sub>N<sub>3</sub>O<sub>2</sub>  
Synonyms: Carbamylurea; Imidodicarbonic diamide  
Distributor: Carolina Biological Supply Company  
2700 York Road  
Burlington, NC 27215

Chemical Information: 800-227-1150 (8am-5pm (ET) M-F)  
Chemtrec (Transportation Spill Response 24 hours): 800-424-9300

## **2. COMPOSITION/INFORMATION ON INGREDIENTS**

Principle Hazardous Components: Biuret Powder (CAS# 108-19-0) 100%  
TLV and PEL units: None established

## **3. HAZARD IDENTIFICATION**

Emergency Overview:  
Potential Health Effects:  
Eyes: May cause irritation.  
Skin: May cause irritation.  
Ingestion: May cause gastrointestinal discomfort.  
Inhalation: May cause irritation to respiratory tract.

## **4. FIRST AID MEASURES**

Emergency and First Aid Procedures:  
Eyes - Flush with water for at least 15 minutes, raising and lowering eyelids occasionally. Get medical attention if irritation persists.  
Skin - Thoroughly wash exposed area for at least 15 minutes. Remove contaminated clothing. Launder contaminated clothing before reuse. Get medical attention if irritation persists.  
Ingestion - If swallowed, if conscious, give plenty of water and induce vomiting immediately as directed by medical personnel. Immediately call a physician or poison control center. Never give anything by mouth to an unconscious person.  
Inhalation - Remove to fresh air. Give oxygen if breathing is difficult; give artificial respiration if breathing has stopped. Keep person warm, quiet, and get medical attention.

## **5. FIREFIGHTING PROCEDURES**

Flash Point(Method Used): No data available.

NFPA Rating: Health: 2  
Fire: 1  
Reactivity: 0

Extinguisher Media:

Use dry chemical, CO<sub>2</sub> or appropriate foam.

Flammable Limits in Air % by Volume: No data available.

Autoignition Temperature: No data available.

Special Firefighting Procedures:

Firefighters should wear full protective equipment and NIOSH approved self-contained breathing apparatus.

Unusual Fire and Explosion Hazards: Fire or excessive heat may produce

## **MATERIAL SAFETY DATA SHEET**

BIURET POWDER, POSITIVE TEST  
CAROLINA BIOLOGICAL

Revised: 15/05/08  
Replaces: 10/07/07  
Printed: 20/05/08

---

hazardous decomposition products; can react vigorously with oxidizing materials.

### **6. SPILL OR LEAK PROCEDURES**

Steps to be Taken in Case Material is Released or Spilled:

Ventilate area of spill. Clean-up personnel should wear proper protective equipment. Avoid creating dust. Sweep or scoop up and containerize for disposal.

### **7. SPECIAL PRECAUTIONS**

Precautions to be Taken in Handling or Storing: Store in a cool, dry place.

Wash thoroughly after handling.

Other Precautions: Read label on container before using. Do not take internally.

### **8. SPECIAL PROTECTION INFORMATION**

Respiratory Protection(Specify Type):

None needed under normal conditions of use with adequate ventilation.

NIOSH approved equipment should be worn if PELs are exceeded.

Ventilation:

Local Exhaust: Preferred

Mechanical(General): Acceptable

Special: No

Other: No

Protective Gloves:

Rubber, neoprene, PVC, or equivalent.

Eye Protection:

Splash proof chemical safety goggles should be worn at all times.

Other Protective Clothing or Equipment:

Lab apron, eye wash, and safety shower.

### **9. PHYSICAL DATA**

Molecular Weight: 103.09

Melting Point: 188-192C

Boiling Point: Decomposes

Vapor Pressure: Negligible

Vapor Density(Air=1): Unknown

Specific Gravity(H2O=1): 1.467 @ 20C

Percent Volatile by Volume: No data available.

Evaporation Rate(H2O=1): No data available.

Solubility in Water: 2.01 g/100L water at 25C

Appearance and Odor: White to gray powder; odorless.

### **10. REACTIVITY DATA**

Stability: Stable

Conditions to Avoid: Excessive temperatures and heat.

Incompatibility(Materials to Avoid): Strong oxidizing agents, strong caustic agents.

Hazardous Decomposition Products: Thermal decomposition will produce carbon

dioxide and/or carbon monoxide and oxides of nitrogen (NOx).

Hazardous Polymerization: Will not occur

### **11. TOXICITY DATA**

# MATERIAL SAFETY DATA SHEET

BIURET POWDER, POSITIVE TEST  
CAROLINA BIOLOGICAL

Revised: 15/05/08  
Replaces: 10/07/07  
Printed: 20/05/08

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Toxicity Data: No data available.  
Effects of Overexposure:  
Acute: See section 3  
Chronic: No chronic effects data found. Not listed as causing cancer by IARC, NTP, or OSHA.  
Conditions Aggravated by Overexposure: No data available.  
Target Organs: No data available.  
Primary Route(s) of Entry: Inhalation

## 12. ECOLOGICAL DATA

EPA Waste Numbers: None

## 13. DISPOSAL INFORMATION

Waste Disposal Methods: Dispose in accordance with all applicable Federal, State and Local regulations.  
Always contact a permitted waste disposer (TSD) to assure compliance.

## 14. TRANSPORT INFORMATION

Non-regulated material.

## 15. REGULATORY INFORMATION

EPA TSCA Status: On TSCA Inventory  
Hazard Category for SARA Section 311/312 Reporting: Acute

Product or Components	SARA EHS Sec. 302 TPQ	SARA Sec. 313 Chemicals Name List	CERCLA Sec. 103 RQ lbs.	RCRA Sec.
261.33		Chemical Category		

---

Biuret Powder	No	No	No	No	No
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## 16. ADDITIONAL INFORMATION

The information provided in this Material Safety Data Sheet represents a compilation of data drawn directly from various sources available to us. Carolina Biological Supply makes no representation or guarantee as to the suitability of this information to a particular application of the substance covered in the Material Safety Data Sheet. Any employer must carefully assess the applicability of any information contained herein in regards to the particular use to which the employer puts the material.

### Glossary

ACGIH.....American Conference of Governmental Industrial Hygienists  
CAS Number..Chemical Abstracts Service Number  
CERCLA.....Comprehensive Environmental Response, Compensation, and Liability Act  
DOT.....U.S. Department of Transportation  
IARC.....International Agency of Research on Cancer  
mppcf.....million particles per cubic foot  
N/A.....Not Available  
NTP.....National Toxicology Program  
OSHA.....Occupational Safety and Health Administration  
PEL.....Permissible Exposure Limit

## **MATERIAL SAFETY DATA SHEET**

BIURET POWDER, POSITIVE TEST  
CAROLINA BIOLOGICAL

Revised: 15/05/08  
Replaces: 10/07/07  
Printed: 20/05/08

---

ppm.....parts per million  
RCRA.....Resource Conservation and Recovery Act  
SARA.....Superfund Amendments and Reauthorization Act  
TLV.....Threshold Limit Value  
TSCA.....Toxic Substances Control Act

# FLINN SCIENTIFIC INC.

"Your Safer Source for Science Supplies"

## Material Safety Data Sheet (MSDS)

MSDS #: 125.00

Revision Date: November 25, 2002

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### Section 1 — Chemical Product and Company Identification

---

#### Boric Acid

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### Section 2 — Composition, Information on Ingredients

---

Boric Acid

CAS#: 10043-35-3

---

### Section 3 — Hazards Identification

---

White, odorless crystalline powder.

Slightly toxic by ingestion, inhalation or skin absorption; irritant to skin in dry form.

Avoid ingestion, inhalation and skin absorption.

#### FLINN AT-A-GLANCE

Health-1

Flammability-0

Reactivity-1

Exposure-1

Storage-0

0 is low hazard, 3 is high hazard

---

### Section 4 — First Aid Measures

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash continuously with fresh water for 15 minutes.

Internal: Rinse out mouth, give 1 to 2 cups of water or milk, induce vomiting. Call a physician or poison control at once.

---

### Section 5 — Fire Fighting Measures

---

Non flammable, non combustible solid.

#### NFPA CODE

None Established

---

### Section 6 — Accidental Release Measures

---

Restrict unprotected personnel from area. Sweep up, place in sealed bag or container and dispose. Ventilate area and wash spill site after material pickup is complete. See Sections 8 and 13 for further information.

---

### Section 7 — Handling and Storage

---

Flinn Suggested Chemical Storage Pattern: Inorganic #9, store with other inorganic acids.

Store in a cool dry place.

---

### Section 8 — Exposure Controls, Personal Protection

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron.

Use exhaust ventilation to keep airborne concentrations low.

### Section 9 — Physical and Chemical Properties

White, odorless crystalline powder.  
Solubility: Soluble in water.  
Specific Gravity: 2.46

Formula: H3BO3  
Formula Weight: 61.84  
Melting Point: 185 C

### Section 10 — Stability and Reactivity

Avoid contact with potassium, acid anhydrides.  
Shelf life: Indefinite.

### Section 11 — Toxicological Information

Acute effects: Irritant  
Chronic effects: N.A.  
Target organs: N.A.

ORL-RAT LD50: 2660 mg/kg  
IHL-RAT LC50: N.A.  
SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

### Section 12 — Ecological Information

Data not yet available.

### Section 13 — Disposal Considerations

Please consult with state and local regulations.  
Flinn Suggested Disposal Method #24a is one option.

### Section 14 — Transport Information

Shipping Name: Not regulated  
Hazard Class: N/A  
UN Number: N/A

N/A = Not applicable

### Section 15 — Regulatory Information

TSCA-listed, EINECS-listed (233-139-2).

### Section 16 — Other Information

Consult your copy of the Flinn Scientific Catalog/Reference Manual for additional information about laboratory chemicals. This Material Safety Data Sheet (MSDS) is for guidance and is based upon information and tests believed to be reliable. Flinn Scientific Inc. makes no guarantee of the accuracy or completeness of the data and shall not be liable for any damages relating thereto. The data is offered solely for your consideration, investigation, and verification. Flinn Scientific Inc. assumes no legal responsibility for use or reliance upon this data.

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# FLINN SCIENTIFIC INC.

"Your Safer Source for Science Supplies"

## Material Safety Data Sheet (MSDS)

MSDS #: 130.00

Revision Date: November 25, 2002

---

### Section 1 — Chemical Product and Company Identification

---

#### Brilliant Green and Solutions

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### Section 2 — Composition, Information on Ingredients

---

Brilliant Green and Solutions: Brilliant Green (633-03-4) 1%, Water (7732-18-5) 99%

Synonym: C.I. 42040

CAS#: 633-03-4

---

### Section 3 — Hazards Identification

---

Metallic-green crystals or green liquid.

Substance not considered hazardous. However, not all health aspects of this substance have been thoroughly investigated.

#### FLINN AT-A-GLANCE

Health-0

Flammability-0

Reactivity-0

Exposure-0

Storage-0

0 is low hazard, 3 is high hazard

---

### Section 4 — First Aid Measures

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash continuously with fresh water for 15 minutes.

Internal: Give large quantities of water. Call a physician or poison control at once.

---

### Section 5 — Fire Fighting Measures

---

Non-flammable solid.

When heated to decomposition, can emit toxic SO<sub>x</sub> and NO<sub>x</sub> fumes.

**Fire Fighting Instructions:** Use triclass, dry chemical fire extinguisher. Firefighters should wear PPE and SCBA with full facepiece operated in positive pressure mode.

#### NFPA CODE

None Established

---

### Section 6 — Accidental Release Measures

---

Restrict unprotected personnel from area. Sweep up, place in sealed bag or container and dispose. Ventilate area and wash spill site after material pickup is complete. See Sections 8 and 13 for further information.

---

### Section 7 — Handling and Storage

---

Flinn Suggested Chemical Storage Pattern: Organic #9. Store with dyes, indicators, and stains.

Store in a cool dry place.

Keep container tightly closed.

---

### Section 8 — Exposure Controls, Personal Protection

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron.



---

### Section 9 — Physical and Chemical Properties

---

Metallic-green crystals.  
Solubility: Soluble in water.  
Formula: C<sub>27</sub>H<sub>34</sub>N<sub>2</sub>O<sub>4</sub>S  
Formula Weight: 482.64

Boiling Point: 210 C (dec.)

---

### Section 10 — Stability and Reactivity

---

Avoid contact with strong oxidizers.  
When heated to decomposition, emits toxic fumes of NH<sub>3</sub> and NO<sub>x</sub>.

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### Section 11 — Toxicological Information

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Acute effects: N.A.  
Chronic effects: N.A.  
Target organs: N.A.

ORL-RAT LD50: N.A.  
IHL-RAT LC50: N.A.  
SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

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### Section 12 — Ecological Information

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Data not yet available.

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### Section 13 — Disposal Considerations

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Please consult with state and local regulations.  
Flinn Suggested Disposal Method #26a is one option.

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### Section 14 — Transport Information

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Shipping Name: Not regulated  
Hazard Class: N/A  
UN Number: N/A

N/A = Not applicable

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### Section 15 — Regulatory Information

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TSCA-listed, EINECS-listed (211-190-1).

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### Section 16 — Other Information

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Consult your copy of the Flinn Scientific Catalog/Reference Manual for additional information about laboratory chemicals. This Material Safety Data Sheet (MSDS) is for guidance and is based upon information and tests believed to be reliable. Flinn Scientific Inc. makes no guarantee of the accuracy or completeness of the data and shall not be liable for any damages relating thereto. The data is offered solely for your consideration, investigation, and verification. Flinn Scientific Inc. assumes no legal responsibility for use or reliance upon this data.

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(800) 452-1261 Fax (866) 452-1436

MSDS Number: **B4392** \* \* \* \* \* Effective Date: **02/01/07** \* \* \* \* \* Supersedes: **04/27/04**

<b>MSDS</b>	<b>Material Safety Data Sheet</b>		24 Hour Emergency Telephone: 908-859-2151 CHEMTREC: 1-800-424-9300
	From: Mallinckrodt Baker, Inc. 222 Red School Lane Phillipsburg, NJ 08865		National Response In Canada CANUTEC: 613-996-6666
NOTE: CHEMTREC, CANUTEC and National Response Center emergency numbers to be used only in the event of chemical emergencies involving a spill, leak, fire, exposure or accident involving chemicals.			Outside U.S. and Canada Chemtrec: 703-527-3887
		All non-emergency questions should be directed to Customer Service (1-800-582-2537) for assistance.	

## BROMOCRESOL GREEN

### 1. Product Identification

**Synonyms:** 3,3',5,5'-Tetrabromo-m-cresolsulphonphthalein; 4,4'-(3H-2, 1-Benzoxathiol-3-ylidene) bis [2,6-dibromo-3 methylphenol]S,S-dioxide; BCG  
**CAS No.:** 76-60-8  
**Molecular Weight:** 698.02  
**Chemical Formula:** C21H14O5Br4S  
**Product Codes:**  
 J.T. Baker: C946  
 Mallinckrodt: 1793

### 2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
Bromocresol Green	76-60-8	90 - 100%	Yes

### 3. Hazards Identification

#### Emergency Overview

**CAUTION! MAY BE HARMFUL IF SWALLOWED OR INHALED. MAY CAUSE IRRITATION TO SKIN, EYES, AND RESPIRATORY TRACT.**

SAF-T-DATA<sup>(tm)</sup> Ratings (Provided here for your convenience)

Health Rating: 1 - Slight  
 Flammability Rating: 1 - Slight  
 Reactivity Rating: 0 - None  
 Contact Rating: 2 - Moderate  
 Lab Protective Equip: GOGGLES; LAB COAT; PROPER GLOVES  
 Storage Color Code: Green (General Storage)

#### Potential Health Effects

##### Inhalation:

May cause irritation to the respiratory tract. Symptoms may include coughing and shortness of breath.

##### Ingestion:

Large oral doses may cause irritation to the gastrointestinal tract.

##### Skin Contact:

May cause irritation with redness and pain.

##### Eye Contact:

May cause irritation, redness and pain.

##### Chronic Exposure:

No information found.

##### Aggravation of Pre-existing Conditions:

No information found.

### 4. First Aid Measures

#### Inhalation:

Remove to fresh air. Get medical attention for any breathing difficulty.

#### Ingestion:

Induce vomiting immediately as directed by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention.

#### Skin Contact:

Immediately flush skin with plenty of water for at least 15 minutes. Remove contaminated clothing and shoes. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention if irritation develops.

#### Eye Contact:

Immediately flush eyes with plenty of water for at least 15 minutes, lifting upper and lower eyelids occasionally. Get medical attention if irritation persists.

---

## 5. Fire Fighting Measures

**Fire:**

As with most organic solids, fire is possible at elevated temperatures or by contact with an ignition source.

**Explosion:**

Fine dust dispersed in air in sufficient concentrations, and in the presence of an ignition source is a potential dust explosion hazard.

**Fire Extinguishing Media:**

Water spray, dry chemical, alcohol foam, or carbon dioxide.

**Special Information:**

In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode.

---

## 6. Accidental Release Measures

Ventilate area of leak or spill. Wear appropriate personal protective equipment as specified in Section 8. Spills: Sweep up and containerize for reclamation or disposal. Vacuuming or wet sweeping may be used to avoid dust dispersal.

---

## 7. Handling and Storage

Keep in a tightly closed container, stored in a cool, dry, ventilated area. Protect against physical damage. Containers of this material may be hazardous when empty since they retain product residues (dust, solids); observe all warnings and precautions listed for the product.

---

## 8. Exposure Controls/Personal Protection

**Airborne Exposure Limits:**

None established.

**Ventilation System:**

A system of local and/or general exhaust is recommended to keep employee exposures as low as possible. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, *Industrial Ventilation, A Manual of Recommended Practices*, most recent edition, for details.

**Personal Respirators (NIOSH Approved):**

For conditions of use where exposure to dust or mist is apparent and engineering controls are not feasible, a particulate respirator (NIOSH type N95 or better filters) may be worn. If oil particles (e.g. lubricants, cutting fluids, glycerine, etc.) are present, use a NIOSH type R or P filter. For emergencies or instances where the exposure levels are not known, use a full-face positive-pressure, air-supplied respirator. WARNING: Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.

**Skin Protection:**

Wear protective gloves and clean body-covering clothing.

**Eye Protection:**

Use chemical safety goggles. Maintain eye wash fountain and quick-drench facilities in work area.

---

## 9. Physical and Chemical Properties

**Appearance:**

Light brick colored powder.

**Odor:**

Odorless or faint medicinal odor.

**Solubility:**

Slightly soluble in water.

**Specific Gravity:**

No information found.

**pH:**

No information found.

**% Volatiles by volume @ 21C (70F):**

0

**Boiling Point:**

Not applicable.

**Melting Point:**

218C (424F)

**Vapor Density (Air=1):**

No information found.

**Vapor Pressure (mm Hg):**

No information found.

**Evaporation Rate (BuAc=1):**

No information found.

---

## 10. Stability and Reactivity

**Stability:**

Stable under ordinary conditions of use and storage.

**Hazardous Decomposition Products:**

Burning may produce bromines, sulfur oxides, carbon dioxide, and carbon monoxide.

**Hazardous Polymerization:**

Will not occur.

**Incompatibilities:**

Strong oxidizers.

**Conditions to Avoid:**

No information found.

## 11. Toxicological Information

No LD50/LC50 information found relating to normal routes of occupational exposure. Investigated as a mutagen.

Ingredient	---NTP Carcinogen---		IARC Category
	Known	Anticipated	
Bromocresol Green (76-60-8)	No	No	None

## 12. Ecological Information

**Environmental Fate:**

No information found.

**Environmental Toxicity:**

No information found.

## 13. Disposal Considerations

Whatever cannot be saved for recovery or recycling should be managed in an appropriate and approved waste disposal facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

## 14. Transport Information

Not regulated.

## 15. Regulatory Information

Ingredient	-----\Chemical Inventory Status - Part 1\-----			
	TSCA	EC	Japan	Australia
Bromocresol Green (76-60-8)	Yes	Yes	No	Yes

Ingredient	-----\Chemical Inventory Status - Part 2\-----			
	Korea	DSL	NDSL	Phil.
Bromocresol Green (76-60-8)	Yes	Yes	No	Yes

Ingredient	-----\Federal, State & International Regulations - Part 1\-----			
	-SARA 302- RQ	TPQ	-SARA 313- List	Chemical Catg.
Bromocresol Green (76-60-8)	No	No	No	No

Ingredient	-----\Federal, State & International Regulations - Part 2\-----		
	CERCLA	-RCRA- 261.33	-TSCA- 8(d)
Bromocresol Green (76-60-8)	No	No	No

Chemical Weapons Convention: No TSCA 12(b): No CDTA: No  
 SARA 311/312: Acute: Yes Chronic: No Fire: No Pressure: No  
 Reactivity: No (Pure / Solid)

**Australian Hazchem Code:** None allocated.

**Poison Schedule:** None allocated.

**WHMIS:**

This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

## 16. Other Information

**NFPA Ratings:** Health: 1 Flammability: 1 Reactivity: 0

**Label Hazard Warning:**

CAUTION! MAY BE HARMFUL IF SWALLOWED OR INHALED. MAY CAUSE IRRITATION TO SKIN, EYES, AND RESPIRATORY TRACT.

**Label Precautions:**

Avoid contact with eyes, skin and clothing.

Wash thoroughly after handling.

Avoid breathing dust.

Keep container closed.

Use with adequate ventilation.

**Label First Aid:**

If inhaled, remove to fresh air. Get medical attention for any breathing difficulty. In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes. Get medical attention if irritation develops or persists. If swallowed, induce vomiting immediately as directed by medical personnel. Never give anything by mouth to an unconscious person.

**Product Use:**

Laboratory Reagent.

**Revision Information:**

MSDS Section(s) changed since last revision of document include: 1, 3.

**Disclaimer:**



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**Prepared by:** Environmental Health & Safety  
Phone Number: (314) 654-1600 (U.S.A.)

MSDS Number: **B4420** \* \* \* \* \* Effective Date: 02/01/07 \* \* \* \* \* Supersedes: 06/29/04

<b>MSDS</b>	<b>Material Safety Data Sheet</b>		24 Hour Emergency Telephone: 908-859-2151 CHEMTREC: 1-800-424-9300
			National Response In Canada CANUTEC: 613-996-6666
From: Mallinckrodt Baker, Inc. 222 Red School Lane Phillipsburg, NJ 08865		 	Outside U.S. and Canada Chemtrec: 703-527-3887
			NOTE: CHEMTREC, CANUTEC and National Response Center emergency numbers to be used only in the event of chemical emergencies involving a spill, leak, fire, exposure or accident involving chemicals.
All non-emergency questions should be directed to Customer Service (1-800-582-2537) for assistance.			

## BROMOCRESOL PURPLE, INDICATOR GRADE

### 1. Product Identification

**Synonyms:** 5'-5''Dibromo-o-cresol sulfonephthalein; pH indicator; phenol,4,4'-(3H-2,1-benzoxathiol-3-ylidene) bis [2-bromo-6-methyl-, S,S-dioxide.  
**CAS No.:** 115-40-2  
**Molecular Weight:** 540.24  
**Chemical Formula:** C21H16Br2O5S  
**Product Codes:**  
 J.T. Baker: C949  
 Mallinckrodt: 2090

### 2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
Bromocresol Purple Indicator grade	115-40-2	90 - 100%	Yes

### 3. Hazards Identification

#### Emergency Overview

**WARNING! TOXICOLOGICAL PROPERTIES UNKNOWN. MAY BE HARMFUL IF SWALLOWED, INHALED OR ABSORBED THROUGH SKIN. MAY CAUSE IRRITATION TO SKIN, EYES, AND RESPIRATORY TRACT.**

SAF-T-DATA<sup>(tm)</sup> Ratings (Provided here for your convenience)

Health Rating: 1 - Slight  
 Flammability Rating: 0 - None  
 Reactivity Rating: 0 - None  
 Contact Rating: 2 - Moderate (Life)  
 Lab Protective Equip: GOGGLES; LAB COAT; PROPER GLOVES  
 Storage Color Code: Green (General Storage)

#### Potential Health Effects

The toxicological properties of this material have not been investigated.

#### Inhalation:

No information found, but compound should be handled as a potential health hazard. May cause irritation to the respiratory tract. Symptoms may include coughing, sore throat, labored breathing, and chest pain.

#### Ingestion:

No information found, but compound should be handled as a potential health hazard. May cause irritation to the gastrointestinal tract. Symptoms may include nausea, vomiting and diarrhea.

#### Skin Contact:

No information found, but compound should be handled as a potential health hazard. May cause irritation with redness and pain. May be absorbed through the skin with possible systemic effects.

#### Eye Contact:

No information found, but compound should be handled as a potential health hazard. May cause irritation, redness and pain.

#### Chronic Exposure:

No information found.

#### Aggravation of Pre-existing Conditions:

No information found.

### 4. First Aid Measures

#### Inhalation:

Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

#### Ingestion:

Give large amounts of water to drink. Never give anything by mouth to an unconscious person. Get medical attention.

**Skin Contact:**

Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention if symptoms occur.

**Eye Contact:**

Immediately flush eyes with plenty of water for at least 15 minutes, lifting upper and lower eyelids occasionally. Get medical attention if irritation persists.

---

## 5. Fire Fighting Measures

**Fire:**

Not expected to be a fire hazard.

**Explosion:**

No information found.

**Fire Extinguishing Media:**

Use any means suitable for extinguishing surrounding fire.

**Special Information:**

In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode.

---

## 6. Accidental Release Measures

Ventilate area of leak or spill. Wear appropriate personal protective equipment as specified in Section 8. Spills: Sweep up and containerize for reclamation or disposal. Vacuuming or wet sweeping may be used to avoid dust dispersal.

---

## 7. Handling and Storage

Keep in a tightly closed container, stored in a cool, dry, ventilated area. Protect against physical damage. Containers of this material may be hazardous when empty since they retain product residues (dust, solids); observe all warnings and precautions listed for the product.

---

## 8. Exposure Controls/Personal Protection

**Airborne Exposure Limits:**

None established.

**Ventilation System:**

A system of local and/or general exhaust is recommended to keep employee exposures as low as possible. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, *Industrial Ventilation, A Manual of Recommended Practices*, most recent edition, for details.

**Personal Respirators (NIOSH Approved):**

For conditions of use where exposure to dust or mist is apparent and engineering controls are not feasible, a particulate respirator (NIOSH type N95 or better filters) may be worn. If oil particles (e.g. lubricants, cutting fluids, glycerine, etc.) are present, use a NIOSH type R or P filter. For emergencies or instances where the exposure levels are not known, use a full-face positive-pressure, air-supplied respirator. WARNING: Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.

**Skin Protection:**

Wear protective gloves and clean body-covering clothing.

**Eye Protection:**

Use chemical safety goggles. Maintain eye wash fountain and quick-drench facilities in work area.

---

## 9. Physical and Chemical Properties

**Appearance:**

Purple powder.

**Odor:**

Odorless.

**Solubility:**

Practically insoluble in water.

**Specific Gravity:**

No information found.

**pH:**

No information found.

**% Volatiles by volume @ 21C (70F):**

0

**Boiling Point:**

Not applicable.

**Melting Point:**

241 - 242C (466 - 468F)

**Vapor Density (Air=1):**

No information found.

**Vapor Pressure (mm Hg):**

No information found.

**Evaporation Rate (BuAc=1):**

No information found.

---

## 10. Stability and Reactivity

**Stability:**

Stable under ordinary conditions of use and storage.

**Hazardous Decomposition Products:**

Burning may produce bromines, sulfur oxides, carbon dioxide, and carbon monoxide.

**Hazardous Polymerization:**

Will not occur.

**Incompatibilities:**

No information found.

**Conditions to Avoid:**

No information found.

**11. Toxicological Information**

No LD50/LC50 information found relating to normal routes of occupational exposure.

```

-----\Cancer Lists\-----
Ingredient                               ---NTP Carcinogen---
Known      Anticipated      IARC Category
-----
Bromocresol Purple Indicator grade
(115-40-2)                               No          No          None

```

**12. Ecological Information****Environmental Fate:**

No information found.

**Environmental Toxicity:**

No information found.

**13. Disposal Considerations**

Whatever cannot be saved for recovery or recycling should be managed in an appropriate and approved waste disposal facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

**14. Transport Information**

Not regulated.

**15. Regulatory Information**

```

-----\Chemical Inventory Status - Part 1\-----
Ingredient                               TSCA  EC   Japan  Australia
-----
Bromocresol Purple Indicator grade
(115-40-2)                               Yes  Yes  Yes    Yes

```

```

-----\Chemical Inventory Status - Part 2\-----
Ingredient                               --Canada--
Korea  DSL  NDSL  Phil.
-----
Bromocresol Purple Indicator grade
(115-40-2)                               No    Yes  No    Yes

```

```

-----\Federal, State & International Regulations - Part 1\-----
Ingredient                               -SARA 302-  -SARA 313-
RQ    TPQ    List  Chemical Catg.
-----
Bromocresol Purple Indicator grade
(115-40-2)                               No    No    No    No

```

```

-----\Federal, State & International Regulations - Part 2\-----
Ingredient                               -RCRA-  -TSCA-
CERCLA  261.33  8(d)
-----
Bromocresol Purple Indicator grade
(115-40-2)                               No    No    No

```

Chemical Weapons Convention: No    TSCA 12(b): No    CDTA: No  
SARA 311/312: Acute: Yes    Chronic: No    Fire: No    Pressure: No  
Reactivity: No    (Pure / Solid)

**Australian Hazchem Code:** None allocated.**Poison Schedule:** None allocated.**WHMIS:**

This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

**16. Other Information****NFPA Ratings:** Health: 1 Flammability: 0 Reactivity: 0**Label Hazard Warning:**

WARNING! TOXICOLOGICAL PROPERTIES UNKNOWN. MAY BE HARMFUL IF SWALLOWED, INHALED OR ABSORBED THROUGH SKIN.



MAY CAUSE IRRITATION TO SKIN, EYES, AND RESPIRATORY TRACT.

**Label Precautions:**

- Use with adequate ventilation.
- Avoid breathing dust.
- Avoid contact with eyes, skin and clothing.
- Keep container closed.
- Wash thoroughly after handling.

**Label First Aid:**

In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. If swallowed, give large amounts of water to drink. Never give anything by mouth to an unconscious person. In all cases, get medical attention.

**Product Use:**

Laboratory Reagent.

**Revision Information:**

MSDS Section(s) changed since last revision of document include: 3, 9.

**Disclaimer:**

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Mallinckrodt Baker, Inc. provides the information contained herein in good faith but makes no representation as to its comprehensiveness or accuracy. This document is intended only as a guide to the appropriate precautionary handling of the material by a properly trained person using this product. Individuals receiving the information must exercise their independent judgment in determining its appropriateness for a particular purpose. MALLINCKRODT BAKER, INC. MAKES NO REPRESENTATIONS OR WARRANTIES, EITHER EXPRESS OR IMPLIED, INCLUDING WITHOUT LIMITATION ANY WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE WITH RESPECT TO THE INFORMATION SET FORTH HEREIN OR THE PRODUCT TO WHICH THE INFORMATION REFERS. ACCORDINGLY, MALLINCKRODT BAKER, INC. WILL NOT BE RESPONSIBLE FOR DAMAGES RESULTING FROM USE OF OR RELIANCE UPON THIS INFORMATION.

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**Prepared by:** Environmental Health & Safety

Phone Number: (314) 654-1600 (U.S.A.)

MSDS Number: **B5056** \* \* \* \* \* Effective Date: 03/14/07 \* \* \* \* \* Supercedes: 08/10/04

From: Mallinckrodt Baker, Inc.  
222 Red School Lane  
Phillipsburg, NJ 08865



24 Hour Emergency Telephone: 908-859-2151  
CHEMTREC: 1-800-424-9300

National Response in Canada  
CANUTEC: 613-996-6666

Outside U.S. And Canada  
Chemtec: 703-527-3887

NOTE: CHEMTREC, CANUTEC and National Response Center emergency numbers to be used only in the event of chemical emergencies involving a spill, leak, fire, exposure or accident involving chemicals.

All non-emergency questions should be directed to Customer Service (1-800-562-2537) for assistance.

## BROMOPHENOL BLUE

### 1. Product Identification

**Synonyms:** 3,3',5,5'-Tetrabromophenol sulfonphthalein; 4,4'-(3H-2,1-benzoxathiol-3-ylidene)bis[2,6-dibromophenol]S ,S dioxide

**CAS No.:** 115-39-9

**Molecular Weight:** 670.02

**Chemical Formula:** C<sub>19</sub>H<sub>10</sub>Br<sub>4</sub>O<sub>5</sub>S

**Product Codes:** D293

### 2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
Bromophenol Blue	115-39-9	90 - 100%	Yes

### 3. Hazards Identification

#### Emergency Overview

**CAUTION! MAY BE HARMFUL IF SWALLOWED OR INHALED. MAY CAUSE IRRITATION TO SKIN, EYES, AND RESPIRATORY TRACT.**

SAF-T-DATA<sup>(tm)</sup> Ratings (Provided here for your convenience)

Health Rating: 1 - Slight

Flammability Rating: 1 - Slight

Reactivity Rating: 1 - Slight

Contact Rating: 2 - Moderate

Lab Protective Equip: GOGGLES; LAB COAT; PROPER GLOVES

Storage Color Code: Green (General Storage)

#### Potential Health Effects

##### Inhalation:

May cause irritation to the respiratory tract. Symptoms may include coughing and shortness of breath.

##### Ingestion:

Effects not determined. Large oral doses may cause irritation to the gastrointestinal tract.

##### Skin Contact:

May cause irritation with redness and pain.

##### Eye Contact:

May cause irritation, redness and pain.

##### Chronic Exposure:

Not determined.

##### Aggravation of Pre-existing Conditions:

No information found.

### 4. First Aid Measures

#### Inhalation:

Remove to fresh air. Get medical attention for any breathing difficulty.

#### Ingestion:

Induce vomiting immediately as directed by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention.

#### Skin Contact:

Immediately flush skin with plenty of water for at least 15 minutes. Remove contaminated clothing and shoes. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention if irritation develops.

#### Eye Contact:

Immediately flush eyes with plenty of water for at least 15 minutes, lifting upper and lower eyelids occasionally. Get medical attention if irritation persists.

## 5. Fire Fighting Measures

**Fire:**

As with most organic solids, fire is possible at elevated temperatures or by contact with an ignition source.

**Explosion:**

Fine dust dispersed in air in sufficient concentrations, and in the presence of an ignition source is a potential dust explosion hazard.

**Fire Extinguishing Media:**

Water spray, dry chemical, alcohol foam, or carbon dioxide.

**Special Information:**

In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode.

---

## 6. Accidental Release Measures

Remove all sources of ignition. Ventilate area of leak or spill. Wear appropriate personal protective equipment as specified in Section 8. Spills: Clean up spills in a manner that does not disperse dust into the air. Use non-sparking tools and equipment. Reduce airborne dust and prevent scattering by moistening with water. Pick up spill for recovery or disposal and place in a closed container.

---

## 7. Handling and Storage

Keep in a tightly closed container. Protect from physical damage. Store in a cool, dry, ventilated area away from sources of heat, moisture and incompatibilities. Containers of this material may be hazardous when empty since they retain product residues (dust, solids); observe all warnings and precautions listed for the product.

---

## 8. Exposure Controls/Personal Protection

**Airborne Exposure Limits:**

None established.

**Ventilation System:**

A system of local and/or general exhaust is recommended to keep employee exposures as low as possible. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, *Industrial Ventilation, A Manual of Recommended Practices*, most recent edition, for details.

**Personal Respirators (NIOSH Approved):**

For conditions of use where exposure to dust or mist is apparent and engineering controls are not feasible, a particulate respirator (NIOSH type N95 or better filters) may be worn. If oil particles (e.g. lubricants, cutting fluids, glycerine, etc.) are present, use a NIOSH type R or P filter. For emergencies or instances where the exposure levels are not known, use a full-face positive-pressure, air-supplied respirator. WARNING: Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.

**Skin Protection:**

Wear protective gloves and clean body-covering clothing.

**Eye Protection:**

Use chemical safety goggles. Maintain eye wash fountain and quick-drench facilities in work area.

---

## 9. Physical and Chemical Properties

**Appearance:**

Tan to orange, light pink to purple or red crystalline powder.

**Odor:**

Slightly amine to odorless.

**Solubility:**

0.4g/100g water @ 20C (68F).

**Specific Gravity:**

No information found.

**pH:**

No information found.

**% Volatiles by volume @ 21C (70F):**

0

**Boiling Point:**

279C (534F)

**Melting Point:**

273C (523F)

**Vapor Density (Air=1):**

No information found.

**Vapor Pressure (mm Hg):**

No information found.

**Evaporation Rate (BuAc=1):**

No information found.

---

## 10. Stability and Reactivity

**Stability:**

Stable under ordinary conditions of use and storage.

**Hazardous Decomposition Products:**

Burning may produce bromines, sulfur oxides, carbon dioxide, and carbon monoxide.

**Hazardous Polymerization:**

Will not occur.

**Incompatibilities:**

Strong oxidizers.

**Conditions to Avoid:**

Heat, flames, ignition sources and incompatibles.

## 11. Toxicological Information

No LD50/LC50 information found relating to normal routes of occupational exposure. Investigated as a mutagen.

Ingredient	---NTP Carcinogen---		IARC Category
	Known	Anticipated	
Bromophenol Blue (115-39-9)	No	No	None

## 12. Ecological Information

### Environmental Fate:

No information found.

### Environmental Toxicity:

No information found.

## 13. Disposal Considerations

Whatever cannot be saved for recovery or recycling should be managed in an appropriate and approved waste disposal facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

## 14. Transport Information

Not regulated.

## 15. Regulatory Information

Ingredient	-----\Chemical Inventory Status - Part 1\-----			
	TSCA	EC	Japan	Australia
Bromophenol Blue (115-39-9)	Yes	Yes	Yes	Yes

Ingredient	-----\Chemical Inventory Status - Part 2\-----			
	Korea	DSL	NDSL	Phil.
Bromophenol Blue (115-39-9)	Yes	Yes	No	Yes

Ingredient	-----\Federal, State & International Regulations - Part 1\-----			
	-SARA 302- RQ	TPQ	-SARA 313- List	Chemical Catg.
Bromophenol Blue (115-39-9)	No	No	No	No

Ingredient	-----\Federal, State & International Regulations - Part 2\-----		
	CERCLA	-RCRA- 261.33	-TSCA- 8(d)
Bromophenol Blue (115-39-9)	No	No	No

Chemical Weapons Convention: No TSCA 12(b): No CDTA: No  
SARA 311/312: Acute: Yes Chronic: No Fire: No Pressure: No  
Reactivity: No (Pure / Solid)

**Australian Hazchem Code:** None allocated.

**Poison Schedule:** None allocated.

### WHMIS:

This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

## 16. Other Information

**NFPA Ratings:** Health: 1 Flammability: 1 Reactivity: 0

### Label Hazard Warning:

CAUTION! MAY BE HARMFUL IF SWALLOWED OR INHALED. MAY CAUSE IRRITATION TO SKIN, EYES, AND RESPIRATORY TRACT.

### Label Precautions:

Avoid contact with eyes, skin and clothing.  
Avoid breathing dust.  
Keep container closed.  
Use with adequate ventilation.  
Wash thoroughly after handling.

### Label First Aid:

If inhaled, remove to fresh air. Get medical attention for any breathing difficulty. If swallowed, induce vomiting immediately as directed by medical personnel. Never give anything by mouth to an unconscious person. In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes. Get medical attention if irritation develops or persists.

**Product Use:**

Laboratory Reagent.

**Revision Information:**

MSDS Section(s) changed since last revision of document include: 3.

**Disclaimer:**

\*\*\*\*\*

**Mallinckrodt Baker, Inc. provides the information contained herein in good faith but makes no representation as to its comprehensiveness or accuracy. This document is intended only as a guide to the appropriate precautionary handling of the material by a properly trained person using this product. Individuals receiving the information must exercise their independent judgment in determining its appropriateness for a particular purpose. MALLINCKRODT BAKER, INC. MAKES NO REPRESENTATIONS OR WARRANTIES, EITHER EXPRESS OR IMPLIED, INCLUDING WITHOUT LIMITATION ANY WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE WITH RESPECT TO THE INFORMATION SET FORTH HEREIN OR THE PRODUCT TO WHICH THE INFORMATION REFERS. ACCORDINGLY, MALLINCKRODT BAKER, INC. WILL NOT BE RESPONSIBLE FOR DAMAGES RESULTING FROM USE OF OR RELIANCE UPON THIS INFORMATION.**

\*\*\*\*\*

**Prepared by:** Environmental Health & Safety  
Phone Number: (314) 654-1600 (U.S.A.)

MSDS Number: **B5380** \* \* \* \* \* Effective Date: **03/14/07** \* \* \* \* \* Supersedes: **08/10/04**

From: Mallinckrodt Baker, Inc.  
222 Red School Lane  
Phillipsburg, NJ 08865



24 Hour Emergency Telephone: 908-859-2151  
CHEMTREC: 1-800-424-9300

National Response in Canada  
CANUTEC: 613-996-6666

Outside U.S. And Canada  
Chemtec: 703-527-3887

NOTE: CHEMTREC, CANUTEC and National Response Center emergency numbers to be used only in the event of chemical emergencies involving a spill, leak, fire, exposure or accident involving chemicals.

All non-emergency questions should be directed to Customer Service (1-800-562-2537) for assistance.

## BROMOTHYMOL BLUE

### 1. Product Identification

**Synonyms:** 3,3',-Dibromothymolsulfonylphthalein; 4,4'-(3H-2,1 Benzoxathiol-3-ylidene) bis [2 bromo-3-methyl-6-(1-methylethyl)phenol] S,S-dioxide  
**CAS No.:** 76-59-5  
**Molecular Weight:** 624.38  
**Chemical Formula:** C<sub>27</sub>H<sub>28</sub>Br<sub>2</sub>O<sub>5</sub>S  
**Product Codes:** D470

### 2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
Bromothymol Blue	76-59-5	90 - 100%	Yes

### 3. Hazards Identification

#### Emergency Overview

**CAUTION! MAY BE HARMFUL IF SWALLOWED. MAY CAUSE IRRITATION TO SKIN, EYES, AND RESPIRATORY TRACT.**

SAF-T-DATA<sup>(tm)</sup> Ratings (Provided here for your convenience)

Health Rating: 1 - Slight  
Flammability Rating: 1 - Slight  
Reactivity Rating: 1 - Slight  
Contact Rating: 1 - Slight  
Lab Protective Equip: GOGGLES; LAB COAT; PROPER GLOVES  
Storage Color Code: Green (General Storage)

#### Potential Health Effects

Limited health information was found in the published literature to perform a complete hazard evaluation for this substance. Special precautions must be used in handling and storage. Protective equipment should be chosen using professional judgment.

#### Inhalation:

No specific information found. Probably irritating to respiratory tract.

#### Ingestion:

Effects not determined. Probably irritating to the gastro-intestinal tract.

#### Skin Contact:

No specific information found. Probably irritating to moist skin.

#### Eye Contact:

No specific information found. Probably irritating to eye tissues.

#### Chronic Exposure:

Not determined.

#### Aggravation of Pre-existing Conditions:

No information found.

### 4. First Aid Measures

#### Inhalation:

Remove to fresh air. Get medical attention for any breathing difficulty.

#### Ingestion:

Induce vomiting immediately as directed by medical personnel. Never give anything by mouth to an unconscious person.

#### Skin Contact:

Remove any contaminated clothing. Wash skin with soap or mild detergent and water for at least 15 minutes. Get medical attention if irritation develops or persists.

#### Eye Contact:

Wash eyes with plenty of water for at least 15 minutes. Call a physician.

---

## 5. Fire Fighting Measures

**Fire:**

As with most organic solids, fire is possible at elevated temperatures or by contact with an ignition source.

**Explosion:**

Fine dust dispersed in air in sufficient concentrations, and in the presence of an ignition source is a potential dust explosion hazard.

**Fire Extinguishing Media:**

Water spray, dry chemical, alcohol foam, or carbon dioxide.

**Special Information:**

In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode.

---

## 6. Accidental Release Measures

Remove all sources of ignition. Ventilate area of leak or spill. Wear appropriate personal protective equipment as specified in Section 8. Spills: Clean up spills in a manner that does not disperse dust into the air. Use non-sparking tools and equipment. Reduce airborne dust and prevent scattering by moistening with water. Pick up spill for recovery or disposal and place in a closed container.

---

## 7. Handling and Storage

Keep in a tightly closed container. Protect from physical damage. Store in a cool, dry, ventilated area away from sources of heat, moisture and incompatibilities. Containers of this material may be hazardous when empty since they retain product residues (dust, solids); observe all warnings and precautions listed for the product.

---

## 8. Exposure Controls/Personal Protection

**Airborne Exposure Limits:**

None established.

**Ventilation System:**

A system of local and/or general exhaust is recommended to keep employee exposures as low as possible. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, *Industrial Ventilation, A Manual of Recommended Practices*, most recent edition, for details.

**Personal Respirators (NIOSH Approved):**

For conditions of use where exposure to dust or mist is apparent and engineering controls are not feasible, a particulate respirator (NIOSH type N95 or better filters) may be worn. If oil particles (e.g. lubricants, cutting fluids, glycerine, etc.) are present, use a NIOSH type R or P filter. For emergencies or instances where the exposure levels are not known, use a full-face positive-pressure, air-supplied respirator. WARNING: Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.

**Skin Protection:**

Gloves and lab coat, apron or coveralls.

**Eye Protection:**

Use chemical safety goggles. Maintain eye wash fountain and quick-drench facilities in work area.

---

## 9. Physical and Chemical Properties

Little information was found in the literature.

**Appearance:**

Yellow crystals.

**Odor:**

Characteristic odor.

**Solubility:**

Very slightly soluble in water.

**Specific Gravity:**

No information found.

**pH:**

No information found.

**% Volatiles by volume @ 21C (70F):**

0

**Boiling Point:**

Not applicable.

**Melting Point:**

200 - 202C (392 - 396F)

**Vapor Density (Air=1):**

No information found.

**Vapor Pressure (mm Hg):**

No information found.

**Evaporation Rate (BuAc=1):**

No information found.

---

## 10. Stability and Reactivity

**Stability:**

Stable under ordinary conditions of use and storage.

**Hazardous Decomposition Products:**

Burning may produce bromines, sulfur oxides, carbon dioxide, and carbon monoxide.

**Hazardous Polymerization:**

Will not occur.

**Incompatibilities:**

Strong oxidizers.  
**Conditions to Avoid:**  
 Incompatibles.

## 11. Toxicological Information

No LD50/LC50 information found relating to normal routes of occupational exposure. Investigated as a mutagen.

Ingredient	---NTP Carcinogen---		IARC Category
	Known	Anticipated	
Bromothymol Blue (76-59-5)	No	No	None

## 12. Ecological Information

**Environmental Fate:**  
 No information found.  
**Environmental Toxicity:**  
 No information found.

## 13. Disposal Considerations

Whatever cannot be saved for recovery or recycling should be managed in an appropriate and approved waste disposal facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

## 14. Transport Information

Not regulated.

## 15. Regulatory Information

-----\Chemical Inventory Status - Part 1\-----				
Ingredient	TSCA	EC	Japan	Australia
Bromothymol Blue (76-59-5)	Yes	Yes	No	Yes

-----\Chemical Inventory Status - Part 2\-----				
Ingredient	Korea	--Canada--		Phil.
		DSL	NDSL	
Bromothymol Blue (76-59-5)	Yes	Yes	No	Yes

-----\Federal, State & International Regulations - Part 1\-----				
Ingredient	-SARA 302-		-SARA 313-	
	RQ	TPQ	List	Chemical Catg.
Bromothymol Blue (76-59-5)	No	No	No	No

-----\Federal, State & International Regulations - Part 2\-----			
Ingredient	CERCLA	-RCRA-	-TSCA-
		261.33	8(d)
Bromothymol Blue (76-59-5)	No	No	No

Chemical Weapons Convention: No TSCA 12(b): No CDTA: No  
 SARA 311/312: Acute: Yes Chronic: No Fire: No Pressure: No  
 Reactivity: No (Pure / Solid)

**Australian Hazchem Code:** None allocated.

**Poison Schedule:** None allocated.

**WHMIS:**

This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

## 16. Other Information

**NFPA Ratings:** Health: 1 Flammability: 1 Reactivity: 0

**Label Hazard Warning:**

CAUTION! MAY BE HARMFUL IF SWALLOWED. MAY CAUSE IRRITATION TO SKIN, EYES, AND RESPIRATORY TRACT.

**Label Precautions:**

Wash thoroughly after handling.

Avoid contact with eyes, skin and clothing.

Avoid breathing dust.

Store in a tightly closed container.

Use with adequate ventilation.

**Label First Aid:**

If swallowed, induce vomiting immediately as directed by medical personnel. Never give anything by mouth to an unconscious person. In case of contact,



immediately flush eyes or skin with plenty of water for at least 15 minutes. If irritation develops call a physician. If inhaled, remove to fresh air. Get medical attention for any breathing difficulty.

**Product Use:**

Laboratory Reagent.

**Revision Information:**

MSDS Section(s) changed since last revision of document include: 3.

**Disclaimer:**

\*\*\*\*\*

Mallinckrodt Baker, Inc. provides the information contained herein in good faith but makes no representation as to its comprehensiveness or accuracy. This document is intended only as a guide to the appropriate precautionary handling of the material by a properly trained person using this product. Individuals receiving the information must exercise their independent judgment in determining its appropriateness for a particular purpose. MALLINCKRODT BAKER, INC. MAKES NO REPRESENTATIONS OR WARRANTIES, EITHER EXPRESS OR IMPLIED, INCLUDING WITHOUT LIMITATION ANY WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE WITH RESPECT TO THE INFORMATION SET FORTH HEREIN OR THE PRODUCT TO WHICH THE INFORMATION REFERS. ACCORDINGLY, MALLINCKRODT BAKER, INC. WILL NOT BE RESPONSIBLE FOR DAMAGES RESULTING FROM USE OF OR RELIANCE UPON THIS INFORMATION.

\*\*\*\*\*

**Prepared by:** Environmental Health & Safety  
Phone Number: (314) 654-1600 (U.S.A.)

# FLINN SCIENTIFIC INC.

"Your Safer Source for Science Supplies"

## Material Safety Data Sheet (MSDS)

MSDS #: 181.00

Revision Date: March 14, 2001

---

### Section 1 — Chemical Product and Company Identification

---

#### n-Butyl Alcohol

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### Section 2 — Composition, Information on Ingredients

---

n-Butyl Alcohol

Synonym: 1-butanol

CAS#: 71-36-3

---

### Section 3 — Hazards Identification

---

Clear colorless liquid; wine-like odor.

Moderately toxic by inhalation or ingestion. Irritant to body tissue. Absorbed through the skin.

Avoid vapors.

Flammable liquid.

#### FLINN AT-A-GLANCE

Health-2

Flammability-3

Reactivity-1

Exposure-2

Storage-3

0 is low hazard, 3 is high hazard

---

### Section 4 — First Aid Measures

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash continuously with fresh water for 15 minutes.

Internal: Induce vomiting. Call a physician or poison control at once.

---

### Section 5 — Fire Fighting Measures

---

Class 1C-Flammable liquid.

Flash Point: 95 F Upper: 11.2% Lower: 1.4% Autoignition Temperature: 649 F

**Fire Fighting Instructions:** Use triclass, dry chemical fire extinguisher. Firefighters should wear PPE and SCBA with full facepiece operated in positive pressure mode.

#### NFPA CODE

H-1

F-3

R-0

---

### Section 6 — Accidental Release Measures

---

Restrict unprotected personnel from area. Remove all ignition sources and ventilate area. Contain spill with sand and absorbent material; deposit in sealed bag or container. See Sections 8 and 13 for further information.

---

### Section 7 — Handling and Storage

---

Flinn Suggested Chemical Storage Pattern: Organic #2. Store with alcohols, glycols, amines and amides.

Store in a dedicated flammables cabinet. If a flammables cabinet is not available, store in Flinn Saf-Stor can.

Store in a cool dry place. Use and dispense in a hood.

---

### Section 8 — Exposure Controls, Personal Protection

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron.

Use ventilation to keep airborne concentrations below exposure limits. Always wear a NIOSH-approved respirator with proper cartridges or a positive pressure, air-supplied respirator when handling this material in emergency situations (spill or fire).

Exposure guidelines: TWA 100 ppm, (OSHA).

### Section 9 — Physical and Chemical Properties

Clear colorless liquid; vinous odor.  
Solubility: Soluble in water (20%). Miscible with alcohol.  
Formula: CH<sub>3</sub>(CH<sub>2</sub>)<sub>2</sub>CH<sub>2</sub>OH  
Formula Weight: 74.14

Specific Gravity: 0.81  
Melting Point: -90 C  
Boiling Point: 117.7

### Section 10 — Stability and Reactivity

Avoid contact with aluminum, chromium trioxide and oxidizing materials.  
When heated to decomposition, it emits acrid smoke and fumes. Substance may develop explosive hydroperoxides.  
Shelf life: Fair, substance may oxidize.

### Section 11 — Toxicological Information

Acute effects: Severe irritant, gastrointestinal disturbances  
Chronic effects: N.A.  
Target organs: Central nervous system, ears, liver, kidneys, blood

ORL-RAT LD50: 790 mg/kg  
IHL-RAT LC50: 8000 ppm/4H  
SKN-RBT LD50: 3400 mg/kg

N.A. = Not available, not all health aspects of this substance have been fully investigated.

### Section 12 — Ecological Information

Data not yet available.

### Section 13 — Disposal Considerations

Please consult with state and local regulations.  
Flinn Suggested Disposal Method 18b is one option.

### Section 14 — Transport Information

Shipping Name: Butanols  
Hazard Class: 3, Flammable Liquid  
UN Number: UN1120

N/A = Not applicable

### Section 15 — Regulatory Information

TSCA-listed, EINECS-listed (200-751-6), RCRA code U031.

### Section 16 — Other Information

Consult your copy of the Flinn Scientific Catalog/Reference Manual for additional information about laboratory chemicals. This Material Safety Data Sheet (MSDS) is for guidance and is based upon information and tests believed to be reliable. Flinn Scientific Inc. makes no guarantee of the accuracy or completeness of the data and shall not be liable for any damages relating thereto. The data is offered solely for your consideration, investigation, and verification. Flinn Scientific Inc. assumes no legal responsibility for use or reliance upon this data.

**FLINN SCIENTIFIC INC.**

"Your Safer Source for Science Supplies"

*Questions on Chemical Disposal  
or Storage?--Call Flinn*

flinn@flinnsci.com www.flinnsci.com  
P.O. Box 219 Batavia IL 60510  
(800) 452-1261 Fax (866) 452-1436

# FLINN SCIENTIFIC INC.

"Your Safer Source for Science Supplies"

## Material Safety Data Sheet (MSDS)

MSDS #: 193.00

Revision Date: November 25, 2002

---

### Section 1 — Chemical Product and Company Identification

---

#### Calcium Acetate

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### Section 2 — Composition, Information on Ingredients

---

Calcium Acetate

Synonym: Calcium Diacetate

CAS#: 62-54-4

---

### Section 3 — Hazards Identification

---

White powder with a slight acetic acid odor.

Substance not considered hazardous. However, not all health aspects of this substance have been thoroughly investigated.

#### FLINN AT-A-GLANCE

Health-0

Flammability-0

Reactivity-0

Exposure-0

Storage-0

0 is low hazard, 3 is high hazard

---

### Section 4 — First Aid Measures

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash continuously with fresh water for 15 minutes.

Internal: Give large quantities of water. Call a physician or poison control at once.

---

### Section 5 — Fire Fighting Measures

---

Non flammable solid.

When heated to decomposition, emits acrid smoke and fumes.

**Fire Fighting Instructions:** Use triclass, dry chemical fire extinguisher. Firefighters should wear PPE and SCBA with full facepiece operated in positive pressure mode.

#### NFPA CODE

None Established

---

### Section 6 — Accidental Release Measures

---

Restrict unprotected personnel from area. Sweep up, place in sealed bag or container and dispose. Ventilate area and wash spill site after material pickup is complete. See Sections 8 and 13 for further information.

---

### Section 7 — Handling and Storage

---

Flinn Suggested Chemical Storage Pattern: Inorganic #2. Store with acetates, halides, sulfates, sulfites, thiosulfates and phosphates.

Store in a cool dry place.

---

### Section 8 — Exposure Controls, Personal Protection

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron.

### Section 9 — Physical and Chemical Properties

White powder with a slight acetic acid odor.  
Solubility: Water soluble. Slightly soluble in alcohol.  
Decomposes on heating.  
Formula:  $\text{Ca}(\text{C}_2\text{H}_3\text{O}_2)_2 \cdot 2\text{H}_2\text{O}$   
Formula Weight: 176.19

Specific Gravity: 1.5

### Section 10 — Stability and Reactivity

Avoid contact with strong oxidizers and open flame.  
Shelf life: Fair to poor, hygroscopic.

### Section 11 — Toxicological Information

Acute effects: N.A.  
Chronic effects: N.A.  
Target organs: N.A.

ORL-RAT LD50: N.A.  
IHL-RAT LC50: N.A.  
SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

### Section 12 — Ecological Information

Data not yet available.

### Section 13 — Disposal Considerations

Please consult with state and local regulations.  
Flinn Suggested Disposal Method #26a is one option.

### Section 14 — Transport Information

Shipping Name: Not regulated  
Hazard Class: N/A  
UN Number: N/A

N/A = Not applicable

### Section 15 — Regulatory Information

TSCA-listed, EINECS-listed (200-540-9).

### Section 16 — Other Information

Consult your copy of the Flinn Scientific Catalog/Reference Manual for additional information about laboratory chemicals. This Material Safety Data Sheet (MSDS) is for guidance and is based upon information and tests believed to be reliable. Flinn Scientific Inc. makes no guarantee of the accuracy or completeness of the data and shall not be liable for any damages relating thereto. The data is offered solely for your consideration, investigation, and verification. Flinn Scientific Inc. assumes no legal responsibility for use or reliance upon this data.

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*Flinn Chemical Packaging Prevents Accidents*

flinn@flinnsci.com www.flinnsci.com  
P.O. Box 219 Batavia IL 60510  
(800) 452-1261 Fax (866) 452-1436

# FLINN SCIENTIFIC INC.

"Your Safer Source for Science Supplies"

## Material Safety Data Sheet (MSDS)

MSDS #: 194.00

Revision Date: June 18, 2001

---

### Section 1 — Chemical Product and Company Identification

---

## Calcium Carbide

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### Section 2 — Composition, Information on Ingredients

---

Calcium Carbide

Synonym: Calcium Acetylide

CAS#: 75-20-7

---

### Section 3 — Hazards Identification

---

Rock-like, grayish-black solid; odor of acetylene always present. Garlic like odor.

Corrosive. Avoid all body tissue contact.

Exposure to water or moisture evolves flammable acetylene.

#### FLINN AT-A-GLANCE

Health-1

Flammability-3

Reactivity-3

Exposure-1

Storage-2

0 is low hazard, 3 is high hazard

---

### Section 4 — First Aid Measures

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash continuously with fresh water for 15 minutes.

Internal: Give no more than 1-2 cups of water for dilution. Do not induce vomiting. Call a physician or poison control at once.

---

### Section 5 — Fire Fighting Measures

---

Flammable solid. Exposure to water or moisture evolves flammable acetylene. 500 g of calcium carbide will yield approx. 150L of flammable acetylene. **Fire Fighting Instructions:**

Use Class D, Met-L-X, or dry sand as a fire extinguisher. Do not use CO<sub>2</sub>, halogenated extinguishing agent, or water: violent reaction with water. Firefighters should wear PPE and SCBA with full facepiece operating in positive mode.

#### NFPA CODE

H-3

F-3

R-2

No Water

---

### Section 6 — Accidental Release Measures

---

Restrict unprotected personnel from area. Remove all ignition sources and water. Sweep up, place in sealed bag or container and dispose. Ventilate area and wash spill site after material pickup is complete. See Sections 8 and 13 for further information.

---

### Section 7 — Handling and Storage

---

Flinn Suggested Chemical Storage Pattern: Inorganic #5. Store with sulfides, phosphides, carbides and nitrides.

Store in a cool dry place. Store in a Flinn Chem-Saf bag and then inside a Flinn Saf-Stor can. Use and dispense in a hood.

---

### Section 8 — Exposure Controls, Personal Protection

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron.

Use exhaust ventilation to keep airborne concentrations low.

### Section 9 — Physical and Chemical Properties

Rock-like, grayish-black; odor of acetylene always present.  
Garlic-like odor.  
Solubility: Reacts with water-decomposes in water.  
Forms calcium hydroxide and acetylene with much heat.  
Formula: CaC<sub>2</sub>  
Formula Weight: 64.10

Specific Gravity: 2.22

### Section 10 — Stability and Reactivity

Exposure to moisture; decomposes in water to form acetylene and calcium hydroxide. Store in a metal can or a flammables cabinet.  
Avoid contact with water, acids, halogens, silver nitrate, copper compounds and heavy metals.  
Shelf life: Good if stored under dry conditions.

### Section 11 — Toxicological Information

Acute effects: Corrosive  
Chronic effects: N.A.  
Target organs: N.A.

ORL-RAT LD50: N.A.  
IHL-RAT LC50: N.A.  
SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

### Section 12 — Ecological Information

Data not yet available.

### Section 13 — Disposal Considerations

Please consult with state and local regulations.  
Flinn Suggested Disposal Method #25 is one option.

### Section 14 — Transport Information

Shipping Name: Calcium Carbide  
Hazard Class: 4.3, Dangerous when wet  
UN Number: UN1402

N/A = Not applicable

### Section 15 — Regulatory Information

TSCA-listed, EINECS-listed (200-848-3), RCRA code D001, D003.

### Section 16 — Other Information

Consult your copy of the Flinn Scientific Catalog/Reference Manual for additional information about laboratory chemicals. This Material Safety Data Sheet (MSDS) is for guidance and is based upon information and tests believed to be reliable. Flinn Scientific Inc. makes no guarantee of the accuracy or completeness of the data and shall not be liable for any damages relating thereto. The data is offered solely for your consideration, investigation, and verification. Flinn Scientific Inc. assumes no legal responsibility for use or reliance upon this data.

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P.O. Box 219 Batavia IL 60510  
(800) 452-1261 Fax (866) 452-1436

# FLINN SCIENTIFIC INC.

"Your Safer Source for Science Supplies"

## Material Safety Data Sheet (MSDS)

MSDS #: 195.00

Revision Date: November 25, 2002

---

### Section 1 — Chemical Product and Company Identification

---

#### Calcium Carbonate

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### Section 2 — Composition, Information on Ingredients

---

Calcium Carbonate

Synonym: chalk, dolomite, limestone

CAS#: 471-34-1

---

### Section 3 — Hazards Identification

---

White odorless powder.

Irritant to body tissues. Severe eye and moderate skin irritant.

#### FLINN AT-A-GLANCE

Health-0

Flammability-0

Reactivity-0

Exposure-1

Storage-0

0 is low hazard, 3 is high hazard

---

### Section 4 — First Aid Measures

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash continuously with fresh water for 15 minutes.

Internal: Give no more than 1-2 cups of water for dilution. Induce vomiting. Call a physician or poison control at once.

---

### Section 5 — Fire Fighting Measures

---

Non flammable, non combustible solid.

#### NFPA CODE

None Established

---

### Section 6 — Accidental Release Measures

---

Restrict unprotected personnel from area. Sweep up, place in sealed bag or container and dispose. Ventilate area and wash spill site after material pickup is complete. See Sections 8 and 13 for further information.

---

### Section 7 — Handling and Storage

---

Flinn Suggested Chemical Storage Pattern: Inorganic #4. Store with hydroxides, oxides, silicates and carbonates.

Store in a cool dry place.

---

### Section 8 — Exposure Controls, Personal Protection

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron.



### Section 9 — Physical and Chemical Properties

White odorless powder.  
Solubility: Slightly soluble in water.  
Formula: CaCO<sub>3</sub>  
Formula Weight: 100.09

Specific Gravity: 2.7  
Melting Point: 825 C (dec)

### Section 10 — Stability and Reactivity

Avoid contact with strong oxidizers, acids, magnesium and aluminum.

### Section 11 — Toxicological Information

Acute effects: Irritant  
Chronic effects: N.A.  
Target organs: N.A.

ORL-RAT LD50: 6450 mg/kg  
IHL-RAT LC50: N.A.  
SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

### Section 12 — Ecological Information

Data not yet available.

### Section 13 — Disposal Considerations

Please consult with state and local regulations.  
Flinn Suggested Disposal Method #26a is one option.

### Section 14 — Transport Information

Shipping Name: Not regulated  
Hazard Class: N/A  
UN Number: N/A

N/A = Not applicable

### Section 15 — Regulatory Information

TSCA-listed, EINECS-listed (207-439-9).

### Section 16 — Other Information

Consult your copy of the Flinn Scientific Catalog/Reference Manual for additional information about laboratory chemicals. This Material Safety Data Sheet (MSDS) is for guidance and is based upon information and tests believed to be reliable. Flinn Scientific Inc. makes no guarantee of the accuracy or completeness of the data and shall not be liable for any damages relating thereto. The data is offered solely for your consideration, investigation, and verification. Flinn Scientific Inc. assumes no legal responsibility for use or reliance upon this data.

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# FLINN SCIENTIFIC INC.

"Your Safer Source for Science Supplies"

## Material Safety Data Sheet (MSDS)

MSDS #: 196.00

Revision Date: November 25, 2002

---

### Section 1 — Chemical Product and Company Identification

---

#### Calcium Chloride

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### Section 2 — Composition, Information on Ingredients

---

Calcium Chloride and Calcium Chloride dihydrate

CAS#: 10043-52-4 ; dihydrate: 10035-04-8

---

### Section 3 — Hazards Identification

---

White odorless powder, crystals or flakes.

Slightly toxic by ingestion. Mild irritant to skin, eyes and mucous membranes. Avoid all body tissue contact.

#### FLINN AT-A-GLANCE

Health-1  
Flammability-0  
Reactivity-0  
Exposure-1  
Storage-1

0 is low hazard, 3 is high hazard

---

### Section 4 — First Aid Measures

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash continuously with fresh water for 15 minutes.

Internal: Rinse out mouth, give 1 to 2 cups of water or milk, induce vomiting. After vomiting, give mixture of 2 Tbs. of activated charcoal mixed with one cup of water. Call a physician or poison control at once.

---

### Section 5 — Fire Fighting Measures

---

Non flammable, non combustible solid.

When heated to decomposition, emits toxic chlorine gases.

**Fire Fighting Instructions:** Use triclass, dry chemical fire extinguisher. Firefighters should wear PPE and SCBA with full facepiece operated in positive pressure mode.

#### NFPA CODE

None Established

---

### Section 6 — Accidental Release Measures

---

Restrict unprotected personnel from area. Sweep up, place in sealed bag or container and dispose. Ventilate area and wash spill site after material pickup is complete. See Sections 8 and 13 for further information.

---

### Section 7 — Handling and Storage

---

Flinn Suggested Chemical Storage Pattern: Inorganic #2. Store with acetates, halides, sulfates, sulfites, thiosulfates and phosphates. Store in a cool dry place. Deliquescent, store in Flinn Chem-Saf Bag.

---

### Section 8 — Exposure Controls, Personal Protection

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron. Use exhaust ventilation to keep airborne concentrations low.

---

### Section 9 — Physical and Chemical Properties

---

White odorless powder, crystals or flakes.  
Solubility: Dihydrate: Water soluble  
Formula: CaCl<sub>2</sub>; dihydrate: CaCl<sub>2</sub> 2H<sub>2</sub>O  
Formula Weight: 110.98

Specific Gravity: 2.15; dihydrate: 0.835  
Melting Point: 772 C

---

### Section 10 — Stability and Reactivity

---

Avoid contact with strong acids.  
Shelf life: Fair to Poor, deliquescent.

---

### Section 11 — Toxicological Information

---

Acute effects: Irritant  
Chronic effects: N.A.  
Target organs: N.A.

ORL-RAT LD50: 1000 mg/kg  
IHL-RAT LC50: N.A.  
SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

---

### Section 12 — Ecological Information

---

Data not yet available.

---

### Section 13 — Disposal Considerations

---

Please consult with state and local regulations.  
Flinn Suggested Disposal Method #26a is one option.

---

### Section 14 — Transport Information

---

Shipping Name: Not regulated  
Hazard Class: N/A  
UN Number: N/A

N/A = Not applicable

---

### Section 15 — Regulatory Information

---

TSCA-listed, EINECS-listed (233-140-8).

---

### Section 16 — Other Information

---

Consult your copy of the Flinn Scientific Catalog/Reference Manual for additional information about laboratory chemicals. This Material Safety Data Sheet (MSDS) is for guidance and is based upon information and tests believed to be reliable. Flinn Scientific Inc. makes no guarantee of the accuracy or completeness of the data and shall not be liable for any damages relating thereto. The data is offered solely for your consideration, investigation, and verification. Flinn Scientific Inc. assumes no legal responsibility for use or reliance upon this data.

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# FLINN SCIENTIFIC INC.

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## Material Safety Data Sheet (MSDS)

MSDS #: 199.00

Revision Date: November 25, 2002

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### Section 1 — Chemical Product and Company Identification

---

## Calcium Hydroxide

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### Section 2 — Composition, Information on Ingredients

---

Calcium Hydroxide

Synonym: slaked lime, calcium hydrate

CAS#: 1305-62-0

---

### Section 3 — Hazards Identification

---

White odorless powder.

Toxic by inhalation. Irritant to body tissue. Strong solution is caustic. Avoid all body tissue contact.

#### FLINN AT-A-GLANCE

Health-1

Flammability-0

Reactivity-1

Exposure-1

Storage-1

0 is low hazard, 3 is high hazard

---

### Section 4 — First Aid Measures

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash continuously with fresh water for 15 minutes.

Internal: Give no more than 1-2 cups of water for dilution. Do not induce vomiting. Call a physician or poison control at once.

---

### Section 5 — Fire Fighting Measures

---

Non-flammable, non-combustible solid.

#### NFPA CODE

None Established

---

### Section 6 — Accidental Release Measures

---

Restrict unprotected personnel from area. Sweep up, place in sealed bag or container and dispose. Ventilate area and wash spill site after material pickup is complete. See Sections 8 and 13 for further information.

---

### Section 7 — Handling and Storage

---

Flinn Suggested Chemical Storage Pattern: Inorganic #4. Store with hydroxides, oxides, silicates and carbonates.

Store in a cool dry place. Use and dispense in a hood. Store in a Flinn Chem-Saf Bag.

---

### Section 8 — Exposure Controls, Personal Protection

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron.

Use ventilation to keep airborne concentrations below exposure limits. Always wear a NIOSH-approved respirator with proper cartridges or a positive pressure, air-supplied respirator when handling this material in emergency situations (spill or fire). Exposure

guidelines: TWA 5 mg/m<sup>3</sup> (OSHA)

### Section 9 — Physical and Chemical Properties

White odorless powder.  
Solubility: Slightly soluble in water. Soluble in acids and some organic liquids. Absorbs CO<sub>2</sub> from air.  
pH of water solution (25%) 12.4.

Formula: Ca(OH)<sub>2</sub>  
Formula Weight: 74.10  
Specific Gravity: 2.34  
Melting Point: loses water at 580 C

### Section 10 — Stability and Reactivity

Avoid contact with strong acids, maleic anhydride, and nitro compounds.  
Shelf life: Fair to poor. Absorbs CO<sub>2</sub> from air.

### Section 11 — Toxicological Information

Acute effects: Corrosive  
Chronic effects: N.A.  
Target organs: N.A.

ORL-RAT LD50: 7340 mg/Kg  
IHL-RAT LC50: N.A.  
SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

### Section 12 — Ecological Information

Data not yet available.

### Section 13 — Disposal Considerations

Please consult with state and local regulations.  
Flinn Suggested Disposal Method #10 is one option.

### Section 14 — Transport Information

Shipping Name: Not regulated  
Hazard Class: N/A  
UN Number: N/A

N/A = Not applicable

### Section 15 — Regulatory Information

TSCA-listed, EINECS-listed (215-137-3), RCRA code D002.

### Section 16 — Other Information

Consult your copy of the Flinn Scientific Catalog/Reference Manual for additional information about laboratory chemicals. This Material Safety Data Sheet (MSDS) is for guidance and is based upon information and tests believed to be reliable. Flinn Scientific Inc. makes no guarantee of the accuracy or completeness of the data and shall not be liable for any damages relating thereto. The data is offered solely for your consideration, investigation, and verification. Flinn Scientific Inc. assumes no legal responsibility for use or reliance upon this data.

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# FLINN SCIENTIFIC INC.

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## Material Safety Data Sheet (MSDS)

MSDS #: 200.00

Revision Date: March 14, 2001

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### Section 1 — Chemical Product and Company Identification

---

## Calcium Hypochlorite

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### Section 2 — Composition, Information on Ingredients

---

Calcium Hypochlorite

CAS#: 7778-54-3

---

### Section 3 — Hazards Identification

---

Off-white or white solid or powder. Pungent odor; chlorine-like.  
Irritant to body tissues. Moderately toxic by ingestion and inhalation.  
Oxidizer, fire risk in contact with organic substances.

#### FLINN AT-A-GLANCE

Health-2  
Flammability-0  
Reactivity-3  
Exposure-2  
Storage-1

0 is low hazard, 3 is high hazard

---

### Section 4 — First Aid Measures

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash continuously with fresh water for 15 minutes.

Internal: Give no more than 1-2 cups of water for dilution. Do not induce vomiting. Call a physician or poison control at once.

---

### Section 5 — Fire Fighting Measures

---

Non-flammable solid.

Dangerous fire risk in contact with organic material. When heated to decomposition, emits toxic fumes of Na<sub>2</sub>O and Cl.

**Fire Fighting Instructions:** Use triclass, dry chemical fire extinguisher. Firefighters should wear PPE and SCBA with full facepiece operated in positive pressure mode.

#### NFPA CODE

H-3  
F-0  
R-1  
OX

---

### Section 6 — Accidental Release Measures

---

Restrict unprotected personnel from area. Sweep up, place in sealed bag or container and dispose. Ventilate area and wash spill site after material pickup is complete. See Sections 8 and 13 for further information.

---

### Section 7 — Handling and Storage

---

Flinn Suggested Chemical Storage Pattern: Inorganic #6. Store with bromates and chlorates.

Store in a cool dry place. Deliquescent, store in Flinn Chem-Saf Bag. Use and dispense in a hood.

---

### Section 8 — Exposure Controls, Personal Protection

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron. Use exhaust ventilation to keep airborne concentrations low.

### Section 9 — Physical and Chemical Properties

White powder. Pungent odor; chlorine-like.  
Solubility: Decomposes in water and alcohol.  
Formula:  $\text{Ca}(\text{OCl})_2$   
Formula Weight: 142.99

Specific Gravity: 2.35  
65-70% available chlorine.

### Section 10 — Stability and Reactivity

Avoid contact with water, alcohol, strong reducing agents and acids.  
Shelf life: Fair to poor.

### Section 11 — Toxicological Information

Acute effects: Severe irritant  
Chronic effects: N.A.  
Target organs: N.A.

ORL-RAT LD50: 850 mg/kg  
IHL-RAT LC50: N.A.  
SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

### Section 12 — Ecological Information

Data not yet available.

### Section 13 — Disposal Considerations

Please consult with state and local regulations.  
Flinn Suggested Disposal Method #12a is one option.

### Section 14 — Transport Information

Shipping Name: Calcium Hypochlorite, dry  
Hazard Class: 5.1, Oxidizer  
UN Number: UN1748

N/A = Not applicable

### Section 15 — Regulatory Information

TSCA-listed, EINECS-listed (231-908-7), RCRA code D001.

### Section 16 — Other Information

Consult your copy of the Flinn Scientific Catalog/Reference Manual for additional information about laboratory chemicals. This Material Safety Data Sheet (MSDS) is for guidance and is based upon information and tests believed to be reliable. Flinn Scientific Inc. makes no guarantee of the accuracy or completeness of the data and shall not be liable for any damages relating thereto. The data is offered solely for your consideration, investigation, and verification. Flinn Scientific Inc. assumes no legal responsibility for use or reliance upon this data.

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# FLINN SCIENTIFIC INC.

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## Material Safety Data Sheet (MSDS)

MSDS #: 201.00

Revision Date: November 25, 2002

---

### Section 1 — Chemical Product and Company Identification

---

#### Calcium Nitrate

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### Section 2 — Composition, Information on Ingredients

---

Calcium Nitrate

Synonym: lime nitrate

CAS#: 13477-34-4

---

### Section 3 — Hazards Identification

---

Moist, white odorless crystals.

Body tissue irritant, slightly toxic. Harmful if inhaled. Avoid breathing dust. Avoid contact with skin and eyes.

Strong oxidizer; potential fire risk in contact with organic material; may explode if shocked or heated.

When heated, emits toxic NOx fumes, becomes explosive.

#### FLINN AT-A-GLANCE

Health-1

Flammability-0

Reactivity-3

Exposure-1

Storage-1

0 is low hazard, 3 is high hazard

---

### Section 4 — First Aid Measures

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash continuously with fresh water for 15 minutes.

Internal: Give large quantities of water. Call a physician or poison control at once.

---

### Section 5 — Fire Fighting Measures

---

Non-flammable solid.

When heated, emits toxic NOx fumes. Explosion and fire hazard on contact with organic materials. May explode if shocked or heated.

**Fire Fighting Instructions:** Use triclass, dry chemical fire extinguisher. Firefighters should wear PPE and SCBA with full facepiece operated in positive pressure mode.

#### NFPA CODE

None Established

---

### Section 6 — Accidental Release Measures

---

Gather up material in a pile (do not sweep). Place in a suitable container. Use the disposal method listed on the right.

Restrict unprotected personnel from area. Sweep up, place in sealed bag or container and dispose. Ventilate area and wash spill site after material pickup is complete. See Sections 8 and 13 for further information.

---

### Section 7 — Handling and Storage

---

Flinn Suggested Chemical Storage Pattern: Inorganic #3. Store with amides, nitrates and nitrites.

Store in a cool dry place. Deliquescent, store in Flinn Chem-Saf Bag. Use and dispense in a hood.

---

### Section 8 — Exposure Controls, Personal Protection

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron.

Use exhaust ventilation to keep airborne concentrations low.



### Section 9 — Physical and Chemical Properties

Moist, white, odorless crystals.

Solubility: Soluble in water, acetone and alcohol. Deliquescent.

Formula:  $\text{Ca}(\text{NO}_3)_2 \cdot 4\text{H}_2\text{O}$

Formula Weight: 236.16

Specific Gravity: 1.82

Melting Point: 45 C

### Section 10 — Stability and Reactivity

Avoid contact with strong reducing agents, acids, and organic material.

Shelf life: Fair to poor, deliquescent; store in a Flinn Chem-Saf bag.

### Section 11 — Toxicological Information

Acute effects: Irritant

Chronic effects: N.A.

Target organs: Blood, central nervous system

ORL-RAT LD50: 3900 mg/kg

IHL-RAT LC50: N.A.

SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

### Section 12 — Ecological Information

Data not yet available.

### Section 13 — Disposal Considerations

Please consult with state and local regulations.

Flinn Suggested Disposal Method #26a is one option.

### Section 14 — Transport Information

Shipping Name: Calcium Nitrate

Hazard Class: 5.1

UN Number: UN1454

N/A = Not applicable

### Section 15 — Regulatory Information

TSCA-listed, EINECS-listed (233-332-1), RCRA code D001.

### Section 16 — Other Information

Consult your copy of the Flinn Scientific Catalog/Reference Manual for additional information about laboratory chemicals. This Material Safety Data Sheet (MSDS) is for guidance and is based upon information and tests believed to be reliable. Flinn Scientific Inc. makes no guarantee of the accuracy or completeness of the data and shall not be liable for any damages relating thereto. The data is offered solely for your consideration, investigation, and verification. Flinn Scientific Inc. assumes no legal responsibility for use or reliance upon this data.

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# FLINN SCIENTIFIC INC.

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## Material Safety Data Sheet (MSDS)

MSDS #: 205.00

Revision Date: November 25, 2002

---

### Section 1 — Chemical Product and Company Identification

---

#### Calcium Phosphate, Dibasic

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### Section 2 — Composition, Information on Ingredients

---

Calcium Phosphate, dibasic

Synonym: dicalcium phosphate

CAS#: 7757-93-9

---

### Section 3 — Hazards Identification

---

White crystalline powder. Odorless.

Skin and eye irritant. Avoid body tissue contact.

#### FLINN AT-A-GLANCE

Health-0

Flammability-0

Reactivity-0

Exposure-1

Storage-0

0 is low hazard, 3 is high hazard

---

### Section 4 — First Aid Measures

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash continuously with fresh water for 15 minutes.

Internal: Give large quantities of water. Call a physician or poison control at once.

---

### Section 5 — Fire Fighting Measures

---

Non flammable, non combustible solid.

When heated to decomposition, emits toxic fumes of POx.

**Fire Fighting Instructions:** Use triclass, dry chemical fire extinguisher. Firefighters should wear PPE and SCBA with full facepiece operated in positive pressure mode.

#### NFPA CODE

None Established

---

### Section 6 — Accidental Release Measures

---

Restrict unprotected personnel from area. Sweep up, place in sealed bag or container and dispose. Ventilate area and wash spill site after material pickup is complete. See Sections 8 and 13 for further information.

---

### Section 7 — Handling and Storage

---

Flinn Suggested Chemical Storage Pattern: Inorganic #2. Store with acetates, halides, sulfates, sulfites, thiosulfates and phosphates. Store in a cool dry place.

---

### Section 8 — Exposure Controls, Personal Protection

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron.

### Section 9 — Physical and Chemical Properties

White crystalline powder. Odorless.

Specific Gravity: 2.31

Solubility: Soluble in acids except acetic. Insoluble in alcohol; slightly in water.

Formula: CaHPO<sub>4</sub>

Formula Weight: 172.09

### Section 10 — Stability and Reactivity

Avoid contact with strong oxidizers.

Shelf life: Indefinite.

### Section 11 — Toxicological Information

Acute effects: Irritant, gastrointestinal disturbances, nausea, headache and vomiting.

ORL-RAT LD50: N.A.

IHL-RAT LC50: N.A.

Chronic effects: N.A.

SKN-RBT LD50: N.A.

Target organs: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

### Section 12 — Ecological Information

Data not yet available.

### Section 13 — Disposal Considerations

Please consult with state and local regulations.

Flinn Suggested Disposal Method #26a is one option.

### Section 14 — Transport Information

Shipping Name: Not regulated

Hazard Class: N/A

UN Number: N/A

N/A = Not applicable

### Section 15 — Regulatory Information

TSCA-listed, EINECS-listed (231-826-1).

### Section 16 — Other Information

Consult your copy of the Flinn Scientific Catalog/Reference Manual for additional information about laboratory chemicals. This Material Safety Data Sheet (MSDS) is for guidance and is based upon information and tests believed to be reliable. Flinn Scientific Inc. makes no guarantee of the accuracy or completeness of the data and shall not be liable for any damages relating thereto. The data is offered solely for your consideration, investigation, and verification. Flinn Scientific Inc. assumes no legal responsibility for use or reliance upon this data.

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# FLINN SCIENTIFIC INC.

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## Material Safety Data Sheet (MSDS)

MSDS #: 204.00

Revision Date: November 25, 2002

---

### Section 1 — Chemical Product and Company Identification

---

## Calcium Phosphate

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### Section 2 — Composition, Information on Ingredients

---

Calcium Phosphate, monobasic

CAS#: 10031-30-8

---

### Section 3 — Hazards Identification

---

White crystalline powder. Odorless.  
Mild body tissue irritant.

#### FLINN AT-A-GLANCE

Health-0  
Flammability-0  
Reactivity-1  
Exposure-1  
Storage-1

0 is low hazard, 3 is high hazard

---

### Section 4 — First Aid Measures

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash continuously with fresh water for 15 minutes.

Internal: Give large quantities of water. Call a physician or poison control at once.

---

### Section 5 — Fire Fighting Measures

---

Non flammable, non combustible solid.

When heated to decomposition, emits toxic fumes of POx.

**Fire Fighting Instructions:** Use triclass, dry chemical fire extinguisher. Firefighters should wear PPE and SCBA with full facepiece operated in positive pressure mode.

#### NFPA CODE

None Established

---

### Section 6 — Accidental Release Measures

---

Restrict unprotected personnel from area. Sweep up, place in sealed bag or container and dispose. Ventilate area and wash spill site after material pickup is complete. See Sections 8 and 13 for further information.

---

### Section 7 — Handling and Storage

---

Flinn Suggested Chemical Storage Pattern: Inorganic #2. Store with acetates, halides, sulfates, sulfites, thiosulfates and phosphates. Store in a cool dry place. Deliquescent, store in Flinn Chem-Saf Bag.

---

### Section 8 — Exposure Controls, Personal Protection

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron.

### Section 9 — Physical and Chemical Properties

White crystalline powder. Odorless.

Solubility: Water soluble. Aqueous solutions are acidic.

Soluble in acid.

Formula:  $\text{Ca}(\text{H}_2\text{PO}_4)_2 \cdot \text{H}_2\text{O}$

Formula Weight: 252.08

Specific Gravity: 2.2

Melting Point: loses water at 100 C

### Section 10 — Stability and Reactivity

Prudent laboratory practices should be observed.

Avoid contact with strong oxidizers.

Shelf life: Fair to poor; deliquescent.

### Section 11 — Toxicological Information

Acute effects: Irritant, gastrointestinal disturbances, nausea, headache and vomiting.

Chronic effects: N.A.

Target organs: N.A.

ORL-RAT LD50: 17500 mg/kg

IHL-RAT LC50: N.A.

SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

### Section 12 — Ecological Information

Data not yet available.

### Section 13 — Disposal Considerations

Please consult with state and local regulations.

Flinn Suggested Disposal Method #26a is one option.

### Section 14 — Transport Information

Shipping Name: Not regulated

Hazard Class: N/A

UN Number: N/A

N/A = Not applicable

### Section 15 — Regulatory Information

TSCA-listed, EINECS-listed (231-837-1).

### Section 16 — Other Information

Consult your copy of the Flinn Scientific Catalog/Reference Manual for additional information about laboratory chemicals. This Material Safety Data Sheet (MSDS) is for guidance and is based upon information and tests believed to be reliable. Flinn Scientific Inc. makes no guarantee of the accuracy or completeness of the data and shall not be liable for any damages relating thereto. The data is offered solely for your consideration, investigation, and verification. Flinn Scientific Inc. assumes no legal responsibility for use or reliance upon this data.

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(800) 452-1261 Fax (866) 452-1436

# FLINN SCIENTIFIC INC.

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## Material Safety Data Sheet (MSDS)

MSDS #: 206.00

Revision Date: November 25, 2002

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### Section 1 — Chemical Product and Company Identification

---

#### Calcium Phosphate, Tribasic

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### Section 2 — Composition, Information on Ingredients

---

Calcium Phosphate, tribasic

Synonym: tricalcium phosphate

CAS#: 12167-74-7

---

### Section 3 — Hazards Identification

---

White crystalline powder. Odorless.

Skin and eye irritant. Avoid body tissue contact.

#### FLINN AT-A-GLANCE

Health-0

Flammability-0

Reactivity-0

Exposure-1

Storage-0

0 is low hazard, 3 is high hazard

---

### Section 4 — First Aid Measures

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash continuously with fresh water for 15 minutes.

Internal: Give large quantities of water. Call a physician or poison control at once.

---

### Section 5 — Fire Fighting Measures

---

Non flammable, non combustible solid.

When heated to decomposition, emits toxic fumes of POx.

**Fire Fighting Instructions:** Use triclass, dry chemical fire extinguisher. Firefighters should wear PPE and SCBA with full facepiece operated in positive pressure mode.

#### NFPA CODE

None Established

---

### Section 6 — Accidental Release Measures

---

Restrict unprotected personnel from area. Sweep up, place in sealed bag or container and dispose. Ventilate area and wash spill site after material pickup is complete. See Sections 8 and 13 for further information.

---

### Section 7 — Handling and Storage

---

Flinn Suggested Chemical Storage Pattern: Inorganic #2. Store with acetates, halides, sulfates, sulfites, thiosulfates and phosphates. Store in a cool dry place.

---

### Section 8 — Exposure Controls, Personal Protection

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron.

### Section 9 — Physical and Chemical Properties

White crystalline powder. Odorless.  
Solubility: Soluble in acids except acetic.  
Insoluble in water and alcohol.  
Formula:  $\text{Ca}_{10}(\text{OH})_2(\text{PO}_4)_6$   
Formula Weight: 1004.64

Specific Gravity: 3.18  
Melting Point: 1670 C

### Section 10 — Stability and Reactivity

Avoid contact with strong oxidizers.  
Shelf life: Indefinite

### Section 11 — Toxicological Information

Acute effects: Irritant, gastrointestinal disturbances, nausea, headache and vomiting.  
Chronic effects: N.A.  
Target organs: N.A.

ORL-RAT LD50: N.A.  
IHL-RAT LC50: N.A.  
SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

### Section 12 — Ecological Information

Data not yet available.

### Section 13 — Disposal Considerations

Please consult with state and local regulations.  
Flinn Suggested Disposal Method #26a is one option.

### Section 14 — Transport Information

Shipping Name: Not regulated  
Hazard Class: N/A  
UN Number: N/A

N/A = Not applicable

### Section 15 — Regulatory Information

TSCA-listed, EINECS-listed (235-330-6).

### Section 16 — Other Information

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# FLINN SCIENTIFIC INC.

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## Material Safety Data Sheet (MSDS)

MSDS #: 207.00

Revision Date: November 25, 2002

---

### Section 1 — Chemical Product and Company Identification

---

#### Calcium Sulfate

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### Section 2 — Composition, Information on Ingredients

---

Calcium Sulfate, Hydrate

Synonym: alabaster, mineral white, gypsum

CAS#: 10101-41-4

---

### Section 3 — Hazards Identification

---

White odorless powder.

Substance not considered hazardous. However, not all health aspects of this substance have been thoroughly investigated.

#### FLINN AT-A-GLANCE

Health-0

Flammability-0

Reactivity-0

Exposure-0

Storage-0

0 is low hazard, 3 is high hazard

---

### Section 4 — First Aid Measures

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash continuously with fresh water for 15 minutes.

Internal: Give large quantities of water. Call a physician or poison control at once.

---

### Section 5 — Fire Fighting Measures

---

Non flammable, non combustible solid.

When heated to decomposition, may emit toxic fumes of SO<sub>x</sub>.

#### NFPA CODE

None Established

---

### Section 6 — Accidental Release Measures

---

Restrict unprotected personnel from area. Sweep up, place in sealed bag or container and dispose. Ventilate area and wash spill site after material pickup is complete. See Sections 8 and 13 for further information.

---

### Section 7 — Handling and Storage

---

Flinn Suggested Chemical Storage Pattern: Inorganic #2. Store with acetates, halides, sulfates, sulfites, thiosulfates and phosphates. Store in a cool dry place.

---

### Section 8 — Exposure Controls, Personal Protection

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron.

Use ventilation to keep airborne concentrations below exposure limits. Always wear a NIOSH-approved respirator with proper cartridges or a positive pressure, air-supplied respirator when handling this material in emergency situations (spill or fire).

Exposure guidelines: TWA 10 mg/m<sup>3</sup>, total dust. (ACGIH)



### Section 9 — Physical and Chemical Properties

White odorless powder.

Solubility: Slightly soluble in water.

Formula: CaSO<sub>4</sub> 2H<sub>2</sub>O

Formula Weight: 172.18

Specific Gravity: 2.32

Melting Point: 128 C (loses water)

Boiling Point: 163 C

### Section 10 — Stability and Reactivity

Avoid contact with strong oxidizers.

Contact with diazomethane vapor results in an exotherm and may lead to detonation.

Shelf life: Indefinite

### Section 11 — Toxicological Information

Acute effects: Irritating dust

Chronic effects: N.A.

Target organs: N.A.

ORL-RAT LD50: N.A.

IHL-RAT LC50: N.A.

SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

### Section 12 — Ecological Information

Data not yet available.

### Section 13 — Disposal Considerations

Please consult with state and local regulations.

Flinn Suggested Disposal Method #26a is one option.

### Section 14 — Transport Information

Shipping Name: Not regulated

Hazard Class: N/A

UN Number: N/A

N/A = Not applicable

### Section 15 — Regulatory Information

TSCA-listed, EINECS-listed (231-900-3).

### Section 16 — Other Information

Consult your copy of the Flinn Scientific Catalog/Reference Manual for additional information about laboratory chemicals. This Material Safety Data Sheet (MSDS) is for guidance and is based upon information and tests believed to be reliable. Flinn Scientific Inc. makes no guarantee of the accuracy or completeness of the data and shall not be liable for any damages relating thereto. The data is offered solely for your consideration, investigation, and verification. Flinn Scientific Inc. assumes no legal responsibility for use or reliance upon this data.

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# FLINN SCIENTIFIC INC.

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## Material Safety Data Sheet (MSDS)

MSDS #: 208.00

Revision Date: November 25, 2002

---

### Section 1 — Chemical Product and Company Identification

---

#### Calcium Sulfate

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### Section 2 — Composition, Information on Ingredients

---

Calcium Sulfate

Synonyms: plaster of paris, hemihydrate

CAS#: 10034-76-1

---

### Section 3 — Hazards Identification

---

White powder. Odorless.

Irritating dust. Avoid inhalation.

Substance not considered hazardous. However, not all health aspects of this substance have been thoroughly investigated.

#### FLINN AT-A-GLANCE

Health-0

Flammability-0

Reactivity-0

Exposure-1

Storage-1

0 is low hazard, 3 is high hazard

---

### Section 4 — First Aid Measures

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash with soap and water.

Internal: Give large quantities of water. Call a physician or poison control at once.

---

### Section 5 — Fire Fighting Measures

---

Non-flammable, non-combustible solid.

When heated to decomposition, may emit toxic fumes of SO<sub>x</sub>.

#### NFPA CODE

None Established

---

### Section 6 — Accidental Release Measures

---

Restrict unprotected personnel from area. Sweep up, place in sealed bag or container and dispose. Ventilate area and wash spill site after material pickup is complete. See Sections 8 and 13 for further information.

---

### Section 7 — Handling and Storage

---

Flinn Suggested Chemical Storage Pattern: Inorganic #2. Store with acetates, halides, sulfates, sulfites, thiosulfates and phosphates. Store in a cool dry place. Hygroscopic, store in Flinn Chem-Saf Bag.

---

### Section 8 — Exposure Controls, Personal Protection

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron.

Use ventilation to keep airborne concentrations below exposure limits. Always wear a NIOSH-approved respirator with proper cartridges or a positive pressure, air-supplied respirator when handling this material in emergency situations (spill or fire).

Exposure guidelines: TWA 10 mg/m<sup>3</sup>, total dust (ACGIH)

### Section 9 — Physical and Chemical Properties

White powder. Hydrated form. Odorless.  
Solubility: Slightly soluble in water.  
Formula: CaSO<sub>4</sub> 1/2H<sub>2</sub>O  
Formula Weight: 145.15

Specific Gravity: 2.964  
Melting Point: 1450 C

### Section 10 — Stability and Reactivity

Contact with diazomethane vapor results in an exotherm and may lead to detonation. Reacts violently with aluminum when heated.  
Shelf life: Poor, unless kept dry; store in a Flinn Chem-Saf bag.

### Section 11 — Toxicological Information

Acute effects: Irritating dust  
Chronic effects: N.A.  
Target organs: N.A.

ORL-RAT LD50: N.A.  
IHL-RAT LC50: N.A.  
SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

### Section 12 — Ecological Information

Data not yet available.

### Section 13 — Disposal Considerations

Please consult with state and local regulations.  
Flinn Suggested Disposal Method #26a is one option.

### Section 14 — Transport Information

Shipping Name: Not regulated  
Hazard Class: N/A  
UN Number: N/A

N/A = Not applicable

### Section 15 — Regulatory Information

TSCA-listed, EINECS-listed (231-900-3).

### Section 16 — Other Information

Consult your copy of the Flinn Scientific Catalog/Reference Manual for additional information about laboratory chemicals. This Material Safety Data Sheet (MSDS) is for guidance and is based upon information and tests believed to be reliable. Flinn Scientific Inc. makes no guarantee of the accuracy or completeness of the data and shall not be liable for any damages relating thereto. The data is offered solely for your consideration, investigation, and verification. Flinn Scientific Inc. assumes no legal responsibility for use or reliance upon this data.

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# FLINN SCIENTIFIC INC.

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## Material Safety Data Sheet (MSDS)

MSDS #: 211.50

Revision Date: November 25, 2002

---

### Section 1 — Chemical Product and Company Identification

---

#### Carbon

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### Section 2 — Composition, Information on Ingredients

---

Carbon

CAS#: 7440-44-0

---

### Section 3 — Hazards Identification

---

Black rod. Odorless.

Substance not considered hazardous. However, not all health aspects of this substance have been thoroughly investigated.

#### FLINN AT-A-GLANCE

Health-0

Flammability-1

Reactivity-0

Exposure-0

Storage-0

0 is low hazard, 3 is high hazard

---

### Section 4 — First Aid Measures

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash with mild soap and water.

Internal: Rinse out mouth with water. Call a physician or poison control at once.

---

### Section 5 — Fire Fighting Measures

---

Combustible solid.

Autoignition Temperature: 842 F

**Fire Fighting Instructions:** Use triclass, dry chemical fire extinguisher. Firefighters should wear PPE and SCBA with full facepiece operated in positive pressure mode.

#### NFPA CODE

None Established

---

### Section 6 — Accidental Release Measures

---

Restrict unprotected personnel from area. Remove all ignition sources and water. Sweep up, place in sealed bag or container and dispose. Ventilate area and wash spill site after material pickup is complete. See Sections 8 and 13 for further information.

---

### Section 7 — Handling and Storage

---

Flinn Suggested Chemical Storage Pattern: Inorganic #4. Store with hydroxides, oxides, silicates and carbonates.

Store in a cool dry place.

---

### Section 8 — Exposure Controls, Personal Protection

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron.

### Section 9 — Physical and Chemical Properties

Black rod, odorless.  
Solubility: Insoluble in water  
Formula: C  
Formula Weight: 12.01

Specific Gravity: 1.821-2.1  
Boiling Point: 4200 C

### Section 10 — Stability and Reactivity

Avoid heat, flame and oxidizing agents.  
Shelf life: Good, if kept dry.

### Section 11 — Toxicological Information

Acute effects: N.A.  
Chronic effects: N.A.  
Target organs: N.A.

ORL-RAT LD50: N.A.  
IHL-RAT LC50: N.A.  
SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

### Section 12 — Ecological Information

Data not yet available.

### Section 13 — Disposal Considerations

Please consult with state and local regulations.  
Flinn Suggested Disposal Method #26a is one option.

### Section 14 — Transport Information

Shipping Name: Not regulated.  
Hazard Class:  
UN Number:

N/A = Not applicable

### Section 15 — Regulatory Information

TSCA-listed, EINECS-listed (231-153-3).

### Section 16 — Other Information

Consult your copy of the Flinn Scientific Catalog/Reference Manual for additional information about laboratory chemicals. This Material Safety Data Sheet (MSDS) is for guidance and is based upon information and tests believed to be reliable. Flinn Scientific Inc. makes no guarantee of the accuracy or completeness of the data and shall not be liable for any damages relating thereto. The data is offered solely for your consideration, investigation, and verification. Flinn Scientific Inc. assumes no legal responsibility for use or reliance upon this data.

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# FLINN SCIENTIFIC INC.

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## Material Safety Data Sheet (MSDS)

MSDS #: 218.00

Revision Date: March 15, 2001

---

### Section 1 — Chemical Product and Company Identification

---

#### Carnauba Wax

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### Section 2 — Composition, Information on Ingredients

---

Carnauba Wax

Synonym: brazil wax

CAS#: 8015-86-9

---

### Section 3 — Hazards Identification

---

Yellow flakes; odorless.

Combustible solid. Substance not considered hazardous. However, not all health aspects of this substance have been thoroughly investigated.

#### FLINN AT-A-GLANCE

Health-0

Flammability-0

Reactivity-0

Exposure-0

Storage-0

0 is low hazard, 3 is high hazard

---

### Section 4 — First Aid Measures

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash continuously with fresh water for 15 minutes.

Internal: Give large quantities of water. Call a physician or poison control at once.

---

### Section 5 — Fire Fighting Measures

---

Combustible, non-flammable solid.

Flash Point: 540 F

**Fire Fighting Instructions:** Use triclass, dry chemical fire extinguisher. Firefighters should wear PPE and SCBA with full facepiece operated in positive pressure mode.

#### NFPA CODE

H-0

F-1

R-0

---

### Section 6 — Accidental Release Measures

---

Restrict unprotected personnel from area. Sweep up, place in sealed bag or container and dispose. Ventilate area and wash spill site after material pickup is complete. See Sections 8 and 13 for further information.

---

### Section 7 — Handling and Storage

---

Flinn Suggested Chemical Storage Pattern: Organic #3. Store with hydrocarbons, esters and aldehydes.

---

### Section 8 — Exposure Controls, Personal Protection

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron.

---

### Section 9 — Physical and Chemical Properties

---

Yellow flakes; odorless.  
Solubility: Insoluble in water. Soluble in ether and other organic solvents.

Specific Gravity: 0.99  
Melting Point: 84-86 C

---

### Section 10 — Stability and Reactivity

---

Prudent laboratory practices should be observed.

---

### Section 11 — Toxicological Information

---

Acute effects: N.A.  
Chronic effects: N.A.  
Target organs: N.A.

ORL-RAT LD50: N.A.  
IHL-RAT LC50: N.A.  
SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

---

### Section 12 — Ecological Information

---

Data not yet available.

---

### Section 13 — Disposal Considerations

---

Please consult with state and local regulations.  
Flinn Suggested Disposal Method #26a is one option.

---

### Section 14 — Transport Information

---

Shipping Name: Not regulated  
Hazard Class: N/A  
UN Number: N/A

N/A = Not applicable

---

### Section 15 — Regulatory Information

---

Not listed.

---

### Section 16 — Other Information

---

Consult your copy of the Flinn Scientific Catalog/Reference Manual for additional information about laboratory chemicals. This Material Safety Data Sheet (MSDS) is for guidance and is based upon information and tests believed to be reliable. Flinn Scientific Inc. makes no guarantee of the accuracy or completeness of the data and shall not be liable for any damages relating thereto. The data is offered solely for your consideration, investigation, and verification. Flinn Scientific Inc. assumes no legal responsibility for use or reliance upon this data.

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# FLINN SCIENTIFIC INC.

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## Material Safety Data Sheet (MSDS)

MSDS #: 220.00

Revision Date: November 25, 2002

---

### Section 1 — Chemical Product and Company Identification

---

#### Casein

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### Section 2 — Composition, Information on Ingredients

---

Casein

CAS#: 9000-71-9

---

### Section 3 — Hazards Identification

---

Pale-yellow powder. Odorless.

Substance not considered hazardous. However, not all health aspects of this substance have been thoroughly investigated.

#### FLINN AT-A-GLANCE

Health-0  
Flammability-0  
Reactivity-0  
Exposure-0  
Storage-1

0 is low hazard, 3 is high hazard

---

### Section 4 — First Aid Measures

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash continuously with fresh water for 15 minutes.

Internal: Give large quantities of water. Call a physician or poison control at once.

---

### Section 5 — Fire Fighting Measures

---

Non-flammable, combustible solid.

**Fire Fighting Instructions:** Use triclass, dry chemical fire extinguisher. Firefighters should wear PPE and SCBA with full facepiece operated in positive pressure mode.

#### NFPA CODE

None Established

---

### Section 6 — Accidental Release Measures

---

Restrict unprotected personnel from area. Sweep up, place in sealed bag or container and dispose. Ventilate area and wash spill site after material pickup is complete. See Sections 8 and 13 for further information.

---

### Section 7 — Handling and Storage

---

Flinn Suggested Chemical Storage Pattern: Organic #2. Store with alcohols, glycols, amines and amides.

Store in a cool dry place. Deliquescent, store in Flinn Chem-Saf Bag.

---

### Section 8 — Exposure Controls, Personal Protection

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron.



### Section 9 — Physical and Chemical Properties

Pale-yellow powder. Odorless.

Specific Gravity: 1.3

Solubility: Soluble in acids. Soluble in dilute alkalis and concentrated acids. Precipitates from weak acid solutions.

Formula: Aggregate of proteins

Formula Weight: Varies

### Section 10 — Stability and Reactivity

Avoid contact with strong oxidizers. Avoid moisture, deteriorates when damp or wet.

Shelf life: Fair to poor; deteriorates when damp.

### Section 11 — Toxicological Information

Acute effects: N.A.

ORL-RAT LD50: N.A.

Chronic effects: N.A.

IHL-RAT LC50: N.A.

Target organs: N.A.

SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

### Section 12 — Ecological Information

Data not yet available.

### Section 13 — Disposal Considerations

Please consult with state and local regulations.

Flinn Suggested Disposal Method #26a is one option.

### Section 14 — Transport Information

Shipping Name: Not regulated

Hazard Class: N/A

UN Number: N/A

N/A = Not applicable

### Section 15 — Regulatory Information

TSCA-listed, EINECS-listed (232-555-1).

### Section 16 — Other Information

Consult your copy of the Flinn Scientific Catalog/Reference Manual for additional information about laboratory chemicals. This Material Safety Data Sheet (MSDS) is for guidance and is based upon information and tests believed to be reliable. Flinn Scientific Inc. makes no guarantee of the accuracy or completeness of the data and shall not be liable for any damages relating thereto. The data is offered solely for your consideration, investigation, and verification. Flinn Scientific Inc. assumes no legal responsibility for use or reliance upon this data.

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# FLINN SCIENTIFIC INC.

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## Material Safety Data Sheet (MSDS)

MSDS #: 222.00

Revision Date: November 25, 2002

---

### Section 1 — Chemical Product and Company Identification

---

#### Cedarwood Oil

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### Section 2 — Composition, Information on Ingredients

---

Cedarwood Oil

CAS#: 8000-27-9

---

### Section 3 — Hazards Identification

---

Clear oil. May yellow or brown in color with age. Odorless.  
Moderately toxic by inhalation, ingestion or skin absorption. May cause skin irritation.  
Combustible.

#### FLINN AT-A-GLANCE

Health-2  
Flammability-1  
Reactivity-1  
Exposure-1  
Storage-3

0 is low hazard, 3 is high hazard

---

### Section 4 — First Aid Measures

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.  
Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.  
Eye: Immediately flush with fresh water for 15 minutes.  
External: Wash continuously with fresh water for 15 minutes.  
Internal: Give large quantities of water. Call a physician or poison control at once.

---

### Section 5 — Fire Fighting Measures

---

Combustible liquid.

**Fire Fighting Instructions:** Use triclass, dry chemical fire extinguisher. Firefighters should wear PPE and SCBA with full facepiece operated in positive pressure mode.

#### NFPA CODE

None Established

---

### Section 6 — Accidental Release Measures

---

Restrict unprotected personnel from area. Remove all ignition sources and ventilate area. Contain spill with sand and absorbent material; deposit in sealed bag or container. See Sections 8 and 13 for further information.

---

### Section 7 — Handling and Storage

---

Flinn Suggested Chemical Storage Pattern: Organic #4. Store with ethers, ketones, halogenated hydrocarbons and ethylene oxide. Store in a dedicated flammables cabinet. If a flammables cabinet is not available, store in Flinn Saf-Stor Can. Use and dispense in a hood.

---

### Section 8 — Exposure Controls, Personal Protection

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron. Use exhaust ventilation to keep airborne concentrations low.

### Section 9 — Physical and Chemical Properties

Clear oil. May yellow or brown in color with age.  
Solubility: Soluble in many organic solvents. An essential oil.

Specific Gravity: 0.947

### Section 10 — Stability and Reactivity

Avoid strong oxidizing agents. May discolor on exposure to light.  
Shelf life: Indefinite.

### Section 11 — Toxicological Information

Acute effects: Moderately toxic, irritant  
Chronic effects: N.A.  
Target organs: Central nervous system

ORL-RAT LD50: N.A.  
IHL-RAT LC50: N.A.  
SKN-RBT LD50: 500 mg/24H

N.A. = Not available, not all health aspects of this substance have been fully investigated.

### Section 12 — Ecological Information

Data not yet available.

### Section 13 — Disposal Considerations

Please consult with state and local regulations.  
Flinn Suggested Disposal Method 18b is one option.

### Section 14 — Transport Information

Shipping Name: Not regulated  
Hazard Class: N/A  
UN Number: N/A

N/A = Not applicable

### Section 15 — Regulatory Information

Not listed.

### Section 16 — Other Information

Consult your copy of the Flinn Scientific Catalog/Reference Manual for additional information about laboratory chemicals. This Material Safety Data Sheet (MSDS) is for guidance and is based upon information and tests believed to be reliable. Flinn Scientific Inc. makes no guarantee of the accuracy or completeness of the data and shall not be liable for any damages relating thereto. The data is offered solely for your consideration, investigation, and verification. Flinn Scientific Inc. assumes no legal responsibility for use or reliance upon this data.

**FLINN SCIENTIFIC INC.**

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flinn@flinnsci.com www.flinnsci.com  
P.O. Box 219 Batavia IL 60510  
(800) 452-1261 Fax (866) 452-1436

MSDS Number: C1630 \* \* \* \* \* Effective Date: 11/06/08 \* \* \* \* \* Supersedes: 12/05/07

<b>MSDS</b>	<b>Material Safety Data Sheet</b>		24 Hour Emergency Telephone: 908-859-2151 CHEMTREC: 1-800-424-9300
	From: Mallinckrodt Baker, Inc. 222 Red School Lane Phillipsburg, NJ 08865		National Response In Canada CANUTEC: 613-996-6666
Outside U.S. and Canada Chemtrec: 703-527-3887			
		NOTE: CHEMTREC, CANUTEC and National Response Center emergency numbers to be used only in the event of chemical emergencies involving a spill, leak, fire, exposure or accident involving chemicals.	

All non-emergency questions should be directed to Customer Service (1-800-582-2537) for assistance.

## Celite® 503

### 1. Product Identification

**Synonyms:** Diatomaceous Earth; Diatomite; Kieselguhr Soda Ash Flux Calcined  
**CAS No.:** 68855-54-9  
**Molecular Weight:** Not applicable.  
**Chemical Formula:** Not applicable.  
**Product Codes:**  
 J.T. Baker: E406  
 Mallinckrodt: 4382

### 2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
Kieselguhr, Soda Ash Flux-calcined	68855-54-9	100%	Yes
This product may contain up to 75% crystalline silica:			
Cristobalite	14464-46-1	< 70%	Yes
Quartz	14808-60-7	< 5%	Yes

### 3. Hazards Identification

#### Emergency Overview

**WARNING! HARMFUL IF INHALED. CAUSES IRRITATION TO SKIN, EYES AND RESPIRATORY TRACT. MAY AFFECT LUNGS. CANCER HAZARD. CONTAINS CRYSTALLINE SILICA WHICH CAN CAUSE CANCER. Risk of cancer depends upon duration and level of exposure.**

SAF-T-DATA<sup>(tm)</sup> Ratings (Provided here for your convenience)

Health Rating: 4 - Extreme (Cancer Causing)  
 Flammability Rating: 0 - None  
 Reactivity Rating: 0 - None  
 Contact Rating: 1 - Slight  
 Lab Protective Equip: GOGGLES; LAB COAT; VENT HOOD; PROPER GLOVES  
 Storage Color Code: Blue (Health)

#### Potential Health Effects

##### Inhalation:

Causes dryness and irritation to the respiratory tract. Symptoms may include coughing, sore throat, breathing difficulty (dyspnea), and wheezing. Excessive inhalation may cause decreased pulmonary function, lung damage and silicosis. Acute silicosis is manifested by dyspnea, fever, cough and weight loss. Severe respiratory symptoms may lead to death.

##### Ingestion:

No adverse effects expected.

##### Skin Contact:

Causes irritation with dryness and abrasion.

##### Eye Contact:

Causes irritation, redness, and pain.

##### Chronic Exposure:

Prolonged inhalation exposure may produce silicosis. Chronic symptoms include cough, dyspnea, wheezing, increased susceptibility to tuberculosis, decreased chest expansion, and repeated nonspecific chest illnesses. Progressive respiratory and cardiopulmonary impairment may be fatal. Chronic inhalation of crystalline silica is a lung cancer hazard.

##### Aggravation of Pre-existing Conditions:

Persons with pre-existing respiratory or cardiopulmonary problems may be more susceptible to the effects of this substance.

### 4. First Aid Measures

#### Inhalation:

Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

**Ingestion:**

Give several glasses of water to drink to dilute. If large amounts were swallowed, get medical advice.

**Skin Contact:**

Immediately flush skin with plenty of soap and water for at least 15 minutes. Remove contaminated clothing and shoes. Get medical attention. Wash clothing before reuse. Thoroughly clean shoes before reuse.

**Eye Contact:**

Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention immediately.

---

## 5. Fire Fighting Measures

**Fire:**

Not considered to be a fire hazard.

**Explosion:**

Not considered to be an explosion hazard.

**Fire Extinguishing Media:**

Use any means suitable for extinguishing surrounding fire.

**Special Information:**

In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode.

---

## 6. Accidental Release Measures

Ventilate area of leak or spill. Keep unnecessary and unprotected people away from area of spill. Wear appropriate personal protective equipment as specified in Section 8. Spills: Pick up and place in a suitable container for reclamation or disposal, using a method that does not generate dust.

---

## 7. Handling and Storage

Keep in a tightly closed container, stored in a cool, dry, ventilated area. Protect against physical damage. When pouring into a container of flammable liquid, ground both containers electrically to prevent a static electric spark. Containers of this material may be hazardous when empty since they retain product residues (dust, solids); observe all warnings and precautions listed for the product.

---

## 8. Exposure Controls/Personal Protection

**Airborne Exposure Limits:**

OSHA PERMISSIBLE LIMITS (PELs):

- For silica, amorphous, including natural diatomaceous earth (112926-00-8):  
(80 mg/m<sup>3</sup>) / (%SiO<sub>2</sub>), (TWA).

- For silica, crystalline, quartz (14808-60-7):  
(30mg/m<sup>3</sup>)/( %SiO<sub>2</sub> + 2), (TWA), total dust;  
(10 mg/m<sup>3</sup>)/( %SiO<sub>2</sub> + 2), (TWA), respirable fraction;  
where "%SiO<sub>2</sub>" is the percentage of crystalline silica determined by airborne samples, as defined by 29 CFR 1910.1000, Z-3.

- For silica, crystalline, tridymite (15468-32-3) or cristobalite (14464-46-1):  
Use one-half of the quartz exposure limits.

**ACGIH THRESHOLD LIMIT VALUES:**

- For silica, crystalline, quartz (14808-60-7):  
0.025 mg/m<sup>3</sup> (TWA), respirable fraction, A2 - Suspected Human Carcinogen.

- For silica, crystalline, cristobalite (14464-46-1):  
0.025 mg/m<sup>3</sup> (TWA), respirable fraction.

**Ventilation System:**

A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, *Industrial Ventilation, A Manual of Recommended Practices*, most recent edition, for details.

**Personal Respirators (NIOSH Approved):**

If the exposure limit is exceeded and engineering controls are not feasible, a half-face high efficiency particulate respirator (NIOSH type N100 filter) may be worn for up to ten times the exposure limit or the maximum use concentration specified by the appropriate regulatory agency or respirator supplier, whichever is lowest. A full-face piece high efficiency particulate respirator (NIOSH type N100 filter) may be worn up to 50 times the exposure limit, or the maximum use concentration specified by the appropriate regulatory agency or respirator supplier, whichever is lowest. If oil particles (e.g. lubricants, cutting fluids, glycerine, etc.) are present, use a NIOSH type R or P filter. For emergencies or instances where the exposure levels are not known, use a full-facepiece positive-pressure, air-supplied respirator. **WARNING:** Air-purifying respirators do not protect workers in oxygen-deficient atmospheres. Where respirators are required, you must have a written program covering the basic requirements in the OSHA respirator standard. These include training, fit testing, medical approval, cleaning, maintenance, cartridge change schedules, etc. See 29CFR1910.134 for details.

**Skin Protection:**

Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact.

**Eye Protection:**

Use chemical safety goggles and/or full face shield where dusting or splashing of solutions is possible. Maintain eye wash fountain and quick-drench facilities in work area.

---

## 9. Physical and Chemical Properties

**Appearance:**

White to gray Powder.

**Odor:**

Odorless.

**Solubility:**

Slight (0.1-1%)

**Specific Gravity:**

2.30

---

**pH:**  
No information found.  
**% Volatiles by volume @ 21C (70F):**  
0  
**Boiling Point:**  
No information found.  
**Melting Point:**  
No information found.  
**Vapor Density (Air=1):**  
Not applicable.  
**Vapor Pressure (mm Hg):**  
Not applicable.  
**Evaporation Rate (BuAc=1):**  
No information found.

## 10. Stability and Reactivity

**Stability:**  
Stable under ordinary conditions of use and storage.  
**Hazardous Decomposition Products:**  
No information found.  
**Hazardous Polymerization:**  
Will not occur.  
**Incompatibilities:**  
Reacts with hydrogen fluoride, fluorine, oxygen difluoride, chlorine trifluoride, strong acids, strong bases, and oxidizers.  
**Conditions to Avoid:**  
Moisture, extreme heat, and incompatibles.

## 11. Toxicological Information

**Toxicological Data:**  
No LD50/LC50 information found relating to normal routes of occupational exposure.  
  
Silica, Amorphous:  
- diatomaceous earth: investigated as a tumorigen.  
  
Silica, Crystalline:  
- tripoli: investigated as a tumorigen.  
- tridymite: investigated as a tumorigen and mutagen.  
- quartz: investigated as a tumorigen and mutagen.  
- cristobalite: investigated as a tumorigen.  
- fused: investigated as a tumorigen.  
  
**Carcinogenicity:**  
For Silica, Crystalline:  
- Cristobalite (14464-46-1), quartz (14808-60-7), and tridymite (15468-32-3) are listed by NTP as known to be a human carcinogen.  
- NIOSH considers cristobalite, tridymite, quartz, and tripoli (1317-95-9) to be potential occupational carcinogens.

```

-----\Cancer Lists\-----
Ingredient                ---NTP Carcinogen---
                          Known   Anticipated   IARC Category
-----
Kieselguhr, Soda Ash Flux-calcined
(68855-54-9)                No         No             None
Cristobalite (14464-46-1)  Yes        No             1
Quartz (14808-60-7)        Yes        No             1
    
```

## 12. Ecological Information

**Environmental Fate:**  
When released into the soil, this material is not expected to biodegrade. When released into water, this material is not expected to biodegrade.  
**Environmental Toxicity:**  
No information found.

## 13. Disposal Considerations

Whatever cannot be saved for recovery or recycling should be managed in an appropriate and approved waste disposal facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

## 14. Transport Information

Not regulated.

## 15. Regulatory Information

```

-----\Chemical Inventory Status - Part 1\-----
Ingredient                TSCA   EC   Japan  Australia
-----
Kieselguhr, Soda Ash Flux-calcined (68855-54-9)  Yes   Yes  No     Yes
    
```

Cristobalite (14464-46-1)	Yes	Yes	Yes	Yes
Quartz (14808-60-7)	Yes	Yes	Yes	Yes

```
-----\Chemical Inventory Status - Part 2\-----
```

Ingredient	--Canada--			
	Korea	DSL	NDSL	Phil.
Kieselguhr, Soda Ash Flux-calcined (68855-54-9)	Yes	Yes	No	Yes
Cristobalite (14464-46-1)	Yes	Yes	No	Yes
Quartz (14808-60-7)	Yes	Yes	No	Yes

```
-----\Federal, State & International Regulations - Part 1\-----
```

Ingredient	-SARA 302-		-SARA 313-	
	RQ	TPQ	List	Chemical Catg.
Kieselguhr, Soda Ash Flux-calcined (68855-54-9)	No	No	No	No
Cristobalite (14464-46-1)	No	No	No	No
Quartz (14808-60-7)	No	No	No	No

```
-----\Federal, State & International Regulations - Part 2\-----
```

Ingredient	CERCLA	-RCRA-	-TSCA-
		261.33	8 (d)
Kieselguhr, Soda Ash Flux-calcined (68855-54-9)	No	No	No
Cristobalite (14464-46-1)	No	No	No
Quartz (14808-60-7)	No	No	No

Chemical Weapons Convention: No    TSCA 12(b): No    CDTA: No  
 SARA 311/312: Acute: Yes    Chronic: Yes    Fire: No    Pressure: No  
 Reactivity: No    (Pure / Solid)

**WARNING:**  
 THIS PRODUCT CONTAINS A CHEMICAL(S) KNOWN TO THE STATE OF CALIFORNIA TO CAUSE CANCER.

**Australian Hazchem Code:** None allocated.  
**Poison Schedule:** None allocated.

**WHMIS:**  
 This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

## 16. Other Information

**NFPA Ratings:** Health: 2 Flammability: 0 Reactivity: 0

**Label Hazard Warning:**

WARNING! HARMFUL IF INHALED. CAUSES IRRITATION TO SKIN, EYES AND RESPIRATORY TRACT. MAY AFFECT LUNGS. CANCER HAZARD. CONTAINS CRYSTALLINE SILICA WHICH CAN CAUSE CANCER. Risk of cancer depends upon duration and level of exposure.

**Label Precautions:**

- Do not breathe dust.
- Keep container closed.
- Use only with adequate ventilation.
- Do not get in eyes, on skin, or on clothing.
- Wash thoroughly after handling.

**Label First Aid:**

If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes. Remove contaminated clothing and shoes. Wash clothing before reuse. In all cases, get medical attention.

**Product Use:**

Laboratory Reagent.

**Revision Information:**

MSDS Section(s) changed since last revision of document include: 8.

**Disclaimer:**

\*\*\*\*\*  
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**Prepared by:** Environmental Health & Safety  
 Phone Number: (314) 654-1600 (U.S.A.)

# FLINN SCIENTIFIC INC.

"Your Safer Source for Science Supplies"

## Material Safety Data Sheet (MSDS)

MSDS #: 225.00

Revision Date: November 25, 2002

---

### Section 1 — Chemical Product and Company Identification

---

#### Cellulose

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### Section 2 — Composition, Information on Ingredients

---

Cellulose

CAS#: 9004-34-6

---

### Section 3 — Hazards Identification

---

Off white, fibrous powder; odorless.

Irritating dust. Avoid inhalation. Substance not considered hazardous. However, not all health aspects of this substance have been thoroughly investigated.

#### FLINN AT-A-GLANCE

Health-0  
Flammability-0  
Reactivity-0  
Exposure-0  
Storage-1

0 is low hazard, 3 is high hazard

---

### Section 4 — First Aid Measures

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash with soap and water.

Internal: Give large quantities of water. Call a physician or poison control at once.

---

### Section 5 — Fire Fighting Measures

---

Combustible solid.

Dust explosions are possible. When heated to decomposition, emits acrid smoke and irritating fumes.

**Fire Fighting Instructions:** Use triclass, dry chemical fire extinguisher. Firefighters should wear PPE and SCBA with full facepiece operated in positive pressure mode.

#### NFPA CODE

None Established

---

### Section 6 — Accidental Release Measures

---

Restrict unprotected personnel from area. Sweep up, place in sealed bag or container and dispose. Ventilate area and wash spill site after material pickup is complete. See Sections 8 and 13 for further information.

---

### Section 7 — Handling and Storage

---

Flinn Suggested Chemical Storage Pattern: Organic #2. Store with alcohols, glycols, sugars, amines, amides, imines, imides.

Store in a cool dry place. Store in Flinn Chem-Saf Bag.

---

### Section 8 — Exposure Controls, Personal Protection

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron.

Use ventilation to keep airborne concentrations below exposure limits. Always wear a NIOSH-approved respirator with proper cartridges or a positive pressure, air-supplied respirator when handling this material in emergency situations (spill or fire).

Exposure guidelines: TWA 15 ppm (OSHA).



---

### Section 9 — Physical and Chemical Properties

---

Off white, fibrous powder; odorless.

Specific Gravity: 1.55

Solubility: Insoluble in water (1% or less)

Formula: (C<sub>6</sub>H<sub>10</sub>O<sub>5</sub>)<sub>n</sub>

Formula Weight: Varies

---

### Section 10 — Stability and Reactivity

---

Avoid contact with calcium oxide, bleaching powder, perchlorates, perchloric acid, sodium chlorate, fluoride, nitric acid, sodium nitrite and sodium nitrate.

Shelf life: Good, if kept dry.

---

### Section 11 — Toxicological Information

---

Acute effects: Irritating dust.

ORL-RAT LD50: N.A.

Chronic effects: N.A.

IHL-RAT LC50: N.A.

Target organs: N.A.

SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

---

### Section 12 — Ecological Information

---

Data not yet available.

---

### Section 13 — Disposal Considerations

---

Please consult with state and local regulations.

Flinn Suggested Disposal Method #26a is one option.

---

### Section 14 — Transport Information

---

Shipping Name: Not regulated

Hazard Class: N/A

UN Number: N/A

N/A = Not applicable

---

### Section 15 — Regulatory Information

---

TSCA-listed, EINECS-listed (232-674-9).

---

### Section 16 — Other Information

---

Consult your copy of the Flinn Scientific Catalog/Reference Manual for additional information about laboratory chemicals. This Material Safety Data Sheet (MSDS) is for guidance and is based upon information and tests believed to be reliable. Flinn Scientific Inc. makes no guarantee of the accuracy or completeness of the data and shall not be liable for any damages relating thereto. The data is offered solely for your consideration, investigation, and verification. Flinn Scientific Inc. assumes no legal responsibility for use or reliance upon this data.

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P.O. Box 219 Batavia IL 60510  
(800) 452-1261 Fax (866) 452-1436

# FLINN SCIENTIFIC INC.

"Your Safer Source for Science Supplies"

## Material Safety Data Sheet (MSDS)

MSDS #: 228.00

Revision Date: November 25, 2002

---

### Section 1 — Chemical Product and Company Identification

---

#### Charcoal

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### Section 2 — Composition, Information on Ingredients

---

Charcoal

Synonym: activated carbon

CAS#: 7440-44-0

---

### Section 3 — Hazards Identification

---

Black powder, granule or lump. Odorless.

Dust hazardous by inhalation.

Flammable solid as dust. Avoid any source of ignition.

#### FLINN AT-A-GLANCE

Health-1

Flammability-2

Reactivity-1

Exposure-1

Storage-2

0 is low hazard, 3 is high hazard

---

### Section 4 — First Aid Measures

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash continuously with fresh water for 15 minutes.

Internal: Rinse out mouth, give 1 to 2 cups of water or milk, induce vomiting. Call a physician or poison control at once.

---

### Section 5 — Fire Fighting Measures

---

Flammable solid as a dust.

Autoignition Temperature: 842 F

**Fire Fighting Instructions:** Use triclass, dry chemical fire extinguisher. Firefighters should wear PPE and SCBA with full facepiece operated in positive pressure mode.

#### NFPA CODE

None Established

---

### Section 6 — Accidental Release Measures

---

Restrict unprotected personnel from area. Remove all ignition sources and water. Sweep up, place in sealed bag or container and dispose. Ventilate area and wash spill site after material pickup is complete. See Sections 8 and 13 for further information.

---

### Section 7 — Handling and Storage

---

Flinn Suggested Chemical Storage Pattern: Inorganic #4. Store with hydroxides, oxides, silicates and carbonates.

Store in Flinn Chem-Saf bag, in a Flinn Saf-Stor can. Store in a cool dry place.

---

### Section 8 — Exposure Controls, Personal Protection

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron.

### Section 9 — Physical and Chemical Properties

Black powder, granule or lump odorless.

Solubility: Insoluble in water

Formula: C

Formula Weight: 12.01

Specific Gravity: 1.821-2.1

Boiling Point: 4200 C

### Section 10 — Stability and Reactivity

Avoid heat, flame and oxidizing agents.

Shelf life: Good, if kept dry.

### Section 11 — Toxicological Information

Acute effects: Irritating dust

Chronic effects: N.A.

Target organs: N.A.

ORL-RAT LD50: N.A.

IHL-RAT LC50: N.A.

SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

### Section 12 — Ecological Information

Data not yet available.

### Section 13 — Disposal Considerations

Please consult with state and local regulations.

Flinn Suggested Disposal Method #26a is one option.

### Section 14 — Transport Information

Shipping Name: Charcoal

Hazard Class: 4.2, Spontaneously combustible

UN Number: NA1361

N/A = Not applicable

### Section 15 — Regulatory Information

TSCA-listed, EINECS-listed (231-153-3).

### Section 16 — Other Information

Consult your copy of the Flinn Scientific Catalog/Reference Manual for additional information about laboratory chemicals. This Material Safety Data Sheet (MSDS) is for guidance and is based upon information and tests believed to be reliable. Flinn Scientific Inc. makes no guarantee of the accuracy or completeness of the data and shall not be liable for any damages relating thereto. The data is offered solely for your consideration, investigation, and verification. Flinn Scientific Inc. assumes no legal responsibility for use or reliance upon this data.

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(800) 452-1261 Fax (866) 452-1436

# FLINN SCIENTIFIC INC.

"Your Safer Source for Science Supplies"

## Material Safety Data Sheet (MSDS)

MSDS #: 231.00

Revision Date: March 14, 2001

---

### Section 1 — Chemical Product and Company Identification

---

#### Chlorine Water

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### Section 2 — Composition, Information on Ingredients

---

Chlorine (7782-50-5) and Water (7732-18-5)

CAS#: None established

---

### Section 3 — Hazards Identification

---

Pungent odor, light yellow liquid.

Toxic by inhalation and ingestion. Very irritating to mucous membranes. This is a weak solution of chlorine gas and water. Chlorine gas will slowly leave solution.

#### FLINN AT-A-GLANCE

Health-3  
Flammability-0  
Reactivity-2  
Exposure-3  
Storage-2

0 is low hazard, 3 is high hazard

---

### Section 4 — First Aid Measures

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash continuously with fresh water for 15 minutes.

Internal: Give no more than 1-2 cups of water for dilution. Do not induce vomiting. Call a physician or poison control at once.

---

### Section 5 — Fire Fighting Measures

---

Non flammable liquid.

**Fire Fighting Instructions:** Use triclass, dry chemical fire extinguisher. Firefighters should wear PPE and SCBA with full facepiece operated in positive pressure mode.

#### NFPA CODE

None Established

---

### Section 6 — Accidental Release Measures

---

Evacuate area. Open all windows and ventilate as much as possible. If bottle is left open all the chlorine will eventually leave the container. Absorb with sand or absorbent material; after all the chlorine is released, deposit in sealed bag or container.

See Sections 8 and 13 for further information.

---

### Section 7 — Handling and Storage

---

Flinn Suggested Chemical Storage Pattern: Inorganic #2. Store with acetates, halides, sulfates, sulfites, thiosulfates and phosphates.

Use and dispense in a hood. Keep container tightly closed. Store in Flinn Chem Saf Bag and then inside Flinn Saf Stor Can.

---

### Section 8 — Exposure Controls, Personal Protection

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron.

Use ventilation to keep airborne concentrations below exposure limits. Always wear a NIOSH-approved respirator with proper cartridges or a positive pressure, air-supplied respirator when handling this material in emergency situations (spill or fire).

Exposure guidelines: TWA 0.5 ppm, STEL 1 ppm (OSHA, NIOSH).

---

### Section 9 — Physical and Chemical Properties

---

Water saturated with chlorine gas. Water 99+% chlorine 0.4%

---

### Section 10 — Stability and Reactivity

---

Avoid contact with organic materials (such as ether, turpentine, hydrocarbons), ammonia and powdered metals.  
Shelf life: Poor, perhaps six months at best.

---

### Section 11 — Toxicological Information

---

Acute effects: Very irritating.  
Chronic effects: N.A.  
Target organs: N.A.

ORL-RAT LD50: N.A.  
IHL-RAT LC50: N.A.  
SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

---

### Section 12 — Ecological Information

---

Data not yet available.

---

### Section 13 — Disposal Considerations

---

Allow the chlorine water to stand in an open container in a hood in a well-ventilated, protected area. The chlorine will leave the water and the container. The remaining water (now effectively degassed) can be put down the drain.

---

### Section 14 — Transport Information

---

Shipping Name: Not regulated  
Hazard Class: N/A  
UN Number: N/A

N/A = Not applicable

---

### Section 15 — Regulatory Information

---

Not listed.

---

### Section 16 — Other Information

---

Consult your copy of the Flinn Scientific Catalog/Reference Manual for additional information about laboratory chemicals. This Material Safety Data Sheet (MSDS) is for guidance and is based upon information and tests believed to be reliable. Flinn Scientific Inc. makes no guarantee of the accuracy or completeness of the data and shall not be liable for any damages relating thereto. The data is offered solely for your consideration, investigation, and verification. Flinn Scientific Inc. assumes no legal responsibility for use or reliance upon this data.

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(800) 452-1261 Fax (866) 452-1436

# FLINN SCIENTIFIC INC.

"Your Safer Source for Science Supplies"

## Material Safety Data Sheet (MSDS)

MSDS #: 244.00

Revision Date: November 25, 2002

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### Section 1 — Chemical Product and Company Identification

---

#### Citric Acid

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### Section 2 — Composition, Information on Ingredients

---

Citric Acid monohydrate and/or Citric Acid anhydrous

Synonym: 2-hydroxy-1,2,3-propanetricarboxylic acid

CAS#: 77-92-9 (anhydrous) or 5949-29-1 (monohydrate)

---

### Section 3 — Hazards Identification

---

White granules. Odorless.

A severe eye and moderate skin irritant.

#### FLINN AT-A-GLANCE

Health-0

Flammability-1

Reactivity-0

Exposure-1

Storage-1

0 is low hazard, 3 is high hazard

---

### Section 4 — First Aid Measures

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash continuously with fresh water for 15 minutes.

Internal: Give large quantities of water. Call a physician or poison control at once.

---

### Section 5 — Fire Fighting Measures

---

Combustible solid.

When heated to decomposition, emits acrid smoke and fumes.

**Fire Fighting Instructions:** Use triclass, dry chemical fire extinguisher. Firefighters should wear PPE and SCBA with full facepiece operated in positive pressure mode.

#### NFPA CODE

None Established

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### Section 6 — Accidental Release Measures

---

Restrict unprotected personnel from area. Sweep up, place in sealed bag or container and dispose. Ventilate area and wash spill site after material pickup is complete. See Sections 8 and 13 for further information.

---

### Section 7 — Handling and Storage

---

Flinn suggested chemical storage pattern: Organic #1. Store with acids, anhydrides and peracids.

Store in a cool dry place. Store in a Flinn Chem Saf Bag.

---

### Section 8 — Exposure Controls, Personal Protection

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron.

Use exhaust ventilation to keep airborne concentrations low.

### Section 9 — Physical and Chemical Properties

White granules. Odorless.  
Solubility: Water soluble.  
Formula: C<sub>6</sub>H<sub>8</sub>O<sub>7</sub>  
Formula Weight: 192.14

Specific Gravity: 1.54 (anhydrous)

### Section 10 — Stability and Reactivity

Avoid contact with oxidizers, bases and reducing agents.  
Shelf life: Substance efflorescent.

### Section 11 — Toxicological Information

Acute effects: Severe eye irritant  
Chronic effects: N.A.  
Target organs: N.A.

ORL-RAT LD50: N.A.  
IHL-RAT LC50: N.A.  
SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

### Section 12 — Ecological Information

Data not yet available.

### Section 13 — Disposal Considerations

Please consult with state and local regulations.  
Flinn Suggested Disposal Method #26a is one option.

### Section 14 — Transport Information

Shipping Name: Not regulated  
Hazard Class: N/A  
UN Number: N/A

N/A = Not applicable

### Section 15 — Regulatory Information

TSCA-listed, EINECS-listed (201-069-1).

### Section 16 — Other Information

Consult your copy of the Flinn Scientific Catalog/Reference Manual for additional information about laboratory chemicals. This Material Safety Data Sheet (MSDS) is for guidance and is based upon information and tests believed to be reliable. Flinn Scientific Inc. makes no guarantee of the accuracy or completeness of the data and shall not be liable for any damages relating thereto. The data is offered solely for your consideration, investigation, and verification. Flinn Scientific Inc. assumes no legal responsibility for use or reliance upon this data.

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# FLINN SCIENTIFIC INC.

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## Material Safety Data Sheet (MSDS)

MSDS #: 255.00

Revision Date: November 25, 2002

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### Section 1 — Chemical Product and Company Identification

---

#### Cobalt Chloride

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### Section 2 — Composition, Information on Ingredients

---

Cobalt Chloride

Synonym: cobalt (II) chloride, cobaltous chloride, cobalt dichloride

CAS#: 7791-13-1

---

### Section 3 — Hazards Identification

---

Damp, red crystal. Odorless.

Irritant to body tissues. Moderately toxic by ingestion. Prolonged exposure may cease production of red blood cells. Avoid ingestion, inhalation and skin absorption. Cobalt and cobalt compounds are possible carcinogens.

#### FLINN AT-A-GLANCE

Health-3  
Flammability-0  
Reactivity-0  
Exposure-3  
Storage-0

0 is low hazard, 3 is high hazard

---

### Section 4 — First Aid Measures

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash continuously with fresh water for 15 minutes.

Internal: Give large quantities of water. Call a physician or poison control at once.

---

### Section 5 — Fire Fighting Measures

---

Non flammable solid.

When heated to decomposition, emits toxic hydrogen chloride gas and cobalt fumes.

**Fire Fighting Instructions:** Use triclass, dry chemical fire extinguisher. Firefighters should wear PPE and SCBA with full facepiece operated in positive pressure mode.

#### NFPA CODE

None Established

---

### Section 6 — Accidental Release Measures

---

Gather up material in a pile (do not sweep). Place in a suitable container. Use the disposal method listed on the right.

Restrict unprotected personnel from area. Sweep up, place in sealed bag or container and dispose. Ventilate area and wash spill site after material pickup is complete. See Sections 8 and 13 for further information.

---

### Section 7 — Handling and Storage

---

Flinn Suggested Chemical Storage Pattern: Inorganic #2. Store with acetates, halides, sulfates, sulfites, thiosulfates and phosphates. Store in a cool dry place. Use and dispense in a hood.

---

### Section 8 — Exposure Controls, Personal Protection

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron.

Use ventilation to keep airborne concentrations below exposure limits. Always wear a NIOSH-approved respirator with proper cartridges or a positive pressure, air-supplied respirator when handling this material in emergency situations (spill or fire).

Exposure guidelines: TWA 0.05 mg/m<sup>3</sup> (NIOSH)



---

### Section 9 — Physical and Chemical Properties

---

Damp, red crystal. Odorless.  
Solubility: Water soluble.  
Formula:  $\text{CoCl}_2 \cdot 6\text{H}_2\text{O}$   
Formula Weight: 237.95

Specific Gravity: 1.92  
Melting Point: 230 F

---

### Section 10 — Stability and Reactivity

---

Avoid contact with moisture, oxidizers, and alkali metals.  
Shelf life: Indefinite.

---

### Section 11 — Toxicological Information

---

Acute effects: Toxic, irritant, possible sensitizer  
Chronic effects: Possible carcinogen, mutagen  
Target organs: N.A.

ORL-RAT LD50: 766 mg/Kg  
IHL-RAT LC50: N.A.  
SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

---

### Section 12 — Ecological Information

---

Data not yet available.

---

### Section 13 — Disposal Considerations

---

Please consult with state and local regulations.  
Flinn Suggested Disposal Method #27f is one option.

---

### Section 14 — Transport Information

---

Shipping Name: Not regulated  
Hazard Class: N/A  
UN Number: N/A

N/A = Not applicable

---

### Section 15 — Regulatory Information

---

TSCA-listed, EINECS-listed (231-589-4).

---

### Section 16 — Other Information

---

Consult your copy of the Flinn Scientific Catalog/Reference Manual for additional information about laboratory chemicals. This Material Safety Data Sheet (MSDS) is for guidance and is based upon information and tests believed to be reliable. Flinn Scientific Inc. makes no guarantee of the accuracy or completeness of the data and shall not be liable for any damages relating thereto. The data is offered solely for your consideration, investigation, and verification. Flinn Scientific Inc. assumes no legal responsibility for use or reliance upon this data.

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# FLINN SCIENTIFIC INC.

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## Material Safety Data Sheet (MSDS)

MSDS #: 256.00

Revision Date: November 25, 2002

---

### Section 1 — Chemical Product and Company Identification

---

#### Cobalt Nitrate

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### Section 2 — Composition, Information on Ingredients

---

Cobalt Nitrate

Synonym: cobalt (II) nitrate, cobaltous nitrate, cobalt dinitrate

CAS#: 10026-22-9

---

### Section 3 — Hazards Identification

---

Small, red flakes; slight nitric acid odor.

Moderately toxic by ingestion or inhalation. Irritant to body tissues. Avoid breathing dust. Causes burns. May cause an allergic skin reaction. Cobalt and cobalt compounds are possible carcinogens. Severe fire hazard in contact with organic materials.

#### FLINN AT-A-GLANCE

Health-3  
Flammability-0  
Reactivity-3  
Exposure-3  
Storage-1

0 is low hazard, 3 is high hazard

---

### Section 4 — First Aid Measures

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash continuously with fresh water for 15 minutes.

Internal: Give large quantities of water. Call a physician or poison control at once.

---

### Section 5 — Fire Fighting Measures

---

Non flammable, non combustible solid.

Strong oxidizing material, severe fire hazard in contact with organic materials. When heated to decomposition, emits toxic fumes of NO<sub>x</sub> and Co.

**Fire Fighting Instructions:** Use triclass, dry chemical fire extinguisher. Firefighters should wear PPE and SCBA with full facepiece operated in positive pressure mode.

#### NFPA CODE

None Established

---

### Section 6 — Accidental Release Measures

---

Restrict unprotected personnel from area. Sweep up, place in sealed bag or container and dispose. Ventilate area and wash spill site after material pickup is complete. See Sections 8 and 13 for further information.

---

### Section 7 — Handling and Storage

---

Flinn Suggested Chemical Storage Pattern: Inorganic #3. Store with amides, nitrates and nitrites.

Deliquescent, store in Flinn Chem-Saf Bag. Store in a cool dry place. Use and dispense in a hood.

---

### Section 8 — Exposure Controls, Personal Protection

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron. Use ventilation to keep airborne concentrations below exposure limits. Always wear a NIOSH-approved respirator with proper cartridges or a positive pressure, air-supplied respirator when handling this material in emergency situations (spill or fire).

Exposure guidelines: TWA 0.05 mg/m<sup>3</sup> STEL 0.1 mg/m<sup>3</sup> (ACGIH)

### Section 9 — Physical and Chemical Properties

Small, red flakes, slight nitric acid odor.  
Solubility: Soluble in most organic solvents.  
Formula:  $\text{Co}(\text{NO}_3)_2 \cdot 6\text{H}_2\text{O}$   
Formula Weight: 291.05

Specific Gravity: 1.88  
Melting Point: 56 C

### Section 10 — Stability and Reactivity

Avoid contact with reducers, organic materials, heat and moisture.  
Shelf life: Poor; deliquescent.

### Section 11 — Toxicological Information

Acute effects: Harmful dust, irritant  
Chronic effects: N.A.  
Target organs: Lungs, thyroid

ORL-RAT LD50: 691 mg/kg  
IHL-RAT LC50: N.A.  
SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

### Section 12 — Ecological Information

Data not yet available.

### Section 13 — Disposal Considerations

Please consult with state and local regulations.  
Flinn Suggested Disposal Method #27f is one option.

### Section 14 — Transport Information

Shipping Name: Nitrates, Inorganic, n.o.s.  
Hazard Class: 5.1, Oxidizer  
UN Number: UN1477

N/A = Not applicable

### Section 15 — Regulatory Information

TSCA-listed, EINECS-listed (233-402-1), RCRA code D001.

### Section 16 — Other Information

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# FLINN SCIENTIFIC INC.

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## Material Safety Data Sheet (MSDS)

MSDS #: 258.00

Revision Date: March 14, 2001

---

### Section 1 — Chemical Product and Company Identification

---

#### Cobalt Sulfate

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### Section 2 — Composition, Information on Ingredients

---

Cobalt Sulfate

Synonym: cobalt (II) sulfate, cobaltous sulfate.

CAS#: 10026-24-1

---

### Section 3 — Hazards Identification

---

Red-pink crystals. Odorless.

Moderately toxic by ingestion or inhalation. Irritant to body tissues. May cause an allergic skin reaction. Cobalt and cobalt compounds are possible carcinogens. Avoid all body tissue contact.

#### FLINN AT-A-GLANCE

Health-3  
Flammability-0  
Reactivity-0  
Exposure-3  
Storage-0

0 is low hazard, 3 is high hazard

---

### Section 4 — First Aid Measures

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash continuously with fresh water for 15 minutes.

Internal: Give large quantities of water. Call a physician or poison control at once.

---

### Section 5 — Fire Fighting Measures

---

Non flammable solid.

When heated to decomposition, may produce toxic fumes of Co and SO<sub>x</sub>.

**Fire Fighting Instructions:** Use triclass, dry chemical fire extinguisher. Firefighters should wear PPE and SCBA with full facepiece operated in positive pressure mode.

#### NFPA CODE

None established

---

### Section 6 — Accidental Release Measures

---

Restrict unprotected personnel from area. Sweep up, place in sealed bag or container and dispose. Ventilate area and wash spill site after material pickup is complete. See Sections 8 and 13 for further information.

---

### Section 7 — Handling and Storage

---

Flinn Suggested Chemical Storage Pattern: Inorganic #2. Store with acetates, halides, sulfates, sulfites, thiosulfates and phosphates. Use and dispense in a hood.

---

### Section 8 — Exposure Controls, Personal Protection

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron.

Use ventilation to keep airborne concentrations below exposure limits. Always wear a NIOSH-approved respirator with proper cartridges or a positive pressure, air-supplied respirator when handling this material in emergency situations (spill or fire).

Exposure guidelines: TWA 0.05 mg/m<sup>3</sup> STEL 0.1 mg/m<sup>3</sup> (ACGIH, ACGIH)

### Section 9 — Physical and Chemical Properties

Red-pink crystals. Odorless.

Solubility: Water soluble, slightly soluble in alcohols.

Formula:  $\text{CoSO}_4 \cdot 7\text{H}_2\text{O}$

Formula Weight: 281.12

Specific Gravity: 1.948

Melting Point: 420 C

### Section 10 — Stability and Reactivity

Avoid contact with moisture.

Shelf Life: Indefinite.

### Section 11 — Toxicological Information

Acute effects: Irritant

Chronic effects: N.A.

Target organs: Lungs and thyroid

ORL-RAT LD50: 768 mg/kg

IHL-RAT LC50:

SKN-RBT LD50:

N.A. = Not available, not all health aspects of this substance have been fully investigated.

### Section 12 — Ecological Information

Data not yet available.

### Section 13 — Disposal Considerations

Please consult with state and local regulations.

Flinn Suggested Disposal Method #27f is one option.

### Section 14 — Transport Information

Shipping Name: Not regulated

Hazard Class: N/A

UN Number: N/A

N/A = Not applicable

### Section 15 — Regulatory Information

TSCA-listed, EINECS-listed (233-334-2).

### Section 16 — Other Information

Consult your copy of the Flinn Scientific Catalog/Reference Manual for additional information about laboratory chemicals. This Material Safety Data Sheet (MSDS) is for guidance and is based upon information and tests believed to be reliable. Flinn Scientific Inc. makes no guarantee of the accuracy or completeness of the data and shall not be liable for any damages relating thereto. The data is offered solely for your consideration, investigation, and verification. Flinn Scientific Inc. assumes no legal responsibility for use or reliance upon this data.

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# FLINN SCIENTIFIC INC.

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## Material Safety Data Sheet (MSDS)

MSDS #: 263.00

Revision Date: November 25, 2002

---

### Section 1 — Chemical Product and Company Identification

---

#### Congo Red

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### Section 2 — Composition, Information on Ingredients

---

Congo Red

Synonym: direct red 28, C.I. 22120

CAS#: 573-58-0

---

### Section 3 — Hazards Identification

---

Brownish-red powder. Odorless.

Body tissue irritant, eye irritant. Avoid body tissue contact. This material, if ingested, inhaled, absorbed through the skin, may metabolize to Benzidine, a probable carcinogen.

#### FLINN AT-A-GLANCE

Health-2  
Flammability-0  
Reactivity-0  
Exposure-2  
Storage-0

0 is low hazard, 3 is high hazard

---

### Section 4 — First Aid Measures

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash continuously with fresh water for 15 minutes.

Internal: Give large quantities of water. Call a physician or poison control at once.

---

### Section 5 — Fire Fighting Measures

---

Non flammable solid.

When heated to decomposition, emits toxic fumes of CO, CO<sub>2</sub>, and NO<sub>x</sub>, SO<sub>x</sub>.

**Fire Fighting Instructions:** Use triclass, dry chemical fire extinguisher. Firefighters should wear PPE and SCBA with full facepiece operated in positive pressure mode.

#### NFPA CODE

None Established

---

### Section 6 — Accidental Release Measures

---

Restrict unprotected personnel from area. Sweep up, place in sealed bag or container and dispose. Ventilate area and wash spill site after material pickup is complete. See Sections 8 and 13 for further information.

---

### Section 7 — Handling and Storage

---

Flinn Suggested Chemical Storage Pattern: Organic #9. Store with dyes, indicators, and stains.

Store in a cool dry place.

---

### Section 8 — Exposure Controls, Personal Protection

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron.

Use exhaust ventilation to keep airborne concentrations low.

### Section 9 — Physical and Chemical Properties

Brownish-red powder. Odorless.  
Solubility: Soluble in water.  
Formula: C<sub>32</sub>H<sub>22</sub>N<sub>6</sub>Na<sub>2</sub>O<sub>6</sub>S<sub>2</sub>  
Formula Weight: 696.67

### Section 10 — Stability and Reactivity

Avoid contact with strong oxidizers.  
Shelf life: Indefinite

### Section 11 — Toxicological Information

Acute effects: Toxic, eye irritant	ORL-RAT LD50: 15200 mg/kg
Chronic effects: N.A.	IHL-RAT LC50: N.A.
Target organs: N.A.	SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

### Section 12 — Ecological Information

Data not yet available.

### Section 13 — Disposal Considerations

Please consult with state and local regulations.  
Flinn Suggested Disposal Method #26a is one option.

### Section 14 — Transport Information

Shipping Name: Not regulated  
Hazard Class: N/A  
UN Number: N/A

N/A = Not applicable

### Section 15 — Regulatory Information

TSCA-listed, EINECS-listed (209-358-4).

### Section 16 — Other Information

Consult your copy of the Flinn Scientific Catalog/Reference Manual for additional information about laboratory chemicals. This Material Safety Data Sheet (MSDS) is for guidance and is based upon information and tests believed to be reliable. Flinn Scientific Inc. makes no guarantee of the accuracy or completeness of the data and shall not be liable for any damages relating thereto. The data is offered solely for your consideration, investigation, and verification. Flinn Scientific Inc. assumes no legal responsibility for use or reliance upon this data.

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# FLINN SCIENTIFIC INC.

"Your Safer Source for Science Supplies"

## Material Safety Data Sheet (MSDS)

MSDS #: 278.00

Revision Date: September 20, 2004

---

### Section 1 — Chemical Product and Company Identification

---

## Copper(II) Acetate

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### Section 2 — Composition, Information on Ingredients

---

Copper(II) acetate, monohydrate

Synonyms: cupric acetate

CAS#: 6046-93-1

---

### Section 3 — Hazards Identification

---

Dark green crystals or powder. Odorless.

Moderately toxic by ingestion.

Body tissue irritant. Avoid all body tissue contact.

#### FLINN AT-A-GLANCE

Health-2

Flammability-0

Reactivity-1

Exposure-1

Storage-0

0 is low hazard, 3 is high hazard

---

### Section 4 — First Aid Measures

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash continuously with fresh water for 15 minutes.

Internal: Give large quantities of water. Call a physician or poison control at once.

---

### Section 5 — Fire Fighting Measures

---

Non flammable solid.

#### NFPA CODE

None

Established

---

### Section 6 — Accidental Release Measures

---

Restrict unprotected personnel from area. Sweep up, place in sealed bag or container and dispose. Ventilate area and wash spill site after material pickup is complete. See Sections 8 and 13 for further information.

---

### Section 7 — Handling and Storage

---

Flinn Suggested Chemical Storage Pattern: Inorganic #2. Store with acetates, halides, sulfates, sulfites, thiosulfates and phosphates. Use and dispense in a hood.

---

### Section 8 — Exposure Controls, Personal Protection

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron.

Use ventilation to keep airborne concentrations below exposure limits. Always wear a NIOSH-approved respirator with proper cartridges or a positive pressure, air-supplied respirator when handling this material in emergency situations (spill or fire).



# FLINN SCIENTIFIC INC.

"Your Safer Source for Science Supplies"

## Material Safety Data Sheet (MSDS)

Copper(II) Acetate

MSDS #: 278.00

Revision Date: September 20, 2004

### Section 9 — Physical and Chemical Properties

Dark green crystals or powder. Odorless.  
Solubility: Soluble in water and alcohol.  
Formula:  $(\text{CH}_3\text{CO}_2)_2\text{Cu} \cdot \text{H}_2\text{O}$   
Formula Weight: 199.65

Specific Gravity: 1.88  
Melting Point: 115 C

### Section 10 — Stability and Reactivity

Avoid contact with strong oxidizers.  
Shelf Life: Indefinite.

### Section 11 — Toxicological Information

Acute effects: Harmful dust, irritant, gastrointestinal disturbances  
Chronic effects: N.A.  
Target organs: N.A.

ORL-RAT LD50: 710 mg/kg  
IHL-RAT LC50: N.A.  
SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

### Section 12 — Ecological Information

Data not yet available.

### Section 13 — Disposal Considerations

Please consult with state and local regulations.  
Flinn Suggested Disposal Method #26a is one option.

### Section 14 — Transport Information

Shipping Name: Not regulated  
Hazard Class: N/A  
UN Number: N/A

N/A = Not applicable

### Section 15 — Regulatory Information

TSCA-listed, EINECS-listed (205-553-3).

### Section 16 — Other Information

Consult your copy of the Flinn Scientific Catalog/Reference Manual for additional information about laboratory chemicals. This Material Safety Data Sheet (MSDS) is for guidance and is based upon information and tests believed to be reliable. Flinn Scientific Inc. makes no guarantee of the accuracy or completeness of the data and shall not be liable for any damages relating thereto. The data is offered solely for your consideration, investigation, and verification. Flinn Scientific Inc. assumes no legal responsibility for use or reliance upon this data.

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(800) 452-1261 Fax (866) 452-1436

# FLINN SCIENTIFIC INC.

"Your Safer Source for Science Supplies"

## Material Safety Data Sheet (MSDS)

MSDS #: 279.00

Revision Date: September 20, 2004

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### Section 1 — Chemical Product and Company Identification

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## Copper(II) Bromide

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

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### Section 2 — Composition, Information on Ingredients

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Copper(II) bromide

Synonym: cupric bromide, copper dibromide

CAS#: 7789-45-9

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### Section 3 — Hazards Identification

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Grayish to black, crystalline powder. Bromine-like odor.

Mild tissue irritant. Avoid contact with eyes and mucous membranes.

#### FLINN AT-A-GLANCE

Health-1

Flammability-0

Reactivity-0

Exposure-1

Storage-1

0 is low hazard, 3 is high hazard

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### Section 4 — First Aid Measures

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Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash continuously with fresh water for 15 minutes.

Internal: Give large quantities of water. Call a physician or poison control at once.

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### Section 5 — Fire Fighting Measures

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Non flammable solid.

Releases toxic fumes of Br upon decomposition.

**Fire Fighting Instructions:** Use triclass, dry chemical fire extinguisher. Firefighters should wear PPE and SCBA with full facepiece operated in positive pressure mode.

#### NFPA CODE

None

Established

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### Section 6 — Accidental Release Measures

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Restrict unprotected personnel from area. Sweep up, place in sealed bag or container and dispose. Ventilate area and wash spill site after material pickup is complete. See Sections 8 and 13 for further information.

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### Section 7 — Handling and Storage

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Flinn Suggested Chemical Storage Pattern: Inorganic #2. Store with acetates, halides, sulfates, sulfites, thiosulfates and phosphates. Moisture sensitive material. Deliquescent, store in Flinn Chem-Saf Bag. Use and dispense in a hood.

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### Section 8 — Exposure Controls, Personal Protection

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Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron.

Use ventilation to keep airborne concentrations below exposure limits. Always wear a NIOSH-approved respirator with proper cartridges or a positive pressure, air-supplied respirator when handling this material in emergency situations (spill or fire). Exposure guidelines: TWA 0.1 mg/m<sup>3</sup> (OSHA)

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"Your Safer Source for Science Supplies"

## Material Safety Data Sheet (MSDS)

Copper(II) Bromide

MSDS #: 279.00

Revision Date: September 20, 2004

### Section 9 — Physical and Chemical Properties

Grayish to black, crystalline powder. Bromine-like odor.  
Solubility: Soluble: water, alcohol and acetone.  
Formula: CuBr<sub>2</sub>  
Formula Weight: 223.27

Specific Gravity: 4.77  
Melting Point: 498 C

### Section 10 — Stability and Reactivity

Avoid contact with moisture and alkali metals.  
Shelf life: Poor; hygroscopic.

### Section 11 — Toxicological Information

Acute effects: Irritant, gastrointestinal disturbances  
Chronic effects: N.A.  
Target organs: N.A.

ORL-RAT LD50: N.A.  
IHL-RAT LC50: N.A.  
SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

### Section 12 — Ecological Information

Data not yet available.

### Section 13 — Disposal Considerations

Please consult with state and local regulations.  
Flinn Suggested Disposal Method #26a is one option.

### Section 14 — Transport Information

Shipping Name: Not regulated  
Hazard Class: N/A  
UN Number: N/A

N/A = Not applicable

### Section 15 — Regulatory Information

TSCA-listed, EINECS-listed (232-167-2).

### Section 16 — Other Information

Consult your copy of the Flinn Scientific Catalog/Reference Manual for additional information about laboratory chemicals. This Material Safety Data Sheet (MSDS) is for guidance and is based upon information and tests believed to be reliable. Flinn Scientific Inc. makes no guarantee of the accuracy or completeness of the data and shall not be liable for any damages relating thereto. The data is offered solely for your consideration, investigation, and verification. Flinn Scientific Inc. assumes no legal responsibility for use or reliance upon this data.

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P.O. Box 219 Batavia IL 60510  
(800) 452-1261 Fax (866) 452-1436

---

### Section 1 — Chemical Product and Company Identification

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## Copper(II) Carbonate

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

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### Section 2 — Composition, Information on Ingredients

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Copper(II) carbonate

Synonym: cupric carbonate, malachite

CAS#: 12069-69-1

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### Section 3 — Hazards Identification

---

Green to blue powder or dark-green crystals. Odorless.

Slightly toxic by ingestion and inhalation. Irritant to skin, eyes, and mucous membranes. Avoid all body tissue contact.

#### FLINN AT-A-GLANCE

Health-1

Flammability-0

Reactivity-0

Exposure-1

Storage-0

0 is low hazard, 3 is high hazard

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### Section 4 — First Aid Measures

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Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash continuously with fresh water for 15 minutes.

Internal: Give large quantities of water. Call a physician or poison control at once.

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### Section 5 — Fire Fighting Measures

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Non flammable, non combustible solid.

#### NFPA CODE

None established

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### Section 6 — Accidental Release Measures

---

Restrict unprotected personnel from area. Sweep up, place in sealed bag or container and dispose. Ventilate area and wash spill site after material pickup is complete. See Sections 8 and 13 for further information.

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### Section 7 — Handling and Storage

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Flinn Suggested Chemical Storage Pattern: Inorganic #4. Store with hydroxides, oxides, silicates and carbonates.

Store in a cool dry place. Store in the dark. Use and dispense in a hood.

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### Section 8 — Exposure Controls, Personal Protection

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Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron.

Use exhaust ventilation to keep airborne concentrations low.

# FLINN SCIENTIFIC INC.

"Your Safer Source for Science Supplies"

## Material Safety Data Sheet (MSDS)

Copper(II) Carbonate

MSDS #: 280.00

Revision Date: September 20, 2004

### Section 9 — Physical and Chemical Properties

Green to blue powder or dark-green crystals. Odorless.  
Solubility: Insoluble in water; soluble in acids.  
Decomposes at 200 C  
Formula:  $\text{Cu}_2(\text{OH})_2\text{CO}_3$   
Formula Weight: 221.11

Specific Gravity: 4.0

### Section 10 — Stability and Reactivity

Avoid contact with acids and oxidizing agents.  
Shelf life: Indefinite.

### Section 11 — Toxicological Information

Acute effects: Toxic, irritant, gastrointestinal disturbances  
Chronic effects: N.A.  
Target organs: N.A.

ORL-RAT LD50: 1350 mg/kg  
IHL-RAT LC50: N.A.  
SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

### Section 12 — Ecological Information

Data not yet available.

### Section 13 — Disposal Considerations

Please consult with state and local regulations.  
Flinn Suggested Disposal Method #26a is one option.

### Section 14 — Transport Information

Shipping Name: Not regulated  
Hazard Class: N/A  
UN Number: N/A

N/A = Not applicable

### Section 15 — Regulatory Information

TSCA-listed, EINECS-listed (235-113-6).

### Section 16 — Other Information

Consult your copy of the Flinn Scientific Catalog/Reference Manual for additional information about laboratory chemicals. This Material Safety Data Sheet (MSDS) is for guidance and is based upon information and tests believed to be reliable. Flinn Scientific Inc. makes no guarantee of the accuracy or completeness of the data and shall not be liable for any damages relating thereto. The data is offered solely for your consideration, investigation, and verification. Flinn Scientific Inc. assumes no legal responsibility for use or reliance upon this data.

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---

### Section 1 — Chemical Product and Company Identification

---

## Copper(II) Chloride, Anhydrous

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### Section 2 — Composition, Information on Ingredients

---

Copper(II) chloride, anhydrous

Synonym: cupric chloride, copper dichloride

CAS#: 7447-39-4

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### Section 3 — Hazards Identification

---

Olive-tan powder or crystals. Slight vanilla odor.

Highly toxic by ingestion and inhalation. Irritant. Avoid all body tissue contact.

#### FLINN AT-A-GLANCE

Health-3

Flammability-0

Reactivity-1

Exposure-1

Storage-1

0 is low hazard, 3 is high hazard

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### Section 4 — First Aid Measures

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash continuously with fresh water for 15 minutes.

Internal: Rinse out mouth, give 1 to 2 cups of water or milk, induce vomiting. After vomiting, give mixture of 2 Tbs. of activated charcoal mixed with one cup of water. Call a physician or poison control at once.

---

### Section 5 — Fire Fighting Measures

---

Non flammable solid.

When heated to decomposition, emits toxic fumes of Cl.

Fire Fighting Instructions: Use triclass, dry chemical fire extinguisher. Firefighters should wear PPE and SCBA with full facepiece operated in positive pressure mode.

#### NFPA CODE

None

Established

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### Section 6 — Accidental Release Measures

---

Restrict unprotected personnel from area. Sweep up, place in sealed bag or container and dispose. Ventilate area and wash spill site after material pickup is complete. See Sections 8 and 13 for further information.

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### Section 7 — Handling and Storage

---

Flinn Suggested Chemical Storage Pattern: Inorganic #2. Store with acetates, halides, sulfates, sulfites, thiosulfates and phosphates.

Deliquescent, store in Flinn Chem-Saf Bag. Use and dispense in a hood.

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### Section 8 — Exposure Controls, Personal Protection

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron.

Use ventilation to keep airborne concentrations below exposure limits. Always wear a NIOSH-approved respirator with proper cartridges or a positive pressure, air-supplied respirator when handling this material in emergency situations (spill or fire).

# FLINN SCIENTIFIC INC.

"Your Safer Source for Science Supplies"

## Material Safety Data Sheet (MSDS)

Copper(II) Chloride, Anhydrous

MSDS #: 281.00

Revision Date: September 20, 2004

### Section 9 — Physical and Chemical Properties

Olive-tan powder or crystals. Slight vanilla odor.

Solubility: Water soluble and alcohol.

Formula: CuCl<sub>2</sub>

Formula Weight: 134.45

Specific Gravity: 3.4

Melting Point: 620 C

### Section 10 — Stability and Reactivity

Avoid contact with moisture and alkali metals.

Shelf life: Poor; deliquescent.

### Section 11 — Toxicological Information

Acute effects: Toxic, irritant, gastrointestinal disturbances

Chronic effects: N.A.

Target organs: N.A.

ORL-RAT LD50: 140 mg/kg

IHL-RAT LC50: N.A.

SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

### Section 12 — Ecological Information

Data not yet available.

### Section 13 — Disposal Considerations

Please consult with state and local regulations.

Flinn Suggested Disposal Method #26a is one option.

### Section 14 — Transport Information

Shipping Name: Copper Chloride

Hazard Class: 8, Corrosive

UN Number: UN2802

N/A = Not applicable

### Section 15 — Regulatory Information

TSCA-listed, EINECS-listed (231-210-2).

### Section 16 — Other Information

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### Section 1 — Chemical Product and Company Identification

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## Copper(II) Chloride, Dihydrate

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

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### Section 2 — Composition, Information on Ingredients

---

Copper (II) chloride, dihydrate

Synonym: Cupric chloride, copper dichloride

CAS#: 10125-13-0

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### Section 3 — Hazards Identification

---

Light blue/green powder or crystals. Odorless.

Highly toxic by ingestion and inhalation. Irritant. Avoid all body tissue contact.

#### FLINN AT-A-GLANCE

Health-3

Flammability-0

Reactivity-1

Exposure-1

Storage-1

0 is low hazard, 3 is high hazard

---

### Section 4 — First Aid Measures

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash continuously with fresh water for 15 minutes.

Internal: Rinse out mouth, give 1 to 2 cups of water or milk, induce vomiting. After vomiting, give mixture of 2 Tbs. of activated charcoal mixed with one cup of water. Call a physician or poison control at once.

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### Section 5 — Fire Fighting Measures

---

Non flammable solid.

When heated to decomposition, emits toxic fumes of Cl.

**Fire Fighting Instructions:** Use triclass, dry chemical fire extinguisher. Firefighters should wear PPE and SCBA with full facepiece operated in positive pressure mode.

#### NFPA CODE

None

Established

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### Section 6 — Accidental Release Measures

---

Restrict unprotected personnel from area. Sweep up, place in sealed bag or container and dispose. Ventilate area and wash spill site after material pickup is complete. See Sections 8 and 13 for further information.

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### Section 7 — Handling and Storage

---

Flinn Suggested Chemical Storage Pattern: Inorganic #2. Store with acetates, halides, sulfates, sulfites, thiosulfates and phosphates.

Deliquescent, store in Flinn Chem-Saf Bag. Use and dispense in a hood.

---

### Section 8 — Exposure Controls, Personal Protection

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron.

Use ventilation to keep airborne concentrations below exposure limits. Always wear a NIOSH-approved respirator with proper cartridges or a positive pressure, air-supplied respirator when handling this material in emergency situations (spill or fire).



# FLINN SCIENTIFIC INC.

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## Material Safety Data Sheet (MSDS)

Copper(II) Chloride, Dihydrate

MSDS #: 281.05

Revision Date: September 20, 2004

### Section 9 — Physical and Chemical Properties

Light blue/green powder or crystals. Odorless.  
Solubility: Water soluble and alcohol.  
Formula:  $\text{CuCl}_2 \cdot 2\text{H}_2\text{O}$   
Formula Weight: 170.49

Specific Gravity: 2.5  
Melting Point: 100 C

### Section 10 — Stability and Reactivity

Avoid contact with moisture and alkali metals.  
Shelf life: Poor; deliquescent.

### Section 11 — Toxicological Information

Acute effects: Toxic, irritant, gastrointestinal disturbances  
Chronic effects: N.A.  
Target organs: N.A.

ORL-RAT LD50: 140 mg/kg  
IHL-RAT LC50: N.A.  
SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

### Section 12 — Ecological Information

Data not yet available.

### Section 13 — Disposal Considerations

Please consult with state and local regulations.  
Flinn Suggested Disposal Method #26a is one option.

### Section 14 — Transport Information

Shipping Name: Copper Chloride  
Hazard Class: 8, Corrosive  
UN Number: UN2802

N/A = Not applicable

### Section 15 — Regulatory Information

TSCA-listed, EINECS-listed (231-210-2).

### Section 16 — Other Information

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# FLINN SCIENTIFIC INC.

"Your Safer Source for Science Supplies"

## Material Safety Data Sheet (MSDS)

MSDS #: 265.00

Revision Date: November 25, 2002

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### Section 1 — Chemical Product and Company Identification

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#### Copper

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### Section 2 — Composition, Information on Ingredients

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Copper

CAS#: 7440-50-8

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### Section 3 — Hazards Identification

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Reddish-brown ductile metal. May be in the form of granules, shot, powder, sheet, wire, foil, or turnings. Odorless.

Irritant to body tissues as dust. Avoid contact with nitric acid, emits toxic fumes of nitrogen oxides.

#### FLINN AT-A-GLANCE

Health-0

Flammability-0

Reactivity-1

Exposure-0

Storage-0

0 is low hazard, 3 is high hazard

---

### Section 4 — First Aid Measures

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash continuously with fresh water for 15 minutes.

Internal: Give large quantities of water. Call a physician or poison control at once.

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### Section 5 — Fire Fighting Measures

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Non flammable solid.

Non-combustible solid in bulk form, but air-born dust may ignite.

**Fire Fighting Instructions:** Use triclass, dry chemical fire extinguisher. Firefighters should wear PPE and SCBA with full facepiece operated in positive pressure mode.

#### NFPA CODE

None Established

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### Section 6 — Accidental Release Measures

---

Restrict unprotected personnel from area. Sweep up, place in sealed bag or container and dispose. Ventilate area and wash spill site after material pickup is complete. See Sections 8 and 13 for further information.

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### Section 7 — Handling and Storage

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Flinn Suggested Chemical Storage Pattern: Inorganic #1. Store with metals and metal hydrides.

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### Section 8 — Exposure Controls, Personal Protection

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron. Use ventilation to keep airborne concentrations below exposure limits. Always wear a NIOSH-approved respirator with proper cartridges or a positive pressure, air-supplied respirator when handling this material in emergency situations (spill or fire).

Exposure guidelines: TWA 0.1 mg/m<sup>3</sup> (OSHA)

### Section 9 — Physical and Chemical Properties

Reddish-brown ductile metal. Also granules, shot, powder, sheet, wire, foil turnings. Odorless.

Solubility: Soluble in nitric acid and hot sulfuric acid.

Formula: Cu

Formula Weight: 63.54

Specific Gravity: 8.92

Melting Point: 1083 C

### Section 10 — Stability and Reactivity

Avoid contact with strong oxidizers, strong acids, bromates, chlorates, iodates and halogens. Avoid contact with nitric acid, emits toxic fumes of nitrogen oxides.

Shelf Life: Indefinite.

### Section 11 — Toxicological Information

Acute effects: Irritant

Chronic effects: N.A.

Target organs: Respiratory system, skin, liver, kidneys, increased risk with Wilson's disease.

ORL-RAT LD50: N.A.

IHL-RAT LC50: N.A.

SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

### Section 12 — Ecological Information

Data not yet available.

### Section 13 — Disposal Considerations

Please consult with state and local regulations.

Flinn Suggested Disposal Method #26a is one option.

### Section 14 — Transport Information

Shipping Name: Not regulated

Hazard Class: N/A

UN Number: N/A

N/A = Not applicable

### Section 15 — Regulatory Information

TSCA-listed, EINECS-listed (231-159-6), RCRA code D001.

### Section 16 — Other Information

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MSDS Number: C5874 \* \* \* \* \* Effective Date: 05/04/07 \* \* \* \* \* Supersedes: 08/10/04

<b>MSDS</b>	<b>Material Safety Data Sheet</b>		24 Hour Emergency Telephone: 908-659-2151 CHEMTREC: 1-800-424-9300
	From: Mallinckrodt Baker, Inc. 222 Red School Lane Phillipsburg, NJ 08865		National Response In Canada CANUTEC: 613-996-6666
Outside U.S. and Canada Chemtrec: 703-527-3887			NOTE: CHEMTREC, CANUTEC and National Response Center emergency numbers to be used only in the event of chemical emergencies involving a spill, leak, fire, exposure or accident involving chemicals.
All non-emergency questions should be directed to Customer Service (1-800-582-2537) for assistance.			

# CUPRIC NITRATE

## 1. Product Identification

**Synonyms:** Cupric nitrate hemipentahydrate; nitric acid, copper (2+) salt, hydrate (2:5); copper II nitrate hemihydrate  
**CAS No.:** 3251-23-8 (Anhydrous) 19004-19-4 (hemipentahydrate)  
**Molecular Weight:** 232.6  
**Chemical Formula:** Cu(NO<sub>3</sub>)<sub>2</sub> · 2.5H<sub>2</sub>O  
**Product Codes:**  
 J.T. Baker: 1800, 1803  
 Mallinckrodt: 4828

## 2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
Cupric Nitrate	3251-23-8	100%	Yes

## 3. Hazards Identification

### Emergency Overview

**DANGER! STRONG OXIDIZER. CONTACT WITH OTHER MATERIAL MAY CAUSE FIRE. HARMFUL IF SWALLOWED. AFFECTS THE LIVER AND KIDNEYS. CAUSES IRRITATION TO SKIN, EYES AND RESPIRATORY TRACT.**

SAF-T-DATA<sup>(tm)</sup> Ratings (Provided here for your convenience)

Health Rating: 1 - Slight  
 Flammability Rating: 0 - None  
 Reactivity Rating: 3 - Severe (Oxidizer)  
 Contact Rating: 2 - Moderate  
 Lab Protective Equip: GOGGLES; LAB COAT  
 Storage Color Code: Yellow (Reactive)

### Potential Health Effects

#### Inhalation:

Causes irritation to respiratory tract, symptoms may include coughing, sore throat, and shortness of breath. May result in ulceration and perforation of respiratory tract. When heated, this compound may give off copper fume, which can cause symptoms similar to the common cold, including chills and stuffiness of the head.

#### Ingestion:

May cause burning pain in the mouth, esophagus, and stomach. Hemorrhagic gastritis, nausea, vomiting, abdominal pain, metallic taste, and diarrhea may occur. If vomiting does not occur immediately systemic copper poisoning may occur. Symptoms may include capillary damage, headache, cold sweat, weak pulse, kidney and liver damage, central nervous excitation followed by depression, jaundice, convulsions, blood effects, paralysis and coma. Death may occur from shock or renal failure.

#### Skin Contact:

Causes irritation to skin. Irritation may be severe.

#### Eye Contact:

Cause irritation, redness, pain, discoloration, and possible eye damage.

#### Chronic Exposure:

Prolonged or repeated skin exposure may cause dermatitis. Prolonged or repeated exposure to dusts of copper salts may cause discoloration of the skin or hair, blood and liver damage, ulceration and perforation of the nasal septum, runny nose, metallic taste, and atrophic changes and irritation of the mucous membranes.

#### Aggravation of Pre-existing Conditions:

Persons with pre-existing skin disorders, impaired liver, kidney, or pulmonary function, glucose 6-phosphate-dehydrogenase deficiency, or pre-existing Wilson's disease may be more susceptible to the effects of this material.

## 4. First Aid Measures

#### Inhalation:

Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.

#### Ingestion:

Induce vomiting immediately as directed by medical personnel. Never give anything by mouth to an unconscious person. Call a physician immediately.

**Skin Contact:**

In case of contact, wipe off excess material from skin then immediately flush skin with plenty of water for at least 15 minutes. Remove contaminated clothing and shoes. Wash clothing before reuse. Call a physician.

**Eye Contact:**

Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention immediately.

---

## 5. Fire Fighting Measures

**Fire:**

Not combustible, but substance is a strong oxidizer and its heat of reaction with reducing agents or combustibles may cause ignition. Increases flammability of any combustible substance in contact with it.

**Explosion:**

Contact with oxidizable substances may cause extremely violent combustion.

**Fire Extinguishing Media:**

Water or water spray in early stages of fire. Foam or dry chemical may also be used.

**Special Information:**

In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode.

---

## 6. Accidental Release Measures

Ventilate area of leak or spill. Keep unnecessary and unprotected people away from area of spill. Wear appropriate personal protective equipment as specified in Section 8. Spills: Pick up and place in a suitable container for reclamation or disposal, using a method that does not generate dust. US Regulations (CERCLA) require reporting spills and releases to soil, water and air in excess of reportable quantities. The toll free number for the US Coast Guard National Response Center is (800) 424-8802.

---

## 7. Handling and Storage

Keep in a tightly closed container, stored in a cool, dry, ventilated area. Protect against physical damage. Separate from combustible, organic, or any other readily oxidizable materials. Do not store on wooden floors. Containers of this material may be hazardous when empty since they retain product residues (dust, solids); observe all warnings and precautions listed for the product.

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## 8. Exposure Controls/Personal Protection

**Airborne Exposure Limits:**

-OSHA Permissible Exposure Limit (PEL):

1 mg/m<sup>3</sup> (TWA) for copper dusts & mists as Cu

-ACGIH Threshold Limit Value (TLV):

1 mg/m<sup>3</sup> (TWA) for copper dusts & mists as Cu

**Ventilation System:**

A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, *Industrial Ventilation, A Manual of Recommended Practices*, most recent edition, for details.

**Personal Respirators (NIOSH Approved):**

If the exposure limit is exceeded and engineering controls are not feasible, a half facepiece particulate respirator (NIOSH type N95 or better filters) may be worn for up to ten times the exposure limit or the maximum use concentration specified by the appropriate regulatory agency or respirator supplier, whichever is lowest. A full-face piece particulate respirator (NIOSH type N100 filters) may be worn up to 50 times the exposure limit, or the maximum use concentration specified by the appropriate regulatory agency, or respirator supplier, whichever is lowest. If oil particles (e.g. lubricants, cutting fluids, glycerine, etc.) are present, use a NIOSH type R or P filter. For emergencies or instances where the exposure levels are not known, use a full-facepiece positive-pressure, air-supplied respirator. WARNING: Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.

**Skin Protection:**

Wear protective gloves and clean body-covering clothing.

**Eye Protection:**

Use chemical safety goggles and/or full face shield where dusting or splashing of solutions is possible. Maintain eye wash fountain and quick-drench facilities in work area.

---

## 9. Physical and Chemical Properties

**Appearance:**

Blue crystals.

**Odor:**

Odorless.

**Solubility:**

138g/100ml water @ 0C (trihydrate); soluble in water (anhydrous).

**Specific Gravity:**

2.32 (anhydrous), 2.05 (trihydrate)

**pH:**

No information found.

**% Volatiles by volume @ 21C (70F):**

0

**Boiling Point:**

170C (338F) Decomposes (anhydrous).

**Melting Point:**

115C (239F)

**Vapor Density (Air=1):**

No information found.

**Vapor Pressure (mm Hg):**

No information found.

**Evaporation Rate (BuAc=1):**

No information found.

## 10. Stability and Reactivity

### Stability:

Stable under ordinary conditions of use and storage.

### Hazardous Decomposition Products:

Oxides of nitrogen and toxic metal fumes may form when heated to decomposition.

### Hazardous Polymerization:

Will not occur.

### Incompatibilities:

Paper, wood, organic materials, ether, potassium ferrocyanide, tin, acetylene, hydrazine, nitromethane, ammonia + potassium amide, acetic anhydride, sodium hypobromite, nitromethanes, and any readily oxidizable substance.

### Conditions to Avoid:

Incompatibles.

## 11. Toxicological Information

Oral rat LD50: 794 mg/kg (anhydrous); skin rabbit (Draize) 500 mg, severe (anhydrous); eye rabbit (Draize) 100 mg, severe (anhydrous).

-----\Cancer Lists\-----			
Ingredient	---NTP Carcinogen---		IARC Category
	Known	Anticipated	
Cupric Nitrate (3251-23-8)	No	No	None

## 12. Ecological Information

### Environmental Fate:

This material is expected to significantly bioaccumulate. This material has an experimentally-determined bioconcentration factor (BCF) of greater than 100. Bioaccumulation data for copper.

### Environmental Toxicity:

This material is expected to be very toxic to aquatic life. The LC50/96-hour values for fish are less than 1 mg/l. The IC50/72-hour values for algae are less than 1 mg/l. Toxicity data for copper.

## 13. Disposal Considerations

Whatever cannot be saved for recovery or recycling should be handled as hazardous waste and sent to a RCRA approved incinerator or disposed in a RCRA approved waste facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

## 14. Transport Information

### Domestic (Land, D.O.T.)

**Proper Shipping Name:** RQ, NITRATES, INORGANIC, N.O.S. (CUPRIC NITRATE)

**Hazard Class:** 5.1

**UN/NA:** UN1477

**Packing Group:** II

**Information reported for product/size:** 100KG

### International (Water, I.M.O.)

**Proper Shipping Name:** NITRATES, INORGANIC, N.O.S. (CUPRIC NITRATE)

**Hazard Class:** 5.1

**UN/NA:** UN1477

**Packing Group:** II

**Information reported for product/size:** 100KG

## 15. Regulatory Information

-----\Chemical Inventory Status - Part 1\-----				
Ingredient	TSCA	EC	Japan	Australia
Cupric Nitrate (3251-23-8)	Yes	Yes	Yes	Yes

-----\Chemical Inventory Status - Part 2\-----				
Ingredient	Korea	--Canada--		
		DSL	NDSL	Phil.
Cupric Nitrate (3251-23-8)	Yes	Yes	No	Yes

-----\Federal, State & International Regulations - Part 1\-----				
Ingredient	-SARA 302-		-SARA 313-	
	RQ	TPQ	List	Chemical Catg.
Cupric Nitrate (3251-23-8)	No	No	No	Copper cmpd/

-----\Federal, State & International Regulations - Part 2\-----			
Ingredient	CERCLA	-RCRA-	-TSCA-
		261.33	8 (d)

-----  
Cupric Nitrate (3251-23-8) 100 No No

Chemical Weapons Convention: No TSCA 12(b): No CDTA: No  
SARA 311/312: Acute: Yes Chronic: Yes Fire: Yes Pressure: No  
Reactivity: No (Pure / Solid)

**Australian Hazchem Code:** None allocated.

**Poison Schedule:** None allocated.

**WHMIS:**

This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

---

## 16. Other Information

**NFPA Ratings:** Health: 2 Flammability: 0 Reactivity: 0 Other: Oxidizer

**Label Hazard Warning:**

DANGER! STRONG OXIDIZER. CONTACT WITH OTHER MATERIAL MAY CAUSE FIRE. HARMFUL IF SWALLOWED. AFFECTS THE LIVER AND KIDNEYS. CAUSES IRRITATION TO SKIN, EYES AND RESPIRATORY TRACT.

**Label Precautions:**

Keep from contact with clothing and other combustible materials.

Store in a tightly closed container.

Avoid contact with eyes, skin and clothing.

Avoid breathing dust.

Use only with adequate ventilation.

Wash thoroughly after handling.

**Label First Aid:**

If swallowed, induce vomiting immediately as directed by medical personnel. Never give anything by mouth to an unconscious person. If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. In case of contact, wipe off excess material from skin then immediately flush eyes or skin with plenty of water for at least 15 minutes. Remove contaminated clothing and shoes. Wash clothing before reuse. In all cases, get medical attention.

**Product Use:**

Laboratory Reagent.

**Revision Information:**

No Changes.

**Disclaimer:**

\*\*\*\*\*

**Mallinckrodt Baker, Inc. provides the information contained herein in good faith but makes no representation as to its comprehensiveness or accuracy.**

**This document is intended only as a guide to the appropriate precautionary handling of the material by a properly trained person using this product.**

**Individuals receiving the information must exercise their independent judgment in determining its appropriateness for a particular purpose.**

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\*\*\*\*\*

**Prepared by:** Environmental Health & Safety

Phone Number: (314) 654-1600 (U.S.A.)

# FLINN SCIENTIFIC, INC.

## Material Safety Data Sheet (MSDS)

MSDS #: 282.00

Revision Date: July 11, 2005

### SECTION 1 — CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

#### Copper(II) Nitrate

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

### SECTION 2 — COMPOSITION, INFORMATION ON INGREDIENTS

Copper(II) Nitrate

Synonym: Cupric Nitrate

CAS#: 10031-43-3

### SECTION 3 — HAZARDS IDENTIFICATION

Blue crystals, nitric acid odor.

Moderately toxic by ingestion and inhalation. Corrosive. Body tissue irritant. Avoid all body tissue contact.

Strong oxidizer, keep away from organic material.

#### FLINN AT-A-GLANCE

Health-2

Flammability-0

Reactivity-3

Exposure-2

Storage-1

0 is low hazard, 3 is high hazard

### SECTION 4 — FIRST AID MEASURES

Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash continuously with fresh water for 15 minutes.

Internal: Give large quantities of water. Call a physician or poison control at once.

### SECTION 5 — FIRE FIGHTING MEASURES

Non flammable, non combustible solid.

Strong oxidizer. Avoid contact with combustible and organic materials. Heating to decomposition may emit toxic fumes of NOx.

**Fire Fighting Instructions:** Use triclass, dry chemical fire extinguisher. Firefighters should wear PPE and SCBA with full facepiece operated in positive pressure mode.

#### NFPA CODE

None

Established

### SECTION 6 — ACCIDENTAL RELEASE MEASURES

Restrict unprotected personnel from area. Sweep up, place in sealed bag or container and dispose. Ventilate area and wash spill site after material pickup is complete. See Sections 8 and 13 for further information.

### SECTION 7 — HANDLING AND STORAGE

Flinn Suggested Chemical Storage Pattern: Inorganic #3. Store with amides, nitrates and nitrites.

Store in a cool dry place. Deliquescent, store in Flinn Chem-Saf Bag. Use and dispense in a hood.

### SECTION 8 — EXPOSURE CONTROLS, PERSONAL PROTECTION

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron. Use exhaust ventilation to keep airborne concentrations low.



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**SECTION 9 — PHYSICAL AND CHEMICAL PROPERTIES**

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Blue crystals, nitric acid odor.  
Solubility: Soluble in water and alcohol.  
Formula:  $\text{Cu}(\text{NO}_3)_2 \cdot 3\text{H}_2\text{O}$   
Formula Weight: 241.60

Specific Gravity: 2.0  
Melting Point: 115 C

---

**SECTION 10 — STABILITY AND REACTIVITY**

---

Avoid contact with organic materials, reducing agents, heat or moisture. Avoid dust.  
Shelf life: Poor; substance deliquescent.

---

**SECTION 11 — TOXICOLOGICAL INFORMATION**

---

Acute effects: Corrosive  
Chronic effects: N.A.  
Target organs: N.A.

ORL-RAT LD50: 940 mg/kg  
IHL-RAT LC50: N.A.  
SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

---

**SECTION 12 — ECOLOGICAL INFORMATION**

---

Data not yet available.

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**SECTION 13 — DISPOSAL CONSIDERATIONS**

---

Please consult with state and local regulations.  
Flinn Suggested Disposal Method #26a is one option.

---

**SECTION 14 — TRANSPORT INFORMATION**

---

Shipping Name: Nitrates, Inorganic, n.o.s.  
Hazard Class: 5.1, Oxidizer  
UN Number: UN1477  
N/A = Not applicable

---

**SECTION 15 — REGULATORY INFORMATION**

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TSCA-listed, EINECS-listed (221-838-5), RCRA code D001.

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**SECTION 16 — OTHER INFORMATION**

---

This Material Safety Data Sheet (MSDS) is for guidance and is based upon information and tests believed to be reliable. Flinn Scientific, Inc. makes no guarantee of the accuracy or completeness of the data and shall not be liable for any damages relating thereto. The data is offered solely for your consideration, investigation, and verification. The data should not be confused with local, state, federal or insurance mandates, regulations, or requirements and CONSTITUTE NO WARRANTY. Any use of this data and information must be determined by the science instructor to be in accordance with applicable local, state or federal laws and regulations. The conditions or methods of handling, storage, use and disposal of the product(s) described are beyond the control of Flinn Scientific, Inc. and may be beyond our knowledge. FOR THIS AND OTHER REASONS, WE DO NOT ASSUME RESPONSIBILITY AND EXPRESSLY DISCLAIM LIABILITY FOR LOSS, DAMAGE OR EXPENSE ARISING OUT OF OR IN ANY WAY CONNECTED WITH THE HANDLING, STORAGE, USE OR DISPOSAL OF THIS PRODUCT(S).

**Consult your copy of the Flinn Chemical Catalog/Reference Manual  
for additional information about laboratory chemicals**

## Material Safety Data Sheet (MSDS)

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### Section 1 — Chemical Product and Company Identification

---

#### Copper(II) Sulfate

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### Section 2 — Composition, Information on Ingredients

---

Copper(II) sulfate, pentahydrate

Synonym: Cupric sulfate, blue vitriol, chalcantite

CAS#: 7758-99-8

---

### Section 3 — Hazards Identification

---

Blue crystalline powder, granules or larger crystals. Odorless.  
Skin and respiratory irritant; moderately toxic by ingestion and inhalation.

#### FLINN AT-A-GLANCE

Health-2  
Flammability-0  
Reactivity-0  
Exposure-2  
Storage-1

0 is low hazard, 3 is high hazard

---

### Section 4 — First Aid Measures

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash continuously with fresh water for 15 minutes.

Internal: Rinse out mouth, give 1 to 2 cups of water or milk, induce vomiting. After vomiting, give mixture of 2 Tbs. of activated charcoal mixed with one cup of water. Call a physician or poison control at once.

---

### Section 5 — Fire Fighting Measures

---

Non flammable, non combustible solid.

However, sulfur trioxide can be produced at temperatures above 653 C.

**Fire Fighting Instructions:** Use triclass, dry chemical fire extinguisher. Firefighters should wear PPE and SCBA with full facepiece operated in positive pressure mode.

#### NFPA CODE

None  
Established

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### Section 6 — Accidental Release Measures

---

Restrict unprotected personnel from area. Sweep up, place in sealed bag or container and dispose. Ventilate area and wash spill site after material pickup is complete. See Sections 8 and 13 for further information.

---

### Section 7 — Handling and Storage

---

Flinn Suggested Chemical Storage Pattern: Inorganic #2. Store with acetates, halides, sulfates, sulfites, thiosulfates and phosphates. Efflorescent. Protect from air, store in a Flinn Chem-Saf bag. Use and dispense in a hood.

---

### Section 8 — Exposure Controls, Personal Protection

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron.

## Material Safety Data Sheet (MSDS)

Copper(II) Sulfate

MSDS #: 285.00

Revision Date: September 20, 2004

### Section 9 — Physical and Chemical Properties

Blue crystalline powder, granules or larger crystals. Odorless.  
Solubility: Soluble in water and methanol; slightly in alcohol.  
Formula:  $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$   
Formula Weight: 249.69

Specific Gravity: 2.28

### Section 10 — Stability and Reactivity

Avoid contact with finely powdered metals, heat. Will corrode steel.  
Shelf Life: Fair, slowly effloresces in air.

### Section 11 — Toxicological Information

Acute effects: Toxic, severe eye irritant, gastrointestinal disturbances  
Chronic effects: Possible mutagen  
Target organs: Liver, kidneys, blood

ORL-RAT LD50: 300 mg/Kg  
IHL-RAT LC50: N.A.  
SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

### Section 12 — Ecological Information

Data not yet available.

### Section 13 — Disposal Considerations

Please consult with state and local regulations.  
Flinn Suggested Disposal Method #26a is one option.

### Section 14 — Transport Information

Shipping Name: Not regulated  
Hazard Class: N/A  
UN Number: N/A

N/A = Not applicable

### Section 15 — Regulatory Information

TSCA-listed, EINECS-listed (231-847-6).

### Section 16 — Other Information

Consult your copy of the Flinn Scientific Catalog/Reference Manual for additional information about laboratory chemicals. This Material Safety Data Sheet (MSDS) is for guidance and is based upon information and tests believed to be reliable. Flinn Scientific Inc. makes no guarantee of the accuracy or completeness of the data and shall not be liable for any damages relating thereto. The data is offered solely for your consideration, investigation, and verification. Flinn Scientific Inc. assumes no legal responsibility for use or reliance upon this data.

**FLINN SCIENTIFIC INC.**

"Your Safer Source for Science Supplies"

*Flinn Chemical Packaging Prevents Accidents*

flinn@flinnsci.com www.flinnsci.com  
P.O. Box 219 Batavia IL 60510  
(800) 452-1261 Fax (866) 452-1436

MSDS Number: C5357 \* \* \* \* \* Effective Date: 08/20/08 \* \* \* \* \* Supercedes: 11/10/05



From: Mallinckrodt Baker, Inc.  
222 Red School Lane  
Phillipsburg, NJ 08865



24 Hour Emergency Telephone: 908-859-2151  
CHEMTREC: 1-800-424-9300

National Response in Canada  
CANUTEC: 613-996-6666

Outside U.S. And Canada  
Chemtec: 703-527-3887

NOTE: CHEMTREC, CANUTEC and National Response Center emergency numbers to be used only in the event of chemical emergencies involving a spill, leak, fire, exposure or accident involving chemicals.

All non-emergency questions should be directed to Customer Service (1-800-562-2537) for assistance.

## Creatine, Monohydrate

### 1. Product Identification

**Synonyms:** N-Amidinosarcosine; N-(Aminoiminomethyl)-N-methylglycine

**CAS No.:** 57-00-1 (Anhydrous) 6020-87-7(monohydrate)

**Molecular Weight:** 149.15

**Chemical Formula:** NH<sub>2</sub>C(=NH)N(CH<sub>3</sub>)CH<sub>2</sub>COOH . H<sub>2</sub>O

**Product Codes:** F812

### 2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
Creatine (anhydrous)	57-00-1	90 - 100%	No

### 3. Hazards Identification

#### Emergency Overview

As part of good industrial and personal hygiene and safety procedure, avoid all unnecessary exposure to the chemical substance and ensure prompt removal from skin, eyes and clothing.

**SAF-T-DATA<sup>(tm)</sup>** Ratings (Provided here for your convenience)

Health Rating: 1 - Slight

Flammability Rating: 0 - None

Reactivity Rating: 1 - Slight

Contact Rating: 1 - Slight

Lab Protective Equip: GOGGLES; LAB COAT; PROPER GLOVES

Storage Color Code: Green (General Storage)

#### Potential Health Effects

##### Inhalation:

No adverse health effects expected from inhalation. May cause mild irritation to the respiratory tract.

##### Ingestion:

Not expected to be a health hazard via ingestion. Large oral doses may cause irritation to the gastrointestinal tract.

##### Skin Contact:

Not expected to be a health hazard from skin exposure. May cause mild irritation and redness.

##### Eye Contact:

Not expected to be a health hazard. May cause mild irritation, possible reddening.

##### Chronic Exposure:

No information found.

##### Aggravation of Pre-existing Conditions:

No information found.

### 4. First Aid Measures

#### Inhalation:

Not expected to require first aid measures. Remove to fresh air. Get medical attention for any breathing difficulty.

#### Ingestion:

Not expected to require first aid measures. If large amounts were swallowed, give water to drink and get medical advice.

#### Skin Contact:

Not expected to require first aid measures. Wash exposed area with soap and water. Get medical advice if irritation develops.

#### Eye Contact:

Not expected to require first aid measures. Wash thoroughly with running water. Get medical advice if irritation develops.

## 5. Fire Fighting Measures

**Fire:**

Not considered to be a fire hazard.

**Explosion:**

Not considered to be an explosion hazard.

**Fire Extinguishing Media:**

Use any means suitable for extinguishing surrounding fire.

**Special Information:**

In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode.

---

## 6. Accidental Release Measures

Ventilate area of leak or spill. Wear appropriate personal protective equipment as specified in Section 8. Spills: Sweep up and containerize for reclamation or disposal. Vacuuming or wet sweeping may be used to avoid dust dispersal.

---

## 7. Handling and Storage

Keep in a tightly closed container, stored in a cool, dry, ventilated area. Protect against physical damage. Isolate from incompatible substances. Containers of this material may be hazardous when empty since they retain product residues (dust, solids); observe all warnings and precautions listed for the product.

---

## 8. Exposure Controls/Personal Protection

**Airborne Exposure Limits:**

None established.

**Ventilation System:**

Not expected to require any special ventilation.

**Personal Respirators (NIOSH Approved):**

For conditions of use where exposure to dust or mist is apparent and engineering controls are not feasible, a particulate respirator (NIOSH type N95 or better filters) may be worn. If oil particles (e.g. lubricants, cutting fluids, glycerine, etc.) are present, use a NIOSH type R or P filter. For emergencies or instances where the exposure levels are not known, use a full-face positive-pressure, air-supplied respirator. **WARNING:** Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.

**Skin Protection:**

Wear protective gloves and clean body-covering clothing.

**Eye Protection:**

Use chemical safety goggles and/or full face shield where dusting or splashing of solutions is possible. Maintain eye wash fountain and quick-drench facilities in work area.

---

## 9. Physical and Chemical Properties

**Appearance:**

White Crystalline solid.

**Odor:**

No information found.

**Solubility:**

Moderate (1-10%)

**Specific Gravity:**

No information found.

**pH:**

No information found.

**% Volatiles by volume @ 21C (70F):**

0

**Boiling Point:**

No information found.

**Melting Point:**

300C (572F)

**Vapor Density (Air=1):**

Not applicable.

**Vapor Pressure (mm Hg):**

Not applicable.

**Evaporation Rate (BuAc=1):**

No information found.

---

## 10. Stability and Reactivity

**Stability:**

Stable under ordinary conditions of use and storage.

**Hazardous Decomposition Products:**

Burning may produce ammonia, carbon monoxide, carbon dioxide, nitrogen oxides.

**Hazardous Polymerization:**

Will not occur.

**Incompatibilities:**

Strong oxidizing agents.

**Conditions to Avoid:**

Moisture and incompatibles.

---

## 11. Toxicological Information

No LD50/LC50 information found relating to normal routes of occupational exposure.

-----\Cancer Lists\-----			
Ingredient	---NTP Carcinogen---		IARC Category
	Known	Anticipated	
Creatine (anhydrous) (57-00-1)	No	No	None

## 12. Ecological Information

**Environmental Fate:**

No information found.

**Environmental Toxicity:**

No information found.

## 13. Disposal Considerations

Whatever cannot be saved for recovery or recycling should be managed in an appropriate and approved waste disposal facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

## 14. Transport Information

Not regulated.

## 15. Regulatory Information

-----\Chemical Inventory Status - Part 1\-----				
Ingredient	TSCA	EC	Japan	Australia
Creatine (anhydrous) (57-00-1)	Yes	Yes	Yes	Yes

-----\Chemical Inventory Status - Part 2\-----				
Ingredient	Korea	--Canada--		
		DSL	NDSL	Phil.
Creatine (anhydrous) (57-00-1)	Yes	Yes	No	No

-----\Federal, State & International Regulations - Part 1\-----				
Ingredient	-SARA 302-		-SARA 313-	
	RQ	TPQ	List	Chemical Catg.
Creatine (anhydrous) (57-00-1)	No	No	No	No

-----\Federal, State & International Regulations - Part 2\-----			
Ingredient	CERCLA	-RCRA-	-TSCA-
		261.33	8 (d)
Creatine (anhydrous) (57-00-1)	No	No	No

Chemical Weapons Convention: No TSCA 12(b): No CDTA: No  
 SARA 311/312: Acute: No Chronic: No Fire: No Pressure: No  
 Reactivity: No (Pure / Solid)

**Australian Hazchem Code:** None allocated.

**Poison Schedule:** None allocated.

**WHMIS:**

This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

## 16. Other Information

**NFPA Ratings:** Health: 0 Flammability: 0 Reactivity: 0

**Label Hazard Warning:**

As part of good industrial and personal hygiene and safety procedure, avoid all unnecessary exposure to the chemical substance and ensure prompt removal from skin, eyes and clothing.

**Label Precautions:**

None.

**Label First Aid:**

Not applicable.

**Product Use:**

Laboratory Reagent.

**Revision Information:**

No Changes.

**Disclaimer:**

\*\*\*\*\*

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This document is intended only as a guide to the appropriate precautionary handling of the material by a properly trained person using this product.

Individuals receiving the information must exercise their independent judgment in determining its appropriateness for a particular purpose.

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\*\*\*\*\*

**Prepared by:** Environmental Health & Safety  
Phone Number: (314) 654-1600 (U.S.A.)

# FLINN SCIENTIFIC INC.

"Your Safer Source for Science Supplies"

## Material Safety Data Sheet (MSDS)

MSDS #: 276.00

Revision Date: November 25, 2002

---

### Section 1 — Chemical Product and Company Identification

---

#### Crystal Violet

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### Section 2 — Composition, Information on Ingredients

---

Crystal Violet

Synonym: C.I. 42555, basic violet 3, gentian violet

CAS#: 548-62-9

---

### Section 3 — Hazards Identification

---

Green powder. Odorless.

Moderately toxic by ingestion and inhalation, body tissue irritant. Avoid all body tissue contact.

#### FLINN AT-A-GLANCE

Health-2

Flammability-0

Reactivity-1

Exposure-1

Storage-0

0 is low hazard, 3 is high hazard

---

### Section 4 — First Aid Measures

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash continuously with fresh water for 15 minutes.

Internal: Give large quantities of water. Call a physician or poison control at once.

---

### Section 5 — Fire Fighting Measures

---

Non flammable solid.

When heated to decomposition, emits toxic fumes of CO, CO<sub>2</sub>, NO<sub>x</sub> and SO<sub>x</sub>.

**Fire Fighting Instructions:** Use triclass, dry chemical fire extinguisher. Firefighters should wear PPE and SCBA with full facepiece operated in positive pressure mode.

#### NFPA CODE

None Established

---

### Section 6 — Accidental Release Measures

---

Restrict unprotected personnel from area. Sweep up, place in sealed bag or container and dispose. Ventilate area and wash spill site after material pickup is complete. See Sections 8 and 13 for further information.

---

### Section 7 — Handling and Storage

---

Flinn Suggested Chemical Storage Pattern: Organic #9. Store with dyes, indicators, and stains.

Use and dispense in a hood.

---

### Section 8 — Exposure Controls, Personal Protection

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron.



### Section 9 — Physical and Chemical Properties

Green powder. Odorless.

Solubility: Water soluble. Biological stain.

Formula: C<sub>25</sub>H<sub>30</sub>CIN<sub>3</sub>

Formula Weight: 408.00

Melting Point: 215 C (dec.)

### Section 10 — Stability and Reactivity

Avoid contact with strong oxidizers.

Shelf Life: Indefinite.

### Section 11 — Toxicological Information

Acute effects: Toxic, irritant, nausea, headache and vomiting

Chronic effects: Mutagen

Target organs: N.A.

ORL-RAT LD50: 420 mg/kg

IHL-RAT LC50: N.A.

SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

### Section 12 — Ecological Information

Data not yet available.

### Section 13 — Disposal Considerations

Please consult with state and local regulations.

Flinn Suggested Disposal Method #26a is one option.

### Section 14 — Transport Information

Shipping Name: Not regulated

Hazard Class: N/A

UN Number: N/A

N/A = Not applicable

### Section 15 — Regulatory Information

TSCA-listed, EINECS-listed (208-953-6).

### Section 16 — Other Information

Consult your copy of the Flinn Scientific Catalog/Reference Manual for additional information about laboratory chemicals. This Material Safety Data Sheet (MSDS) is for guidance and is based upon information and tests believed to be reliable. Flinn Scientific Inc. makes no guarantee of the accuracy or completeness of the data and shall not be liable for any damages relating thereto. The data is offered solely for your consideration, investigation, and verification. Flinn Scientific Inc. assumes no legal responsibility for use or reliance upon this data.

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# FLINN SCIENTIFIC INC.

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## Material Safety Data Sheet (MSDS)

MSDS #: 284.00

Revision Date: November 25, 2002

---

### Section 1 — Chemical Product and Company Identification

---

#### Cupric Oxide

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### Section 2 — Composition, Information on Ingredients

---

Cupric Oxide

Synonym: copper (II) oxide

CAS#: 1317-38-0

---

### Section 3 — Hazards Identification

---

Black or brownish-black color granules or powder. Odorless.  
Irritating to body tissues. Avoid all body tissue contact.

#### FLINN AT-A-GLANCE

Health-0  
Flammability-0  
Reactivity-0  
Exposure-1  
Storage-0

0 is low hazard, 3 is high hazard

---

### Section 4 — First Aid Measures

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash continuously with fresh water for 15 minutes.

Internal: Give large quantities of water. Call a physician or poison control at once.

---

### Section 5 — Fire Fighting Measures

---

Non flammable, non combustible solid.

#### NFPA CODE

None Established

---

### Section 6 — Accidental Release Measures

---

Restrict unprotected personnel from area. Sweep up, place in sealed bag or container and dispose. Ventilate area and wash spill site after material pickup is complete. See Sections 8 and 13 for further information.

---

### Section 7 — Handling and Storage

---

Flinn Suggested Chemical Storage Pattern: Inorganic #4. Store with hydroxides, oxides, silicates and carbonates.

Store in a cool dry place. Keep container tightly closed. Use and dispense in a hood.

---

### Section 8 — Exposure Controls, Personal Protection

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron. Use exhaust ventilation to keep airborne concentrations low.

### Section 9 — Physical and Chemical Properties

Black or brownish-black color granules or powder. Odorless.  
Solubility: Soluble in acids; difficult to dissolve in water.

Formula: CuO

Formula Weight: 79.54

Specific Gravity: 5.75-6.09

Decomposes at 1026 C

### Section 10 — Stability and Reactivity

Avoid contact with reducing agents, aluminum, alkali metals, finely powdered metals.

Shelf Life: Indefinite.

### Section 11 — Toxicological Information

Acute effects: Irritant

Chronic effects: N.A.

Target organs: N.A.

ORL-RAT LD50: N.A.

IHL-RAT LC50: N.A.

SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

### Section 12 — Ecological Information

Data not yet available.

### Section 13 — Disposal Considerations

Please consult with state and local regulations.

Flinn Suggested Disposal Method #26a is one option.

### Section 14 — Transport Information

Shipping Name: Not regulated

Hazard Class: N/A

UN Number: N/A

N/A = Not applicable

### Section 15 — Regulatory Information

TSCA-listed, EINECS-listed (215-269-1).

### Section 16 — Other Information

Consult your copy of the Flinn Scientific Catalog/Reference Manual for additional information about laboratory chemicals. This Material Safety Data Sheet (MSDS) is for guidance and is based upon information and tests believed to be reliable. Flinn Scientific Inc. makes no guarantee of the accuracy or completeness of the data and shall not be liable for any damages relating thereto. The data is offered solely for your consideration, investigation, and verification. Flinn Scientific Inc. assumes no legal responsibility for use or reliance upon this data.

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# FLINN SCIENTIFIC INC.

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## Material Safety Data Sheet (MSDS)

MSDS #: 272.00

Revision Date: November 25, 2002

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### Section 1 — Chemical Product and Company Identification

---

#### m-Cresol Purple and Solutions

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### Section 2 — Composition, Information on Ingredients

---

m-Cresol Purple and Solution: m-Cresol Purple (2303-01-7) <0.1%, Sodium Hydroxide (1310-73-2) <0.1%, and Water (7732-18-5) >99%

CAS#: 62625-31-4

---

### Section 3 — Hazards Identification

---

Shiny black crystals or powder. Odorless. The solution is purple/blue in color and odorless. Possibly a mild irritant. Avoid all body tissue contact.

#### FLINN AT-A-GLANCE

Health-0  
Flammability-0  
Reactivity-0  
Exposure-1  
Storage-0

0 is low hazard, 3 is high hazard

---

### Section 4 — First Aid Measures

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash continuously with fresh water for 15 minutes.

Internal: Give large quantities of water. Call a physician or poison control at once.

---

### Section 5 — Fire Fighting Measures

---

Non flammable solid.

When heated to decomposition, emits toxic fumes of CO, CO<sub>2</sub>, SO<sub>x</sub>.

**Fire Fighting Instructions:** Use triclass, dry chemical fire extinguisher. Firefighters should wear PPE and SCBA with full facepiece operated in positive pressure mode.

#### NFPA CODE

None Established

---

### Section 6 — Accidental Release Measures

---

Restrict unprotected personnel from area and ventilate area. Contain spill with sand or absorbent material; deposit in sealed bag or container. See Sections 8 and 13 for further information.

---

### Section 7 — Handling and Storage

---

Flinn Suggested Chemical Storage Pattern: Organic #9. Store with dyes, indicators, and stains.

---

### Section 8 — Exposure Controls, Personal Protection

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron.

---

### Section 9 — Physical and Chemical Properties

---

Shiny black crystals or powder. Odorless. The solution is purple/blue in color and odorless.

Solubility: An acid-base indicator. Soluble in water and alcohol.

Formula:  $C_6H_4SO_2OC(C_6H_3(OH)CH_3)_2$

Formula Weight: 382.43

---

### Section 10 — Stability and Reactivity

---

Shelf life: Indefinite.

---

### Section 11 — Toxicological Information

---

Acute effects: Mild irritant

Chronic effects: N.A.

Target organs: N.A.

ORL-RAT LD50: N.A.

IHL-RAT LC50: N.A.

SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

---

### Section 12 — Ecological Information

---

Data not yet available.

---

### Section 13 — Disposal Considerations

---

Please consult with state and local regulations.

Flinn Suggested Disposal Method #26a is one option.

---

### Section 14 — Transport Information

---

Shipping Name: Not regulated

Hazard Class: N/A

UN Number: N/A

N/A = Not applicable

---

### Section 15 — Regulatory Information

---

TSCA-listed, EINECS-listed (218-960-6).

---

### Section 16 — Other Information

---

Consult your copy of the Flinn Scientific Catalog/Reference Manual for additional information about laboratory chemicals. This Material Safety Data Sheet (MSDS) is for guidance and is based upon information and tests believed to be reliable. Flinn Scientific Inc. makes no guarantee of the accuracy or completeness of the data and shall not be liable for any damages relating thereto. The data is offered solely for your consideration, investigation, and verification. Flinn Scientific Inc. assumes no legal responsibility for use or reliance upon this data.

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# FLINN SCIENTIFIC INC.

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## Material Safety Data Sheet (MSDS)

MSDS #: 296.00

Revision Date: November 25, 2002

---

### Section 1 — Chemical Product and Company Identification

---

#### Dextrose

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### Section 2 — Composition, Information on Ingredients

---

Dextrose

CAS#: 5996-10-1 (monohydrate); 492-62-6 (anhydrous)

---

### Section 3 — Hazards Identification

---

Colorless to white crystals. Odorless.

Substance not considered hazardous. However, not all health aspects of this substance have been thoroughly investigated.

#### FLINN AT-A-GLANCE

Health-0  
Flammability-0  
Reactivity-0  
Exposure-0  
Storage-1

0 is low hazard, 3 is high hazard

---

### Section 4 — First Aid Measures

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash with mild soap and water.

Internal: Give large quantities of water.

---

### Section 5 — Fire Fighting Measures

---

Non flammable solid.

#### NFPA CODE

None Established

---

### Section 6 — Accidental Release Measures

---

Restrict unprotected personnel from area. Sweep up, place in sealed bag or container and dispose. Ventilate area and wash spill site after material pickup is complete. See Sections 8 and 13 for further information.

---

### Section 7 — Handling and Storage

---

Flinn Suggested Chemical Storage Pattern: Organic #2. Store with alcohols, glycols, sugars, amines, amides, imines, and imides.

Store in a cool dry place. Store in a Finn Chem-Saf bag.

---

### Section 8 — Exposure Controls, Personal Protection

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron.

---

### Section 9 — Physical and Chemical Properties

---

Colorless to white crystals. Odorless.  
Solubility: Soluble in water.  
Formula: C<sub>6</sub>H<sub>12</sub>O<sub>6</sub> H<sub>2</sub>O  
Formula Weight: 198.18

Specific Gravity: 1.544  
Melting Point: 83 C

---

### Section 10 — Stability and Reactivity

---

Shelf Life: Good, if kept dry.

---

### Section 11 — Toxicological Information

---

Acute effects: N.A.  
Chronic effects: N.A.  
Target organs: N.A.

ORL-RAT LD50: N.A.  
IHL-RAT LC50: N.A.  
SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

---

### Section 12 — Ecological Information

---

Data not yet available.

---

### Section 13 — Disposal Considerations

---

Please consult with state and local regulations.  
Flinn Suggested Disposal Method #26a is one option.

---

### Section 14 — Transport Information

---

Shipping Name: Not regulated  
Hazard Class: N/A  
UN Number: N/A

N/A = Not applicable

---

### Section 15 — Regulatory Information

---

EINECS-listed (207-757-8).

---

### Section 16 — Other Information

---

Consult your copy of the Flinn Scientific Catalog/Reference Manual for additional information about laboratory chemicals. This Material Safety Data Sheet (MSDS) is for guidance and is based upon information and tests believed to be reliable. Flinn Scientific Inc. makes no guarantee of the accuracy or completeness of the data and shall not be liable for any damages relating thereto. The data is offered solely for your consideration, investigation, and verification. Flinn Scientific Inc. assumes no legal responsibility for use or reliance upon this data.

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## Material Safety Data Sheet (MSDS)

MSDS #: 298.00

Revision Date: November 25, 2002

---

### Section 1 — Chemical Product and Company Identification

---

#### Diastase of Malt

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### Section 2 — Composition, Information on Ingredients

---

Diastase of Malt

Synonym: maltin

CAS#: 9000-92-4

---

### Section 3 — Hazards Identification

---

White-tan powder; slight yeast odor.

Irritating dust. Substance not considered hazardous. However, not all health aspects of this substance have been thoroughly investigated.

#### FLINN AT-A-GLANCE

Health-0

Flammability-0

Reactivity-0

Exposure-0

Storage-1

0 is low hazard, 3 is high hazard

---

### Section 4 — First Aid Measures

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash continuously with fresh water for 15 minutes.

Internal: Give large quantities of water. Call a physician or poison control at once.

---

### Section 5 — Fire Fighting Measures

---

Non flammable solid.

#### NFPA CODE

None Established

---

### Section 6 — Accidental Release Measures

---

Restrict unprotected personnel from area. Sweep up, place in sealed bag or container and dispose. Ventilate area and wash spill site after material pickup is complete. See Sections 8 and 13 for further information.

---

### Section 7 — Handling and Storage

---

Flinn Suggested Chemical Storage Pattern: Organic Miscellaneous.

Store in a cool dry place. Keep container tightly closed. Moisture sensitive material, store in a Flinn Chem-Saf bag. Best stored under dry conditions in a refrigerator.

---

### Section 8 — Exposure Controls, Personal Protection

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron. Use exhaust ventilation to keep airborne concentrations low.



---

### Section 9 — Physical and Chemical Properties

---

White-tan powder; slight yeast odor.  
Solubility: Water soluble.

---

### Section 10 — Stability and Reactivity

---

Enzyme activity may be destroyed by exposure to high temperature.  
Shelf life: Poor unless kept dry.

---

### Section 11 — Toxicological Information

---

Acute effects: Mild irritant  
Chronic effects: N.A.  
Target organs: N.A.

ORL-RAT LD50: N.A.  
IHL-RAT LC50: N.A.  
SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

---

### Section 12 — Ecological Information

---

Data not yet available.

---

### Section 13 — Disposal Considerations

---

Please consult with state and local regulations.  
Flinn Suggested Disposal Method #26a is one option.

---

### Section 14 — Transport Information

---

Shipping Name: Not regulated  
Hazard Class: N/A  
UN Number: N/A

N/A = Not applicable

---

### Section 15 — Regulatory Information

---

Not listed.

---

### Section 16 — Other Information

---

Consult your copy of the Flinn Scientific Catalog/Reference Manual for additional information about laboratory chemicals. This Material Safety Data Sheet (MSDS) is for guidance and is based upon information and tests believed to be reliable. Flinn Scientific Inc. makes no guarantee of the accuracy or completeness of the data and shall not be liable for any damages relating thereto. The data is offered solely for your consideration, investigation, and verification. Flinn Scientific Inc. assumes no legal responsibility for use or reliance upon this data.

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# FLINN SCIENTIFIC INC.

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## Material Safety Data Sheet (MSDS)

MSDS #: 299.00

Revision Date: November 25, 2002

---

### Section 1 — Chemical Product and Company Identification

---

#### Diatomaceous Earth

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### Section 2 — Composition, Information on Ingredients

---

Diatomaceous Earth

Synonyms: celite, infusorial earth

CAS#: 61790-53-2

---

### Section 3 — Hazards Identification

---

White to buff-colored solid. Slightly spicy odor.

Avoid breathing dust. Irritating to skin, eyes and mucous membranes.

#### FLINN AT-A-GLANCE

Health-0

Flammability-0

Reactivity-0

Exposure-0

Storage-0

0 is low hazard, 3 is high hazard

---

### Section 4 — First Aid Measures

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash continuously with fresh water for 15 minutes.

Internal: Give large quantities of water. Call a physician or poison control at once.

---

### Section 5 — Fire Fighting Measures

---

Non flammable solid.

#### NFPA CODE

None Established

---

### Section 6 — Accidental Release Measures

---

Restrict unprotected personnel from area. Sweep up, place in sealed bag or container and dispose. Ventilate area and wash spill site after material pickup is complete. See Sections 8 and 13 for further information.

---

### Section 7 — Handling and Storage

---

Flinn Suggested Chemical Storage Pattern: Inorganic #4. Store with hydroxides, oxides, silicates and carbonates.

Moisture sensitive material, store in a Flinn Chem-Saf bag.

---

### Section 8 — Exposure Controls, Personal Protection

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron.

Use exhaust ventilation to keep airborne concentrations low.

---

### Section 9 — Physical and Chemical Properties

---

White to buff-colored solid (88% Silica)  
Slightly spicy odor.  
Solubility: Soluble in strong alkalies; no acid except hydrofluoric.

Specific Gravity: 1.9-2.35

---

### Section 10 — Stability and Reactivity

---

Avoid contact with hydrofluoric acid.  
Shelf Life: Good, if kept dry.

---

### Section 11 — Toxicological Information

---

Acute effects: Harmful dust.  
Chronic effects: N.A.  
Target organs: Lungs

ORL-RAT LD50: N.A.  
IHL-RAT LC50: N.A.  
SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

---

### Section 12 — Ecological Information

---

Data not yet available.

---

### Section 13 — Disposal Considerations

---

Please consult with state and local regulations.  
Flinn Suggested Disposal Method #26a is one option.

---

### Section 14 — Transport Information

---

Shipping Name: Not regulated  
Hazard Class: N/A  
UN Number: N/A

N/A = Not applicable

---

### Section 15 — Regulatory Information

---

TSCA-listed.

---

### Section 16 — Other Information

---

Consult your copy of the Flinn Scientific Catalog/Reference Manual for additional information about laboratory chemicals. This Material Safety Data Sheet (MSDS) is for guidance and is based upon information and tests believed to be reliable. Flinn Scientific Inc. makes no guarantee of the accuracy or completeness of the data and shall not be liable for any damages relating thereto. The data is offered solely for your consideration, investigation, and verification. Flinn Scientific Inc. assumes no legal responsibility for use or reliance upon this data.

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# FLINN SCIENTIFIC INC.

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## Material Safety Data Sheet (MSDS)

MSDS #: 310.00

Revision Date: March 15, 2001

---

### Section 1 — Chemical Product and Company Identification

---

## Diphenylamine

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### Section 2 — Composition, Information on Ingredients

---

Diphenylamine

CAS#: 122-39-4

---

### Section 3 — Hazards Identification

---

White to tan flakes. Strong floral odor.

Moderately toxic by ingestion and inhalation. Irritant. Avoid contact with body tissues.

Combustible solid.

#### FLINN AT-A-GLANCE

Health-2

Flammability-1

Reactivity-1

Exposure-2

Storage-0

0 is low hazard, 3 is high hazard

---

### Section 4 — First Aid Measures

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash continuously with fresh water for 15 minutes.

Internal: Rinse out mouth, give 1 to 2 cups of water or milk, induce vomiting. Call a physician or poison control at once.

---

### Section 5 — Fire Fighting Measures

---

Combustible solid.

When heated to decomposition, emits fumes of nitrogen oxides.

Flash Point: 307 F Autoignition Temperature: 1175 F

**Fire Fighting Instructions:** Use triclass, dry chemical fire extinguisher. Firefighters should wear PPE and SCBA with full facepiece operated in positive pressure mode.

#### NFPA CODE

H-3

F-1

R-0

---

### Section 6 — Accidental Release Measures

---

Restrict unprotected personnel from area. Sweep up, place in sealed bag or container and dispose. Ventilate area and wash spill site after material pickup is complete. See Sections 8 and 13 for further information.

---

### Section 7 — Handling and Storage

---

Flinn Suggested Chemical Storage Pattern: Organic #2. Store with alcohols, glycols, amines and amides.

Store in a cool dry place and light sensitive. Use and dispense in a hood.

---

### Section 8 — Exposure Controls, Personal Protection

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron.

Use ventilation to keep airborne concentrations below exposure limits. Always wear a NIOSH-approved respirator with proper cartridges or a positive pressure, air-supplied respirator when handling this material in emergency situations (spill or fire).

Exposure guidelines: TWA 10 mg/m<sup>3</sup> ppm, (OSHA)

### Section 9 — Physical and Chemical Properties

White to tan flakes. Strong floral odor.  
Solubility: Insoluble in water; soluble in carbon disulfide, benzene, alcohol and ether.  
Formula: (C<sub>6</sub>H<sub>5</sub>)<sub>2</sub>NH  
Formula Weight: 169.24

Specific Gravity: 1.16  
Boiling Point: 302 C  
Melting Point: 54 C

### Section 10 — Stability and Reactivity

Avoid contact with strong oxidizing agents and strong acids.  
Shelf life: Indefinite.

### Section 11 — Toxicological Information

Acute effects: Toxic, Irritant  
Chronic effects: Possible mutagen, possible teratogen  
Target organs: Liver, kidneys, blood, heart, bladder

ORL-RAT LD50: 300 mg/Kg  
IHL-RAT LC50: N.A.  
SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

### Section 12 — Ecological Information

Data not yet available.

### Section 13 — Disposal Considerations

Please consult with state and local regulations.  
Flinn Suggested Disposal Method #5 is one option.

### Section 14 — Transport Information

Shipping Name: Not regulated  
Hazard Class: N/A  
UN Number: N/A

N/A = Not applicable

### Section 15 — Regulatory Information

TSCA-listed, EINECS-listed (204-539-4).

### Section 16 — Other Information

Consult your copy of the Flinn Scientific Catalog/Reference Manual for additional information about laboratory chemicals. This Material Safety Data Sheet (MSDS) is for guidance and is based upon information and tests believed to be reliable. Flinn Scientific Inc. makes no guarantee of the accuracy or completeness of the data and shall not be liable for any damages relating thereto. The data is offered solely for your consideration, investigation, and verification. Flinn Scientific Inc. assumes no legal responsibility for use or reliance upon this data.

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# FLINN SCIENTIFIC INC.

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## Material Safety Data Sheet (MSDS)

MSDS #: 251.00

Revision Date: November 25, 2002

---

### Section 1 — Chemical Product and Company Identification

---

## Cleaner - Household Liquid Dishwashing Detergent

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### Section 2 — Composition, Information on Ingredients

---

Cleaner - Household Liquid Dishwashing Detergent

CAS#: None Established

---

### Section 3 — Hazards Identification

---

A pink or white viscous liquid. Odor: Soap-like.

May be eye irritant. Substance not considered hazardous. However, not all health aspects of this substance have been thoroughly investigated.

#### FLINN AT-A-GLANCE

Health-1  
Flammability-0  
Reactivity-0  
Exposure-0  
Storage-0

0 is low hazard, 3 is high hazard

---

### Section 4 — First Aid Measures

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash continuously with fresh water for 15 minutes.

Internal: Give large quantities of water. Call a physician or poison control at once.

---

### Section 5 — Fire Fighting Measures

---

Non flammable, non combustible liquid.

#### NFPA CODE

None Established

---

### Section 6 — Accidental Release Measures

---

Restrict unprotected personnel from area and ventilate area. Contain spill with sand or absorbent material; deposit in sealed bag or container. See Sections 8 and 13 for further information.

---

### Section 7 — Handling and Storage

---

Flinn Suggested Chemical Storage Pattern: Inorganic Miscellaneous, or near washing area.

---

### Section 8 — Exposure Controls, Personal Protection

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron.

---

### Section 9 — Physical and Chemical Properties

---

Pink or white viscous liquid. Odor: soap-like.  
Entirely water soluble.

---

### Section 10 — Stability and Reactivity

---

Prudent laboratory practices should be observed.  
Shelf Life: Good.

---

### Section 11 — Toxicological Information

---

Acute effects: Mild eye irritant  
Chronic effects: N.A.  
Target organs: N.A.

ORL-RAT LD50: N.A.  
IHL-RAT LC50: N.A.  
SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

---

### Section 12 — Ecological Information

---

Data not yet available.

---

### Section 13 — Disposal Considerations

---

Please consult with state and local regulations.  
Flinn Suggested Disposal Method #26b is one option.

---

### Section 14 — Transport Information

---

Shipping Name: Not regulated  
Hazard Class: N/A  
UN Number: N/A

N/A = Not applicable

---

### Section 15 — Regulatory Information

---

Not listed.

---

### Section 16 — Other Information

---

Consult your copy of the Flinn Scientific Catalog/Reference Manual for additional information about laboratory chemicals. This Material Safety Data Sheet (MSDS) is for guidance and is based upon information and tests believed to be reliable. Flinn Scientific Inc. makes no guarantee of the accuracy or completeness of the data and shall not be liable for any damages relating thereto. The data is offered solely for your consideration, investigation, and verification. Flinn Scientific Inc. assumes no legal responsibility for use or reliance upon this data.

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*Flinn Chemical Packaging Prevents Accidents*

flinn@flinnsci.com www.flinnsci.com  
P.O. Box 219 Batavia IL 60510  
(800) 452-1261 Fax (866) 452-1436

MSDS Number: E0150 \* \* \* \* \* Effective Date: 11/21/08 \* \* \* \* \* Supercedes: 01/13/06

**MSDS****Material Safety Data Sheet**From: Mallinckrodt Baker, Inc.  
222 Red School Lane  
Phillipsburg, NJ 08865Mallinckrodt  
CHEMICALS24 Hour Emergency Telephone: 908-659-2151  
CHEMTREC: 1-800-424-9300National Response In Canada  
CANUTEC: 613-996-6666Outside U.S. and Canada  
Chemtrec: 703-527-3887

NOTE: CHEMTREC, CANUTEC and National Response Center emergency numbers to be used only in the event of chemical emergencies involving a spill, leak, fire, exposure or accident involving chemicals.

All non-emergency questions should be directed to Customer Service (1-800-582-2537) for assistance.

## (ETHYLENEDINITRILO) TETRAACETIC ACID

### 1. Product Identification

**Synonyms:** EDTA; edetic acid; versene acid; ethylenediaminetetraacetic acid.**CAS No.:** 60-00-4**Molecular Weight:** 292.24**Chemical Formula:** (HOCOCH<sub>2</sub>)<sub>2</sub>NCH<sub>2</sub>CH<sub>2</sub>N- (HOCOCH<sub>2</sub>)<sub>2</sub>**Product Codes:**

J.T. Baker: 8991

Mallinckrodt: 2580

### 2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
Ethylenediamine Tetraacetic Acid	60-00-4	100%	Yes

### 3. Hazards Identification

#### Emergency Overview

**CAUTION! MAY BE HARMFUL IF SWALLOWED. MAY CAUSE IRRITATION TO SKIN, EYES, AND RESPIRATORY TRACT.**SAF-T-DATA<sup>(tm)</sup> Ratings (Provided here for your convenience)

Health Rating: 1 - Slight

Flammability Rating: 1 - Slight

Reactivity Rating: 0 - None

Contact Rating: 1 - Slight

Lab Protective Equip: GOGGLES; LAB COAT; PROPER GLOVES

Storage Color Code: Green (General Storage)

#### Potential Health Effects

**Inhalation:**

Mild irritant. Can cause sore throat and coughing.

**Ingestion:**

Substance has low toxicity by ingestion. Large amounts may cause gastrointestinal upset due to osmotic imbalance caused by its ability to sequester metal ions.

**Skin Contact:**

Can cause redness and pain.

**Eye Contact:**

Can cause redness and pain.

**Chronic Exposure:**

No information found.

**Aggravation of Pre-existing Conditions:**

No information found.

### 4. First Aid Measures

**Inhalation:**

Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.

**Ingestion:**

Give several glasses of water to drink to dilute. If large amounts were swallowed, get medical advice.

**Skin Contact:**

Remove any contaminated clothing. Wash skin with soap or mild detergent and water for at least 15 minutes. Get medical attention if irritation develops or persists.

**Eye Contact:**

Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention immediately.



---

## 5. Fire Fighting Measures

**Fire:**

Not considered to be a fire hazard.

**Explosion:**

Not considered to be an explosion hazard.

**Fire Extinguishing Media:**

Use any means suitable for extinguishing surrounding fire.

**Special Information:**

In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode.

---

## 6. Accidental Release Measures

Ventilate area of leak or spill. Wear appropriate personal protective equipment as specified in Section 8. Spills: Pick up and place in a suitable container for reclamation or disposal, using a method that does not generate dust. US Regulations (CERCLA) require reporting spills and releases to soil, water and air in excess of reportable quantities. The toll free number for the US Coast Guard National Response Center is (800) 424-8802.

---

## 7. Handling and Storage

Keep in a tightly closed container, stored in a cool, dry, ventilated area. Protect against physical damage. Containers of this material may be hazardous when empty since they retain product residues (dust, solids); observe all warnings and precautions listed for the product.

---

## 8. Exposure Controls/Personal Protection

**Airborne Exposure Limits:**

None established.

**Ventilation System:**

A system of local and/or general exhaust is recommended to keep employee exposures as low as possible. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, *Industrial Ventilation, A Manual of Recommended Practices*, most recent edition, for details.

**Personal Respirators (NIOSH Approved):**

For conditions of use where exposure to dust or mist is apparent and engineering controls are not feasible, a particulate respirator (NIOSH type N95 or better filters) may be worn. If oil particles (e.g. lubricants, cutting fluids, glycerine, etc.) are present, use a NIOSH type R or P filter. For emergencies or instances where the exposure levels are not known, use a full-face positive-pressure, air-supplied respirator. WARNING: Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.

**Skin Protection:**

Wear protective gloves and clean body-covering clothing.

**Eye Protection:**

Use chemical safety goggles. Maintain eye wash fountain and quick-drench facilities in work area.

---

## 9. Physical and Chemical Properties

**Appearance:**

White crystals.

**Odor:**

Odorless.

**Solubility:**

0.05 g/100 ml @ 20C (68F)

**Density:**

ca. 0.9

**pH:**

No information found.

**% Volatiles by volume @ 21C (70F):**

0

**Boiling Point:**

Not applicable.

**Melting Point:**

240C (464F)

**Vapor Density (Air=1):**

No information found.

**Vapor Pressure (mm Hg):**

No information found.

**Evaporation Rate (BuAc=1):**

No information found.

---

## 10. Stability and Reactivity

**Stability:**

Stable under ordinary conditions of use and storage.

**Hazardous Decomposition Products:**

Burning may produce carbon monoxide, carbon dioxide, nitrogen oxides.

**Hazardous Polymerization:**

Will not occur.

**Incompatibilities:**

Oxidizing agents.

**Conditions to Avoid:**

Incompatibles.

## 11. Toxicological Information

Investigated as a mutagen, reproductive effector. Oral LD50 Rat: 1658 mg/kg;  
Dermal LD50 Rat: >2000 mg/kg

Ingredient	---NTP Carcinogen---		IARC Category
	Known	Anticipated	
Ethylenediamine Tetraacetic Acid (60-00-4)	No	No	None

## 12. Ecological Information

### Environmental Fate:

When released into the soil, this material is expected to leach into groundwater. When released into the soil, this material may biodegrade to a moderate extent. When released into the soil, this material is not expected to evaporate significantly. When released into water, this material is not expected to evaporate significantly. This material is not expected to significantly bioaccumulate. When released into the air, this material is expected to be readily degraded by photolysis.

### Environmental Toxicity:

24 Hr LC50 rainbow trout: 340 mg/L;  
96 Hr LC50 bluegill sunfish: 486 mg/L;  
96 Hr LC50 channel catfish: 129 mg/L

## 13. Disposal Considerations

Whatever cannot be saved for recovery or recycling should be managed in an appropriate and approved waste disposal facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

## 14. Transport Information

Not regulated.

## 15. Regulatory Information

Ingredient	-----\Chemical Inventory Status - Part 1\-----			
	TSCA	EC	Japan	Australia
Ethylenediamine Tetraacetic Acid (60-00-4)	Yes	Yes	Yes	Yes

Ingredient	-----\Chemical Inventory Status - Part 2\-----			
	Korea	DSL	NDSL	Phil.
Ethylenediamine Tetraacetic Acid (60-00-4)	Yes	Yes	No	Yes

Ingredient	-----\Federal, State & International Regulations - Part 1\-----			
	-SARA 302- RQ	TPQ	-----SARA 313----- List	Chemical Catg.
Ethylenediamine Tetraacetic Acid (60-00-4)	No	No	No	No

Ingredient	-----\Federal, State & International Regulations - Part 2\-----		
	CERCLA	-RCRA- 261.33	-TSCA- 8(d)
Ethylenediamine Tetraacetic Acid (60-00-4)	5000	No	No

Chemical Weapons Convention: No TSCA 12(b): No CDTA: No  
SARA 311/312: Acute: Yes Chronic: No Fire: No Pressure: No  
Reactivity: No (Pure / Solid)

**Australian Hazchem Code:** None allocated.

**Poison Schedule:** None allocated.

### WHMIS:

This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

## 16. Other Information

**NFPA Ratings:** Health: 1 Flammability: 0 Reactivity: 0

### Label Hazard Warning:

CAUTION! MAY BE HARMFUL IF SWALLOWED. MAY CAUSE IRRITATION TO SKIN, EYES, AND RESPIRATORY TRACT.

### Label Precautions:

Avoid breathing dust.

Use with adequate ventilation.  
Keep container closed.  
Wash thoroughly after handling.  
Avoid contact with eyes, skin and clothing.

**Label First Aid:**

If swallowed, induce vomiting immediately as directed by medical personnel. Never give anything by mouth to an unconscious person. In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes.

**Product Use:**

Laboratory Reagent.

**Revision Information:**

No Changes.

**Disclaimer:**

\*\*\*\*\*

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\*\*\*\*\*

**Prepared by:** Environmental Health & Safety  
Phone Number: (314) 654-1600 (U.S.A.)

# FLINN SCIENTIFIC INC.

"Your Safer Source for Science Supplies"

## Material Safety Data Sheet (MSDS)

MSDS #: 320.00

Revision Date: November 25, 2002

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### Section 1 — Chemical Product and Company Identification

---

#### Eriochrome Black T

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### Section 2 — Composition, Information on Ingredients

---

Eriochrome Black T

Synonyms: mordant black 11, C.I. 14645

CAS#: 1787-61-7

---

### Section 3 — Hazards Identification

---

Brownish black powder or crystals. Reddish-brown liquid in solution. Odor of new rubber.  
May be slightly irritating to body tissues. Substance not considered hazardous. However, not all health aspects of this substance have been thoroughly investigated.

#### FLINN AT-A-GLANCE

Health-0  
Flammability-0  
Reactivity-0  
Exposure-0  
Storage-0

0 is low hazard, 3 is high hazard

---

### Section 4 — First Aid Measures

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash continuously with fresh water for 15 minutes.

Internal: Give large quantities of water. Call a physician or poison control at once.

---

### Section 5 — Fire Fighting Measures

---

Non flammable solid.

#### NFPA CODE

None Established

---

### Section 6 — Accidental Release Measures

---

Restrict unprotected personnel from area. Sweep up, place in sealed bag or container and dispose. Ventilate area and wash spill site after material pickup is complete. See Sections 8 and 13 for further information.

---

### Section 7 — Handling and Storage

---

Flinn Suggested Chemical Storage Pattern: Organic #9. Store with dyes, indicators, and stains.

Store in a cool dry place.

---

### Section 8 — Exposure Controls, Personal Protection

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron.

### Section 9 — Physical and Chemical Properties

Brownish black powder or crystals.  
Reddish-brown liquid in solution. Odor of new rubber.  
Solubility: Soluble in hot water.  
Formula: C<sub>20</sub>H<sub>12</sub>N<sub>3</sub>NaO<sub>7</sub>S  
Formula Weight: 461.38

### Section 10 — Stability and Reactivity

Avoid contact with strong oxidizers.  
Shelf life: Indefinite.

### Section 11 — Toxicological Information

Acute effects: Irritant	ORL-RAT LD50: N.A.
Chronic effects: N.A.	IHL-RAT LC50: N.A.
Target organs: N.A.	SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

### Section 12 — Ecological Information

Data not yet available.

### Section 13 — Disposal Considerations

Please consult with state and local regulations.  
Flinn Suggested Disposal Method #26a is one option.

### Section 14 — Transport Information

Shipping Name: Not regulated  
Hazard Class: N/A  
UN Number: N/A

N/A = Not applicable

### Section 15 — Regulatory Information

TSCA-listed, EINECS-listed (217-250-3).

### Section 16 — Other Information

Consult your copy of the Flinn Scientific Catalog/Reference Manual for additional information about laboratory chemicals. This Material Safety Data Sheet (MSDS) is for guidance and is based upon information and tests believed to be reliable. Flinn Scientific Inc. makes no guarantee of the accuracy or completeness of the data and shall not be liable for any damages relating thereto. The data is offered solely for your consideration, investigation, and verification. Flinn Scientific Inc. assumes no legal responsibility for use or reliance upon this data.

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(800) 452-1261 Fax (866) 452-1436

# FLINN SCIENTIFIC INC.

"Your Safer Source for Science Supplies"

## Material Safety Data Sheet (MSDS)

MSDS #: 326.00

Revision Date: March 8, 2001

---

### Section 1 — Chemical Product and Company Identification

---

#### Ethyl Alcohol

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### Section 2 — Composition, Information on Ingredients

---

Ethyl Alcohol

Synonym: ethanol

CAS#: 64-17-5

---

### Section 3 — Hazards Identification

---

Clear liquid; strong alcohol odor.

Toxic by ingestion and inhalation. Body tissue irritant. Avoid all body tissue contact. Denatured with isopropanol and methanol. Not for human consumption.

Flammable liquid.

#### FLINN AT-A-GLANCE

Health-3

Flammability-3

Reactivity-1

Exposure-1

Storage-3

0 is low hazard, 3 is high hazard

---

### Section 4 — First Aid Measures

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash continuously with fresh water for 15 minutes.

Internal: Rinse out mouth, give 1 to 2 cups of water or milk, induce vomiting. Call a physician or poison control at once.

---

### Section 5 — Fire Fighting Measures

---

Class IB Flammable liquid.

Flash Point: 48 F Upper: 24.5% Lower: 3.3% Autoignition Temperature: 683 F

**Fire Fighting Instructions:** Use triclass, dry chemical fire extinguisher. Firefighters should wear PPE and SCBA with full facepiece operated in positive pressure mode.

#### NFPA CODE

H-0

F-3

R-0

---

### Section 6 — Accidental Release Measures

---

Restrict unprotected personnel from area. Remove all ignition sources and ventilate area. Contain spill with sand and absorbent material; deposit in sealed bag or container. See Sections 8 and 13 for further information.

---

### Section 7 — Handling and Storage

---

Flinn Suggested Chemical Storage Pattern: Organic #2. Store with alcohols, glycols, amines and amides.

Use and dispense in a hood. Store in a dedicated flammables cabinet. If a flammables cabinet is not available, store in Flinn Saf-Stor can.

---

### Section 8 — Exposure Controls, Personal Protection

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron.

Use ventilation to keep airborne concentrations below exposure limits. Always wear a NIOSH-approved respirator with proper cartridges or a positive pressure, air-supplied respirator when handling this material in emergency situations (spill or fire).

Exposure guidelines: TWA 1000 ppm (OSHA)

### Section 9 — Physical and Chemical Properties

Clear liquid; strong alcohol odor.  
Solubility: Miscible with water and many organic solvents.  
Formula: C<sub>2</sub>H<sub>5</sub>OH  
Formula Weight: 46.07

Specific Gravity: .785  
Melting Point: -130 C  
Boiling Point: 78 C

### Section 10 — Stability and Reactivity

Avoid contact with oxidizing agents, peroxides, acids, acid chlorides, acid anhydrides, and alkali metals, ammonia, moisture, heat, open flame or any source of ignition.  
Shelf life: Excellent, if stored safely.

### Section 11 — Toxicological Information

Acute effects: Poison, irritant, nausea, dizziness and headache  
Chronic effects: N.A.  
Target organs: Eyes, liver, kidneys, nerves

ORL-RAT LD50: 7060 mg/Kg  
IHL-RAT LC50: 20000 ppm/10H  
SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

### Section 12 — Ecological Information

Data not yet available.

### Section 13 — Disposal Considerations

Please consult with state and local regulations.  
Flinn Suggested Disposal Method #26b is one option.

### Section 14 — Transport Information

Shipping Name: Ethyl alcohol  
Hazard Class: 3, Flammable liquid  
UN Number: UN1170

N/A = Not applicable

### Section 15 — Regulatory Information

TSCA-listed, EINECS-listed (200-578-6), RCRA code D001.

### Section 16 — Other Information

Consult your copy of the Flinn Scientific Catalog/Reference Manual for additional information about laboratory chemicals. This Material Safety Data Sheet (MSDS) is for guidance and is based upon information and tests believed to be reliable. Flinn Scientific Inc. makes no guarantee of the accuracy or completeness of the data and shall not be liable for any damages relating thereto. The data is offered solely for your consideration, investigation, and verification. Flinn Scientific Inc. assumes no legal responsibility for use or reliance upon this data.

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P.O. Box 219 Batavia IL 60510  
(800) 452-1261 Fax (866) 452-1436

# FLINN SCIENTIFIC, INC.

## Material Safety Data Sheet (MSDS)

MSDS #: 325.00

Revision Date: April 23, 2007

---

### SECTION 1 — CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

---

#### Ethyl Acetate

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### SECTION 2 — COMPOSITION, INFORMATION ON INGREDIENTS

---

Ethyl Acetate

Synonym: acetic acid ethyl ester

CAS#: 141-78-6

---

### SECTION 3 — HAZARDS IDENTIFICATION

---

Colorless, fragrant liquid.

Slightly toxic by inhalation, ingestion and skin absorption.

Avoid all body tissue contact.

Flammable liquid.

#### FLINN AT-A-GLANCE

Health-1

Flammability-3

Reactivity-0

Exposure-1

Storage-3

0 is low hazard, 3 is high hazard

---

### SECTION 4 — FIRST AID MEASURES

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash continuously with fresh water for 15 minutes.

Internal: Induce vomiting. Call a physician or poison control at once.

---

### SECTION 5 — FIRE FIGHTING MEASURES

---

Class 1B Flammable liquid.

Flash Point: 26 F Upper: 11.5% (38 C) Lower: 2.2% (38 C) Autoignition Temperature: 905 F

When heated to decomposition, emits acrid smoke and irritating fumes.

**Fire Fighting Instructions:** Use triclass, dry chemical fire extinguisher. Firefighters should wear PPE and SCBA with full facepiece operated in positive pressure mode.

#### NFPA CODE

H-1

F-3

R-0

---

### SECTION 6 — ACCIDENTAL RELEASE MEASURES

---

Restrict unprotected personnel from area. Remove all ignition sources and ventilate area. Contain spill with sand and absorbent material; deposit in sealed bag or container. See Sections 8 and 13 for further information.

---

### SECTION 7 — HANDLING AND STORAGE

---

Flinn Suggested Chemical Storage Pattern: Organic #3. Store with hydrocarbons, esters and aldehydes.

Store in a dedicated flammables cabinet. If a flammables cabinet is not available, store in Flinn Saf-Stor Can.

Moisture sensitive material. Store in a cool dry place. Use and dispense in a hood.

---

### SECTION 8 — EXPOSURE CONTROLS, PERSONAL PROTECTION

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron. Use ventilation to keep airborne concentrations below exposure limits. Always wear a NIOSH-approved respirator with proper cartridges or a positive pressure, air-supplied respirator when handling this material in emergency situations (spill or fire).

Exposure guidelines: TWA 400 ppm, (OSHA)



---

**SECTION 9 — PHYSICAL AND CHEMICAL PROPERTIES**

---

Colorless, fragrant liquid.  
Solubility: Soluble in chloroform, alcohol and ether;  
only slightly in water.  
Formula: CH<sub>3</sub>COOC<sub>2</sub>H<sub>5</sub>  
Formula Weight: 88.12

Specific Gravity: 0.902  
Melting Point: -84 C

---

**SECTION 10 — STABILITY AND REACTIVITY**

---

Avoid contact with oxidizers, bases, acids, moisture, heat.  
Shelf life: Good, if stored safely.

---

**SECTION 11 — TOXICOLOGICAL INFORMATION**

---

Acute effects: Irritant, nausea, headache and vomiting  
Chronic effects: Anemia  
Target organs: Liver, kidneys, central nervous system, blood

ORL-RAT LD50: 5620 mg/kg  
IHL-RAT LC50: 45 gm/m<sup>3</sup>/2H  
SKN-RBT LD50: 720 gm/kg

N.A. = Not available, not all health aspects of this substance have been fully investigated.

---

**SECTION 12 — ECOLOGICAL INFORMATION**

---

Data not yet available.

---

**SECTION 13 — DISPOSAL CONSIDERATIONS**

---

Please consult with state and local regulations.  
Flinn Suggested Disposal Method #18a is one option.

---

**SECTION 14 — TRANSPORT INFORMATION**

---

Shipping Name: Ethyl acetate  
Hazard Class: 3, Flammable Liquid  
UN Number: UN1173  
N/A = Not applicable

---

**SECTION 15 — REGULATORY INFORMATION**

---

TSCA-listed, EINECS-listed (205-500-4), RCRA code U112.

---

**SECTION 16 — OTHER INFORMATION**

---

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**Consult your copy of the Flinn Chemical Catalog/Reference Manual  
for additional information about laboratory chemicals**

# FLINN SCIENTIFIC INC.

"Your Safer Source for Science Supplies"

## Material Safety Data Sheet (MSDS)

MSDS #: 330.00

Revision Date: March 14, 2001

---

### Section 1 — Chemical Product and Company Identification

---

## Ethylene Glycol

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### Section 2 — Composition, Information on Ingredients

---

Ethylene Glycol

Synonym: 1,2 ethanediol

CAS#: 107-21-1

---

### Section 3 — Hazards Identification

---

Colorless, viscous, liquid. Sweet, antifreeze-like odor.

Moderately toxic by ingestion and skin absorption. Skin, eye, and mucous membrane irritant. Avoid all body tissue contact. Avoid inhaling toxic fumes.

Combustible.

#### FLINN AT-A-GLANCE

Health-2  
Flammability-1  
Reactivity-1  
Exposure-2  
Storage-1

0 is low hazard, 3 is high hazard

---

### Section 4 — First Aid Measures

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash continuously with fresh water for 15 minutes.

Internal: Induce vomiting. Call a physician or poison control at once.

---

### Section 5 — Fire Fighting Measures

---

Combustible liquid.

When heated to decomposition, emits acrid smoke and irritating fumes.

Flash Point: 232 F Upper: 15.3% Lower: 3.2% Autoignition Temperature: 752 F

**Fire Fighting Instructions:** Use triclass, dry chemical fire extinguisher. Firefighters should wear PPE and SCBA with full facepiece operated in positive pressure mode.

#### NFPA CODE

H-1  
F-1  
R-0

---

### Section 6 — Accidental Release Measures

---

Restrict unprotected personnel from area and ventilate area. Contain spill with sand or absorbent material; deposit in sealed bag or container. See Sections 8 and 13 for further information.

---

### Section 7 — Handling and Storage

---

Flinn Suggested Chemical Storage Pattern: Organic #2. Store with alcohols, glycols, amines and amides.

Store in a cool dry place. Deliquescent, store in Flinn Chem-Saf Bag. Use and dispense in a hood.

---

### Section 8 — Exposure Controls, Personal Protection

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron. Use exhaust ventilation to keep airborne concentrations low.

### Section 9 — Physical and Chemical Properties

Colorless, viscous liquid.  
Sweet, antifreeze-like odor.  
Solubility: Water soluble.  
Formula: HOCH<sub>2</sub>CH<sub>2</sub>OH  
Formula Weight: 62.08

Specific Gravity: 1.1153  
Melting Point: -13 C  
Boiling Point: 196-198 C

### Section 10 — Stability and Reactivity

Avoid contact with strong oxidizers, strong bases, heat, open flame or any source of ignition.  
Shelf life: Fair. Substance is hygroscopic.

### Section 11 — Toxicological Information

Acute effects: Toxic, irritant, nausea, headache and vomiting  
Chronic effects: Reproductive hazard  
Target organs: Liver, kidneys, central nervous system

ORL-RAT LD50: 4700 mg/kg  
IHL-RAT LC50: N.A.  
SKN-RBT LD50: 9530 mg/kg

N.A. = Not available, not all health aspects of this substance have been fully investigated.

### Section 12 — Ecological Information

Data not yet available.

### Section 13 — Disposal Considerations

Please consult with state and local regulations.  
Flinn Suggested Disposal Method 18b is one option.

### Section 14 — Transport Information

Shipping Name: Not regulated  
Hazard Class: N/A  
UN Number: N/A

N/A = Not applicable

### Section 15 — Regulatory Information

TSCA-listed, EINECS-listed (203-473-3).

### Section 16 — Other Information

Consult your copy of the Flinn Scientific Catalog/Reference Manual for additional information about laboratory chemicals. This Material Safety Data Sheet (MSDS) is for guidance and is based upon information and tests believed to be reliable. Flinn Scientific Inc. makes no guarantee of the accuracy or completeness of the data and shall not be liable for any damages relating thereto. The data is offered solely for your consideration, investigation, and verification. Flinn Scientific Inc. assumes no legal responsibility for use or reliance upon this data.

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P.O. Box 219 Batavia IL 60510  
(800) 452-1261 Fax (866) 452-1436

# FLINN SCIENTIFIC INC.

"Your Safer Source for Science Supplies"

## Material Safety Data Sheet (MSDS)

MSDS #: 357.00

Revision Date: November 25, 2002

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### Section 1 — Chemical Product and Company Identification

---

#### Fuchsin, Basic

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### Section 2 — Composition, Information on Ingredients

---

Fuchsin, Basic

Synonyms: Basic violet 14, rosaniline, C.I. 42510

CAS#: 632-99-5

---

### Section 3 — Hazards Identification

---

Green, lustrous powder. Odorless.

Dust may be irritating. Avoid inhalation.

#### FLINN AT-A-GLANCE

Health-0

Flammability-0

Reactivity-0

Exposure-1

Storage-0

0 is low hazard, 3 is high hazard

---

### Section 4 — First Aid Measures

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash continuously with fresh water for 15 minutes.

Internal: Give large quantities of water. Call a physician or poison control at once.

---

### Section 5 — Fire Fighting Measures

---

Non-flammable solid.

When heated to decomposition, emits toxic fumes of NO<sub>x</sub> and chlorides.

**Fire Fighting Instructions:** Use triclass, dry chemical fire extinguisher. Firefighters should wear PPE and SCBA with full facepiece operated in positive pressure mode.

#### NFPA CODE

None Established

---

### Section 6 — Accidental Release Measures

---

Restrict unprotected personnel from area. Sweep up, place in sealed bag or container and dispose. Ventilate area and wash spill site after material pickup is complete. See Sections 8 and 13 for further information.

---

### Section 7 — Handling and Storage

---

Flinn Suggested Chemical Storage Pattern: Organic #9. Store with dyes, indicators, and stains.

Store in a cool dry place.

---

### Section 8 — Exposure Controls, Personal Protection

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron.

### Section 9 — Physical and Chemical Properties

Green, lustrous powder. Odorless.  
pH indicator. Soluble in water and alcohol.  
C<sub>20</sub>H<sub>19</sub>N<sub>3</sub> HCl  
F.W. 337.85

Melting Point: 250 C (dec.)  
pH from 1.2 red to 3.0 purple and  
11.6 purple to 14.0 colorless

### Section 10 — Stability and Reactivity

Avoid contact with strong oxidizers.  
Shelf Life: Indefinite.

### Section 11 — Toxicological Information

Acute effects: Irritating as dust  
Chronic effects: N.A.  
Target organs: N.A.

ORL-RAT LD50: N.A.  
IHL-RAT LC50: N.A.  
SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

### Section 12 — Ecological Information

Data not yet available.

### Section 13 — Disposal Considerations

Please consult with state and local regulations.  
Flinn Suggested Disposal Method #26a is one option.

### Section 14 — Transport Information

Shipping Name: Not regulated  
Hazard Class: N/A  
UN Number: N/A

N/A = Not applicable

### Section 15 — Regulatory Information

TSCA-listed, EINECS-listed (211-189-6).

### Section 16 — Other Information

Consult your copy of the Flinn Scientific Catalog/Reference Manual for additional information about laboratory chemicals. This Material Safety Data Sheet (MSDS) is for guidance and is based upon information and tests believed to be reliable. Flinn Scientific Inc. makes no guarantee of the accuracy or completeness of the data and shall not be liable for any damages relating thereto. The data is offered solely for your consideration, investigation, and verification. Flinn Scientific Inc. assumes no legal responsibility for use or reliance upon this data.

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# FLINN SCIENTIFIC INC.

"Your Safer Source for Science Supplies"

## Material Safety Data Sheet (MSDS)

MSDS #: 333.00

Revision Date: November 25, 2002

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### Section 1 — Chemical Product and Company Identification

---

#### Fast Green FCF

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### Section 2 — Composition, Information on Ingredients

---

Fast Green FCF

Synonym: C.I. 42053

CAS#: 2353-45-9

---

### Section 3 — Hazards Identification

---

Dark green powder or granules with metallic luster. Odorless.

Irritant to body tissues. Slightly toxic by ingestion. Avoid all body tissue contact.

#### FLINN AT-A-GLANCE

Health-1

Flammability-0

Reactivity-0

Exposure-1

Storage-0

0 is low hazard, 3 is high hazard

---

### Section 4 — First Aid Measures

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash continuously with fresh water for 15 minutes.

Internal: Give large quantities of water. Call a physician or poison control at once.

---

### Section 5 — Fire Fighting Measures

---

Non flammable solid.

When heated to decomposition, emits toxic fumes of NH<sub>3</sub> and NO<sub>x</sub>.

**Fire Fighting Instructions:** Use triclass, dry chemical fire extinguisher. Firefighters should wear PPE and SCBA with full facepiece operated in positive pressure mode.

#### NFPA CODE

None Established

---

### Section 6 — Accidental Release Measures

---

Restrict unprotected personnel from area. Sweep up, place in sealed bag or container and dispose. Ventilate area and wash spill site after material pickup is complete. See Sections 8 and 13 for further information.

---

### Section 7 — Handling and Storage

---

Flinn Suggested Chemical Storage Pattern: Organic #9. Store with dyes, indicators, and stains.

Keep container tightly closed. Store in a cool dry place. Use and dispense in a hood.

---

### Section 8 — Exposure Controls, Personal Protection

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron.

Use exhaust ventilation to keep airborne concentrations low.

### Section 9 — Physical and Chemical Properties

Dark green powder or granules with metallic luster. Odorless.

Melting Point: 290 C (dec.)

Solution is dark green with a slight vinegar-like odor.

Solubility: Soluble in water, alcohol.

Formula: C<sub>37</sub>H<sub>34</sub>O<sub>10</sub>N<sub>2</sub>S<sub>3</sub>Na<sub>2</sub>

Formula Weight: 810.91

### Section 10 — Stability and Reactivity

Avoid contact with strong oxidizing agents.

Shelf life: Indefinite

### Section 11 — Toxicological Information

Acute effects: Irritant

ORL-RAT LD50: 2 gm/kg

Chronic effects: N.A.

IHL-RAT LC50: N.A.

Target organs: N.A.

SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

### Section 12 — Ecological Information

Data not yet available.

### Section 13 — Disposal Considerations

Please consult with state and local regulations.

Flinn Suggested Disposal Method #26a is one option.

### Section 14 — Transport Information

Shipping Name: Not regulated

Hazard Class: N/A

UN Number: N/A

N/A = Not applicable

### Section 15 — Regulatory Information

TSCA-listed, EINECS-listed (219-091-5).

### Section 16 — Other Information

Consult your copy of the Flinn Scientific Catalog/Reference Manual for additional information about laboratory chemicals. This Material Safety Data Sheet (MSDS) is for guidance and is based upon information and tests believed to be reliable. Flinn Scientific Inc. makes no guarantee of the accuracy or completeness of the data and shall not be liable for any damages relating thereto. The data is offered solely for your consideration, investigation, and verification. Flinn Scientific Inc. assumes no legal responsibility for use or reliance upon this data.

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## **MATERIAL SAFETY DATA SHEET**

FEHLING SOLUTION A  
CAROLINA BIOLOGICAL

Revised: 15/05/08  
Replaces: 10/07/07  
Printed: 20/05/08

---

### **1. PRODUCT DESCRIPTION**

Product Name: Fehling Solution A  
Product Code(s): 86-2271, 86-2273  
Size: 120ml, 500ml  
Chemical Name: Does not apply product is a mixture  
CAS Number: None assigned to this mixture-See individual components  
Formula: CuSO<sub>2</sub>/Water Solution  
Synonyms: None known  
Distributor: Carolina Biological Supply Company  
2700 York Road  
Burlington, NC 27215

Chemical Information: 800-227-1150 (8am-5pm (ET) M-F)  
Chemtrec (Transportation Spill Response 24 hours): 800-424-9300

### **2. COMPOSITION/INFORMATION ON INGREDIENTS**

Principle Hazardous Components: Cupric Sulfate (CAS#7758-98-7) 7%  
Cupric Sulfate: ACGIH-TLV 1mg (Cu)/m<sup>3</sup> (TWA)  
OSHA-PEL 1mg (Cu)/m<sup>3</sup> (TWA)

### **3. HAZARD IDENTIFICATION**

Emergency Overview: Caution, May be harmful if swallowed.  
Potential Health Effects:  
Eyes: May cause irritation.  
Skin: May cause irritation.  
Ingestion: May cause gastrointestinal discomfort.  
Inhalation: May cause irritation to respiratory tract.

### **4. FIRST AID MEASURES**

Emergency and First Aid Procedures:  
Eyes - Flush with water for at least 15 minutes, raising and lowering eyelids occasionally. Get medical attention if irritation persists.  
Skin - Thoroughly wash exposed area for at least 15 minutes. Remove contaminated clothing. Launder contaminated clothing before reuse. Get medical attention if irritation persists.  
Ingestion - If swallowed, if conscious, give plenty of water and induce vomiting immediately as directed by medical personnel. Immediately call a physician or poison control center. Never give anything by mouth to an unconscious person.  
Inhalation - Remove to fresh air. Give oxygen if breathing is difficult; give artificial respiration if breathing has stopped. Keep person warm, quiet, and get medical attention.

### **5. FIREFIGHTING PROCEDURES**

Flash Point(Method Used): Non-flammable liquid.  
NFPA Rating: None established  
Extinguisher Media:  
Use media suitable to extinguish surrounding fire.  
Flammable Limits in Air % by Volume: No information available  
Autoignition Temperature: No information available  
Special Firefighting Procedures:  
Firefighters should wear full protective equipment and NIOSH approved self-contained breathing apparatus.  
Unusual Fire and Explosion Hazards: If dry heated above 600C, SO<sub>2</sub> is



## **MATERIAL SAFETY DATA SHEET**

FEHLING SOLUTION A  
CAROLINA BIOLOGICAL

Revised: 15/05/08  
Replaces: 10/07/07  
Printed: 20/05/08

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evolved.

### **6. SPILL OR LEAK PROCEDURES**

Steps to be Taken in Case Material is Released or Spilled:

Ventilate area of spill. Eliminate all sources of ignition. Remove all non-essential personnel from area. Clean-up personnel should wear proper protective equipment and clothing. Absorb material with suitable absorbent and containerize for disposal.

### **7. SPECIAL PRECAUTIONS**

Precautions to be Taken in Handling or Storing: Store in a cool place. Avoid

contact with eyes or prolonged contact with skin. Wash thoroughly after handling.

Other Precautions: Do not take internally.

### **8. SPECIAL PROTECTION INFORMATION**

Respiratory Protection(Specify Type):

A NIOSH/MSHA chemical cartridge respirator should be worn if PEL or TLV is exceeded.

Ventilation:

Local Exhaust: Preferred

Mechanical(General): Acceptable

Special: No

Other: No

Protective Gloves:

Rubber, neoprene, PVC, or equivalent.

Eye Protection:

Splash proof chemical safety goggles should be worn at all times.

Other Protective Clothing or Equipment:

Lab apron, eye wash, and safety shower.

### **9. PHYSICAL DATA**

Molecular Weight: No data available

Melting Point: Freezes Approximately -5C (23F)

Boiling Point: Approximately 105C (221 F)

Vapor Pressure: 14 (water)

Vapor Density(Air=1): 0.7 (water)

Specific Gravity(H2O=1): Approximately 1.1

Percent Volatile by Volume: 93%

Evaporation Rate(H2O=1): Greater than 1

Solubility in Water: Complete

Appearance and Odor: Clear, blue colored, liquid; no odor.

### **10. REACTIVITY DATA**

Stability: Stable

Conditions to Avoid: Excessive temperature and heat, open flame or sparks

Incompatibility(Materials to Avoid): Solution is corrosive to mild steel.

Hazardous Decomposition Products: If dry heated above 1100F (600C) sulfur

dioxide (SO2) may be released.

Hazardous Polymerization: Will not occur

### **11. TOXICITY DATA**

# **MATERIAL SAFETY DATA SHEET**

FEHLING SOLUTION A  
CAROLINA BIOLOGICAL

Revised: 15/05/08  
Replaces: 10/07/07  
Printed: 20/05/08

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Toxicity Data: To the best of our knowledge, the toxicological properties of this mixture have not been thoroughly evaluated. Data is listed for individual components.

Effects of Overexposure:

Acute: See section 3

Chronic: Mutation data cited. Tumorigenic data cited. IARC

Cancer

Review: Reproductive effects data cited; IMEMDT 16,187,78. Not listed

OSHA or NTP as causing cancer.

Conditions Aggravated by Overexposure: Preexisting conditions of the eyes,

skin and upper respiratory tract.

Target Organs: Eyes, skin, upper respiratory tract.

Primary Route(s) of Entry: Inhalation, skin contact

## **12. ECOLOGICAL DATA**

EPA Waste Numbers: None

## **13. DISPOSAL INFORMATION**

Waste Disposal Methods: Dispose in accordance with all applicable Federal,

State and Local regulations.

Always contact a permitted waste disposer (TSD) to assure compliance.

## **14. TRANSPORT INFORMATION**

DOT Proper Shipping Name: None (non-regulated material)

## **15. REGULATORY INFORMATION**

EPA TSCA Status: On TSCA Inventory

Hazard Category for SARA Section 311/312 Reporting: Acute

Product or Components	SARA EHS Sec. 302 TPQ	SARA Sec. 313 Chemicals Name List	Chemical Category	CERCLA Sec. 103 RQ lbs.	RCRA Sec.
261.33					

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Cupric Sulfate	No	No	No	10	No
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## **16. ADDITIONAL INFORMATION**

The information provided in this Material Safety Data Sheet represents a compilation of data drawn directly from various sources available to us. Carolina Biological Supply makes no representation or guarantee as to the suitability of this information to a particular application of the substance covered in the Material Safety Data Sheet. Any employer must carefully assess the applicability of any information contained herein in regards to the particular use to which the employer puts the material.

Glossary

ACGIH.....American Conference of Governmental Industrial Hygienists

CAS Number..Chemical Abstracts Service Number

CERCLA.....Comprehensive Environmental Response, Compensation, and Liability Act

## **MATERIAL SAFETY DATA SHEET**

FEHLING SOLUTION A  
CAROLINA BIOLOGICAL

Revised: 15/05/08  
Replaces: 10/07/07  
Printed: 20/05/08

---

DOT.....U.S. Department of Transportation  
IARC.....International Agency of Research on Cancer  
mppcf.....million particles per cubic foot  
N/A.....Not Available  
NTP.....National Toxicology Program  
OSHA.....Occupational Safety and Health Administration  
PEL.....Permissible Exposure Limit  
ppm.....parts per million  
RCRA.....Resource Conservation and Recovery Act  
SARA.....Superfund Amendments and Reauthorization Act  
TLV.....Threshold Limit Value  
TSCA.....Toxic Substances Control Act

## **MATERIAL SAFETY DATA SHEET**

FEHLING SOLUTION B  
CAROLINA BIOLOGICAL

Revised: 16/07/04  
Replaces: 16/07/04  
Printed: 20/05/08

---

### **1. PRODUCT DESCRIPTION**

Product Name: Fehling Solution B (Alkaline)  
Product Code(s): 86-2281, 86-2283  
Size: 120 ml, 500 ml  
Chemical Name: Does not apply  
CAS Number: Not assigned to this mixture  
Formula: See Section 2  
Synonyms: N/A  
Distributor: Carolina Biological Supply Company  
2700 York Road  
Burlington, NC 27215

Chemical Information: 800-227-1150 (8am-5pm (ET) M-F)  
Chemtrec (Transportation Spill Response 24 hours): 800-424-9300

### **2. COMPOSITION/INFORMATION ON INGREDIENTS**

Principle Hazardous Components: Potassium Sodium Tartrate  
(CAS# 6381-59-5) 34.6%  
Sodium Hydroxide (CAS# 1310-73-2) 10%  
TLV and PEL units: ACGIH TLV Sodium Hydroxide ceiling 2 mg/m3  
OSHA-PEL Sodium Hydroxide 2 mg/m3 (TWA)

### **3. HAZARD IDENTIFICATION**

Emergency Overview: Extremely hazardous to eyes.  
Potential Health Effects:  
Eyes: May cause irritation.  
Skin: May cause irritation.  
Ingestion: May cause gastrointestinal discomfort.  
Inhalation: May cause irritation to respiratory tract.

### **4. FIRST AID MEASURES**

Emergency and First Aid Procedures:  
Eyes - Flush with water for at least 15 minutes, raising and lowering eyelids occasionally. Get medical attention if irritation persists.  
Skin - Thoroughly wash exposed area for at least 15 minutes. Remove contaminated clothing. Launder contaminated clothing before reuse. Get medical attention if irritation persists.  
Ingestion - If swallowed, if conscious, give plenty of water and induce vomiting immediately as directed by medical personnel. Immediately call a physician or poison control center. Never give anything by mouth to an unconscious person.  
Inhalation - Remove to fresh air. Give oxygen if breathing is difficult; give artificial respiration if breathing has stopped. Keep person warm, quiet, and get medical attention.

### **5. FIREFIGHTING PROCEDURES**

Flash Point(Method Used): None  
NFPA Rating: None established  
Extinguisher Media:  
Use media suitable to extinguish surrounding fire.  
Flammable Limits in Air % by Volume: No data available  
Autoignition Temperature: No data available  
Special Firefighting Procedures:  
Firefighters should wear full protective equipment and NIOSH approved self-contained breathing apparatus.

## **MATERIAL SAFETY DATA SHEET**

FEHLING SOLUTION B  
CAROLINA BIOLOGICAL

Revised: 16/07/04  
Replaces: 16/07/04  
Printed: 20/05/08

---

Unusual Fire and Explosion Hazards: No data available

### **6. SPILL OR LEAK PROCEDURES**

Steps to be Taken in Case Material is Released or Spilled:

Ventilate area of spill. Eliminate all sources of ignition.  
Remove all non-essential personnel from area. Clean-up personnel should wear proper protective equipment and clothing. Absorb material with suitable absorbent and containerize for disposal.

### **7. SPECIAL PRECAUTIONS**

Precautions to be Taken in Handling and Storing: Store in a tightly closed container away from acids.

### **8. SPECIAL PROTECTION INFORMATION**

Respiratory Protection(Specify Type):

### **9. PHYSICAL DATA**

Molecular Weight: No data available  
Melting Point: No data available  
Boiling Point: No data available  
Vapor Pressure: No data available  
Vapor Density(Air=1): No data available  
Specific Gravity(H<sub>2</sub>O=1): No data available  
Percent Volatile by Volume: No data available  
Evaporation Rate(H<sub>2</sub>O=1): No data available  
Solubility in Water: 100%  
Appearance and Odor: Clear, odorless liquid

### **10. REACTIVITY DATA**

Stability: Stable  
Conditions to Avoid: None known  
Incompatibility(Materials to Avoid): Acids  
Hazardous Decomposition Products: No information available  
Hazardous Polymerization: Will not occur

### **11. TOXICITY DATA**

Toxicity Data: None cited  
Effects of Overexposure: No data available  
Acute: See section 3  
Chronic: None cited  
Conditions Aggravated by Overexposure: No data available  
Target Organs: No data available  
Primary Route(s) of Entry: No data available

### **12. ECOLOGICAL DATA**

EPA Waste Numbers: None

### **13. DISPOSAL INFORMATION**

Waste Disposal Methods: Dispose in accordance with all applicable Federal, State and Local regulations.  
Always contact a permitted waste disposer (TSD) to assure compliance.

### **14. TRANSPORT INFORMATION**

Description: Corrosive liquids, n.o.s.(sodium hydroxide), 8, UN1760, II

### **15. REGULATORY INFORMATION**

EPA TSCA Status: On TSCA Inventory

## MATERIAL SAFETY DATA SHEET

FEHLING SOLUTION B  
CAROLINA BIOLOGICAL

Revised: 16/07/04  
Replaces: 16/07/04  
Printed: 20/05/08

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Hazard Category for SARA Section 311/312 Reporting: Acute

Product or Components	SARA EHS Sec. 302 TPQ	SARA Sec. 313 Chemicals		CERCLA Sec. 103 RQ lbs.	RCRA Sec.
		Name List	Chemical Category		
261.33					

---

Potassium Sodium Tartrate	No	No	No	No	No
Sodium Hydroxide	No	No	No	1000	No

### **16. ADDITIONAL INFORMATION**

The information provided in this Material Safety Data Sheet represents a compilation of data drawn directly from various sources available to us. Carolina Biological Supply makes no representation or guarantee as to the suitability of this information to a particular application of the substance covered in the Material Safety Data Sheet. Any employer must carefully assess the applicability of any information contained herein in regards to the particular use to which the employer puts the material.

#### Glossary

ACGIH.....American Conference of Governmental Industrial Hygienists  
CAS Number..Chemical Abstracts Service Number  
CERCLA.....Comprehensive Environmental Response, Compensation, and Liability Act  
DOT.....U.S. Department of Transportation  
IARC.....International Agency of Research on Cancer  
mppcf.....million particles per cubic foot  
N/A.....Not Available  
NTP.....National Toxicology Program  
OSHA.....Occupational Safety and Health Administration  
PEL.....Permissible Exposure Limit  
ppm.....parts per million  
RCRA.....Resource Conservation and Recovery Act  
SARA.....Superfund Amendments and Reauthorization Act  
TLV.....Threshold Limit Value  
TSCA.....Toxic Substances Control Act

# FLINN SCIENTIFIC INC.

"Your Safer Source for Science Supplies"

## Material Safety Data Sheet (MSDS)

MSDS #: 340.00

Revision Date: November 25, 2002

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### Section 1 — Chemical Product and Company Identification

---

#### Ferric Nitrate

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### Section 2 — Composition, Information on Ingredients

---

Ferric Nitrate

Synonym: iron (III) nitrate

CAS#: 7782-61-8

---

### Section 3 — Hazards Identification

---

Pale violet crystal. Slight nitric acid odor.

Slightly toxic by ingestion and inhalation. Irritant to body tissues. Avoid all body tissue contact.

Strong oxidizer. Dangerous fire risk.

#### FLINN AT-A-GLANCE

Health-1

Flammability-0

Reactivity-3

Exposure-1

Storage-1

0 is low hazard, 3 is high hazard

---

### Section 4 — First Aid Measures

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash continuously with fresh water for 15 minutes.

Internal: Give large quantities of water. Call a physician or poison control at once.

---

### Section 5 — Fire Fighting Measures

---

Non flammable solid.

Strong oxidizer, contact with combustible material may cause fire. When heated to decomposition, emits toxic fumes of NO<sub>x</sub>.

**Fire Fighting Instructions:** Use triclass, dry chemical fire extinguisher. Firefighters should wear PPE and SCBA with full facepiece operated in positive pressure mode.

#### NFPA CODE

None Established

---

### Section 6 — Accidental Release Measures

---

Restrict unprotected personnel from area. Sweep up, place in sealed bag or container and dispose. Ventilate area and wash spill site after material pickup is complete. See Sections 8 and 13 for further information.

---

### Section 7 — Handling and Storage

---

Flinn Suggested Chemical Storage Pattern: Inorganic #3. Store with amides, nitrates and nitrites.

Moisture sensitive material. Deliquescent, store in Flinn Chem-Saf Bag. Store in a cool dry place.

---

### Section 8 — Exposure Controls, Personal Protection

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron.

Use exhaust ventilation to keep airborne concentrations low.

### Section 9 — Physical and Chemical Properties

Pale violet crystal. Slight nitric acid odor.  
Solubility: Soluble in water, alcohol, acetone.  
Formula: Fe(NO<sub>3</sub>)<sub>3</sub> 9H<sub>2</sub>O  
Formula Weight: 404.00

Specific Gravity: 1.7  
Melting Point: 47.2 C

### Section 10 — Stability and Reactivity

Avoid contact with combustible materials.  
Shelf life: Fair to poor, deliquescent, store in a Flinn Chem-Saf bag.

### Section 11 — Toxicological Information

Acute effects: Irritant  
Chronic effects: N.A.  
Target organs: N.A.

ORL-RAT LD50: 3250 mg/kg  
IHL-RAT LC50: N.A.  
SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

### Section 12 — Ecological Information

Data not yet available.

### Section 13 — Disposal Considerations

Please consult with state and local regulations.  
Flinn Suggested Disposal Method #26a is one option.

### Section 14 — Transport Information

Shipping Name: Ferric nitrate  
Hazard Class: 5.1, Oxidizer  
UN Number: UN1466

N/A = Not applicable

### Section 15 — Regulatory Information

TSCA-listed, EINECS-listed (233-899-5), RCRA code D001.

### Section 16 — Other Information

Consult your copy of the Flinn Scientific Catalog/Reference Manual for additional information about laboratory chemicals. This Material Safety Data Sheet (MSDS) is for guidance and is based upon information and tests believed to be reliable. Flinn Scientific Inc. makes no guarantee of the accuracy or completeness of the data and shall not be liable for any damages relating thereto. The data is offered solely for your consideration, investigation, and verification. Flinn Scientific Inc. assumes no legal responsibility for use or reliance upon this data.

**FLINN SCIENTIFIC INC.**

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flinn@flinnsci.com www.flinnsci.com  
P.O. Box 219 Batavia IL 60510  
(800) 452-1261 Fax (866) 452-1436



# FLINN SCIENTIFIC INC.

"Your Safer Source for Science Supplies"

## Material Safety Data Sheet (MSDS)

MSDS #: 348.00

Revision Date: November 25, 2002

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### Section 1 — Chemical Product and Company Identification

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#### Ferrous Sulfate

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### Section 2 — Composition, Information on Ingredients

---

Ferrous Sulfate

Synonym: iron (II) sulfate

CAS#: 7782-63-0

---

### Section 3 — Hazards Identification

---

Light blue or light blue-green crystals. Odorless.

Slightly toxic by ingestion. Body tissue irritant. Avoid ingestion, inhalation and skin absorption.

#### FLINN AT-A-GLANCE

Health-1

Flammability-0

Reactivity-0

Exposure-1

Storage-1

0 is low hazard, 3 is high hazard

---

### Section 4 — First Aid Measures

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash continuously with fresh water for 15 minutes.

Internal: Give large quantities of water. Call a physician or poison control at once.

---

### Section 5 — Fire Fighting Measures

---

Non flammable solid.

When heated to decomposition, emits non-combustible toxic fumes of SO<sub>x</sub>.

**Fire Fighting Instructions:** Use triclass, dry chemical fire extinguisher. Firefighters should wear PPE and SCBA with full facepiece operated in positive pressure mode.

#### NFPA CODE

None Established

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### Section 6 — Accidental Release Measures

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Restrict unprotected personnel from area. Sweep up, place in sealed bag or container and dispose. Ventilate area and wash spill site after material pickup is complete. See Sections 8 and 13 for further information.

---

### Section 7 — Handling and Storage

---

Flinn Suggested Chemical Storage Pattern: Inorganic #2. Store with acetates, halides, sulfates, sulfites, thiosulfates and phosphates. Store in a cool dry place. Deliquescent, store in Flinn Chem-Saf Bag. Air and moisture sensitive.

---

### Section 8 — Exposure Controls, Personal Protection

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron.

Use ventilation to keep airborne concentrations below exposure limits. Always wear a NIOSH-approved respirator with proper cartridges or a positive pressure, air-supplied respirator when handling this material in emergency situations (spill or fire).

Exposure guidelines: TWA 1 mg/m<sup>3</sup> (ACGIH)

### Section 9 — Physical and Chemical Properties

Light blue or light blue-green crystals. Odorless.  
Solubility: Soluble: water; not alcohol. Hygroscopic.  
Formula:  $\text{Fe}(\text{SO}_4) \cdot 7\text{H}_2\text{O}$   
Formula Weight: 278.03

Specific Gravity: 1.89  
Melting Point: 64 C

### Section 10 — Stability and Reactivity

Avoid contact with strong oxidizers.  
Shelf life: Fair to poor; hygroscopic.

### Section 11 — Toxicological Information

Acute effects: Irritant, Intestinal distress  
Chronic effects: N.A.  
Target organs: Gastrointestinal system, liver, kidneys

ORL-MUS LD50: 1520 mg/kg  
IHL-RAT LC50: N.A.  
SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

### Section 12 — Ecological Information

Data not yet available.

### Section 13 — Disposal Considerations

Please consult with state and local regulations.  
Flinn Suggested Disposal Method #26a is one option.

### Section 14 — Transport Information

Shipping Name: Not regulated  
Hazard Class: N/A  
UN Number: N/A

N/A = Not applicable

### Section 15 — Regulatory Information

TSCA-listed, EINECS-listed (231-753-5).

### Section 16 — Other Information

Consult your copy of the Flinn Scientific Catalog/Reference Manual for additional information about laboratory chemicals. This Material Safety Data Sheet (MSDS) is for guidance and is based upon information and tests believed to be reliable. Flinn Scientific Inc. makes no guarantee of the accuracy or completeness of the data and shall not be liable for any damages relating thereto. The data is offered solely for your consideration, investigation, and verification. Flinn Scientific Inc. assumes no legal responsibility for use or reliance upon this data.




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MSDS Number: **F1616** \* \* \* \* \* Effective Date: **05/19/08** \* \* \* \* \* Supercedes: **08/16/05**

	<b>24 Hour Emergency Telephone: 908-859-2151</b> <b>CHEMTREC: 1-800-424-9300</b>
	<b>National Response in Canada</b> <b>CANUTEC: 613-996-6565</b>
<b>From: Mallinckrodt Baker, Inc.</b> <b>222 Red School Lane</b> <b>Phillipsburg, NJ 08865</b>	<b>Outside U.S. and Canada</b> <b>Chemtrec: 703-527-3887</b>
 	<b>NOTE: CHEMTREC, CANUTEC and National Response Center emergency numbers to be used only in the event of chemical emergencies involving a spill, leak, fire, exposure or accident involving chemicals.</b>
All non-emergency questions should be directed to Customer Service (1-800-582-2537) for assistance.	

# FERROUS AMMONIUM SULFATE

## 1. Product Identification

**Synonyms:** Ammonium iron (II) sulfate (2:1:2); ammonium ferrous sulfate; ferrous ammonium sulfate, hexahydrate

**CAS No.:** 10045-89-3 Anhydrous; (7783-85-9 Hexahydrate)

**Molecular Weight:** 392.13

**Chemical Formula:** Fe(NH<sub>4</sub>)<sub>2</sub>(SO<sub>4</sub>)<sub>2</sub> 6H<sub>2</sub>O

**Product Codes:**

J.T. Baker: 2054

Mallinckrodt: 5064

## 2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
Ferrous Ammonium Sulfate	10045-89-3	90 - 100%	Yes

## 3. Hazards Identification

### Emergency Overview

**WARNING! CAUSES IRRITATION TO SKIN, EYES AND RESPIRATORY TRACT. HARMFUL IF SWALLOWED OR INHALED.**

**SAF-T-DATA<sup>(tm)</sup>** Ratings (Provided here for your convenience)

Health Rating: 3 - Severe (Life)

Flammability Rating: 0 - None

Reactivity Rating: 1 - Slight

Contact Rating: 2 - Moderate

Lab Protective Equip: GOGGLES; LAB COAT; VENT HOOD; PROPER GLOVES

Storage Color Code: Green (General Storage)

---

### Potential Health Effects

---

**Inhalation:**

Causes irritation to the respiratory tract. Symptoms may include coughing, shortness of breath.

**Ingestion:**

Causes irritation to the gastrointestinal tract. Symptoms may include nausea, vomiting and diarrhea. Low toxicity in small quantities but larger dosages may cause nausea, vomiting, diarrhea, and black stool. Pink urine discoloration is a strong indicator of iron poisoning. Liver damage, coma, and death from iron poisoning has been recorded.

**Skin Contact:**

Causes irritation to skin. Symptoms include redness, itching, and pain.

**Eye Contact:**

Causes irritation, redness, and pain.

**Chronic Exposure:**

No information found.

**Aggravation of Pre-existing Conditions:**

Persons with pre-existing skin disorders or eye problems, or impaired liver, kidney or respiratory function may be more susceptible to the effects of the substance.

---

## 4. First Aid Measures

**Inhalation:**

Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

**Ingestion:**

Induce vomiting immediately as directed by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention.

**Skin Contact:**

Immediately flush skin with plenty of water for at least 15 minutes. Remove contaminated clothing and shoes. Get medical attention. Wash clothing before reuse. Thoroughly clean shoes before reuse.

**Eye Contact:**

Immediately flush eyes with plenty of water for at least 15 minutes, lifting upper and lower eyelids occasionally. Get medical attention.

---

## 5. Fire Fighting Measures

**Fire:**

Not considered to be a fire hazard. Irritating and toxic ammonia gas may form in fires.

**Explosion:**

Not considered to be an explosion hazard. Sealed containers may rupture when heated.

**Fire Extinguishing Media:**

Use any means suitable for extinguishing surrounding fire.

**Special Information:**

Use protective clothing and breathing equipment appropriate for the surrounding fire.

---

## 6. Accidental Release Measures

Ventilate area of leak or spill. Wear appropriate personal protective equipment as specified in Section 8. Spills: Sweep up and containerize for reclamation or disposal. Vacuuming or wet sweeping may be used to avoid dust dispersal. Small amounts of residue may be flushed to sewer with plenty of water. US Regulations (CERCLA)

require reporting spills and releases to soil, water and air in excess of reportable quantities. The toll free number for the US Coast Guard National Response Center is (800) 424-8802.

---

## 7. Handling and Storage

Keep in a tightly closed light-resistant container, stored in a cool, dry, ventilated area. Protect against physical damage. Containers of this material may be hazardous when empty since they retain product residues (dust, solids); observe all warnings and precautions listed for the product.

---

## 8. Exposure Controls/Personal Protection

### **Airborne Exposure Limits:**

-ACGIH Threshold Limit Value (TLV):

1 mg/m<sup>3</sup> (TWA) soluble iron salt as Fe

### **Ventilation System:**

A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, *Industrial Ventilation, A Manual of Recommended Practices*, most recent edition, for details.

### **Personal Respirators (NIOSH Approved):**

If the exposure limit is exceeded and engineering controls are not feasible, a half facepiece particulate respirator (NIOSH type N95 or better filters) may be worn for up to ten times the exposure limit or the maximum use concentration specified by the appropriate regulatory agency or respirator supplier, whichever is lowest.. A full-face piece particulate respirator (NIOSH type N100 filters) may be worn up to 50 times the exposure limit, or the maximum use concentration specified by the appropriate regulatory agency, or respirator supplier, whichever is lowest. If oil particles (e.g. lubricants, cutting fluids, glycerine, etc.) are present, use a NIOSH type R or P filter. For emergencies or instances where the exposure levels are not known, use a full-facepiece positive-pressure, air-supplied respirator. **WARNING:** Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.

### **Skin Protection:**

Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact.

### **Eye Protection:**

Use chemical safety goggles and/or full face shield where dusting or splashing of solutions is possible. Maintain eye wash fountain and quick-drench facilities in work area.

---

## 9. Physical and Chemical Properties

### **Appearance:**

Pale blue-green crystals.

### **Odor:**

Odorless.

### **Solubility:**

26.9 g/100cc water @ 20C (68F)

### **Specific Gravity:**

1.86

### **pH:**

No information found.

### **% Volatiles by volume @ 21C (70F):**

0

### **Boiling Point:**

Not applicable.

**Melting Point:**

100 - 110C (212 - 230F)

**Vapor Density (Air=1):**

&gt; 1.0

**Vapor Pressure (mm Hg):**

No information found.

**Evaporation Rate (BuAc=1):**

No information found.

## 10. Stability and Reactivity

**Stability:**

Stable under ordinary conditions of use and storage. Slowly oxidizes in moist air.

**Hazardous Decomposition Products:**

May emit ammonia, oxides of sulfur, oxides of nitrogen, and oxides of carbon.

**Hazardous Polymerization:**

Will not occur.

**Incompatibilities:**

Sulfuric acid

**Conditions to Avoid:**

Heat, light, moisture.

## 11. Toxicological Information

Oral rat LD50: 3250 mg/kg

Ingredient	---NTP Carcinogen---		IARC Category
	Known	Anticipated	
Ferrous Ammonium Sulfate (10045-89-3)	No	No	None

## 12. Ecological Information

**Environmental Fate:**

No information found.

**Environmental Toxicity:**

No information found.

## 13. Disposal Considerations

Whatever cannot be saved for recovery or recycling should be managed in an appropriate and approved waste disposal facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

## 14. Transport Information

Not regulated.

## 15. Regulatory Information

```

-----\Chemical Inventory Status - Part 1\-----
Ingredient                                     TSCA  EC   Japan  Australia
-----
Ferrous Ammonium Sulfate (10045-89-3)         Yes  Yes  No     Yes
    
```

```

-----\Chemical Inventory Status - Part 2\-----
Ingredient                                     Korea  --Canada--
                                     -----
                                     DSL   NDSL  Phil.
-----
Ferrous Ammonium Sulfate (10045-89-3)         Yes   Yes   No     Yes
    
```

```

-----\Federal, State & International Regulations - Part 1\-----
Ingredient                                     -SARA 302-  -----SARA 313-----
                                     RQ   TPQ   List  Chemical Catg.
-----
Ferrous Ammonium Sulfate (10045-89-3)         No   No    No     No
    
```

```

-----\Federal, State & International Regulations - Part 2\-----
Ingredient                                     CERCLA  -RCRA-  -TSCA-
                                     -----
                                     261.33  8 (d)
-----
Ferrous Ammonium Sulfate (10045-89-3)         1000    No     No
    
```

Chemical Weapons Convention: No      TSCA 12(b): No      CDTA: No  
 SARA 311/312: Acute: Yes      Chronic: No      Fire: No      Pressure: No  
 Reactivity: No      (Pure / Solid)

**Australian Hazchem Code:** None allocated.

**Poison Schedule:** None allocated.

**WHMIS:**

This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

## 16. Other Information

**NFPA Ratings:** Health: **2** Flammability: **0** Reactivity: **0**

**Label Hazard Warning:**

WARNING! CAUSES IRRITATION TO SKIN, EYES AND RESPIRATORY TRACT. HARMFUL IF SWALLOWED OR INHALED.

**Label Precautions:**

- Avoid breathing dust.
- Avoid contact with eyes, skin and clothing.
- Wash thoroughly after handling.
- Keep container closed.
- Use only with adequate ventilation.

**Label First Aid:**

In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes. Remove contaminated clothing and shoes. Wash clothing before reuse. If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. If swallowed, induce vomiting immediately as directed by medical personnel. Never give anything by mouth to an unconscious person. In all cases, get medical attention.

**Product Use:**

Laboratory Reagent.

**Revision Information:**

No Changes.

**Disclaimer:**

\*\*\*\*\*

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\*\*\*\*\*

**Prepared by:** Environmental Health & Safety  
Phone Number: (314) 654-1600 (U.S.A.)



MSDS Number: **F1678** \* \* \* \* \* *Effective Date: 08/20/08* \* \* \* \* \* *Supercedes: 11/10/05*



From: Mallinckrodt Baker, Inc.  
222 Red School Lane  
Phillipsburg, NJ 08865



24 Hour Emergency Telephone: 908-859-2151  
CHEMTREC: 1-800-424-9300

National Response in Canada  
CANUTEC: 613-996-6666

Outside U.S. And Canada  
Chemtrec: 703-527-3887

NOTE: CHEMTREC, CANUTEC and National Response Center emergency numbers to be used only in the event of chemical emergencies involving a spill, leak, fire, exposure or accident involving chemicals.

All non-emergency questions should be directed to Customer Service (1-800-582-2537) for assistance.

## Ferrous Chloride, 4-Hydrate

### 1. Product Identification

**Synonyms:** Iron (II) Chloride, Tetrahydrate; Iron Chloride, Tetrahydrate

**CAS No.:** 7758-94-3 (Anhydrous) 13478-10-9 (Tetrahydrate)

**Molecular Weight:** 198.81

**Chemical Formula:** FeCl<sub>2</sub>.4H<sub>2</sub>O

**Product Codes:** 2064

### 2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
Ferrous Chloride	7758-94-3	99 - 100%	Yes

### 3. Hazards Identification

#### Emergency Overview

**DANGER! CORROSIVE. CAUSES SEVERE IRRITATION OR BURNS TO EVERY AREA OF CONTACT. HARMFUL IF SWALLOWED OR INHALED. AFFECTS THE LIVER.**

**J.T. Baker SAF-T-DATA<sup>(tm)</sup> Ratings** (Provided here for your convenience)

Health Rating: 2 - Moderate

Flammability Rating: 0 - None

Reactivity Rating: 1 - Slight

Contact Rating: 3 - Severe (Corrosive)

Lab Protective Equip: GOGGLES & SHIELD; LAB COAT & APRON; VENT HOOD; PROPER GLOVES

Storage Color Code: White (Corrosive)

#### Potential Health Effects

---

**Inhalation:**

Corrosive. Extremely destructive to tissues of the mucous membranes and upper respiratory tract. Symptoms may include burning sensation, coughing, wheezing, laryngitis, shortness of breath, headache, nausea and vomiting.

**Ingestion:**

Corrosive. Swallowing can cause severe burns of the mouth, throat, and stomach. Can cause sore throat, vomiting, diarrhea. Low systemic toxicity in small quantities but larger doses may cause systemic effects. Pink urine discoloration is a strong indicator of iron poisoning. Liver damage, coma and death may follow, sometimes delayed as long as three days.

**Skin Contact:**

Corrosive. May cause severe irritation, redness, pain, and skin burns.

**Eye Contact:**

Corrosive. Contact causes severe irritation, burns, redness, and pain.

**Chronic Exposure:**

Repeated ingestion may cause liver damage. Prolonged exposure of the eyes may cause discoloration.

**Aggravation of Pre-existing Conditions:**

No information found.

---

## 4. First Aid Measures

**Inhalation:**

Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention immediately.

**Ingestion:**

If swallowed, DO NOT INDUCE VOMITING. Give large quantities of water. Never give anything by mouth to an unconscious person. Get medical attention immediately.

**Skin Contact:**

Wipe off excess material from skin then immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention immediately. Wash clothing before reuse.

Thoroughly clean shoes before reuse.

**Eye Contact:**

Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention immediately.

---

## 5. Fire Fighting Measures

**Fire:**

Not considered to be a fire hazard. Irritating hydrogen chloride fumes may form in fire.

**Explosion:**

Not considered to be an explosion hazard.

**Fire Extinguishing Media:**

Use any means suitable for extinguishing surrounding fire. Use water carefully as material will react with water to form acidic solution.

**Special Information:**

In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode. Structural firefighter's protective clothing is ineffective for fires involving this material.

---

## 6. Accidental Release Measures

Ventilate area of leak or spill. Keep unnecessary and unprotected people away from area of spill. Wear appropriate personal protective equipment as specified in Section 8. Spills: Pick up and place in a suitable

container for reclamation or disposal, using a method that does not generate dust. Material dissolves in water to form an acidic solution. US Regulations (CERCLA) require reporting spills and releases to soil, water and air in excess of reportable quantities. The toll free number for the US Coast Guard National Response Center is (800) 424-8802.

---

## 7. Handling and Storage

Keep in a tightly closed container, stored in a cool, dry, ventilated area. Protect against physical damage. Material dissolves in water to form an acidic solution. Isolate from incompatible substances. Containers of this material are hazardous when empty since they retain product residues; observe all warnings for the product.

---

## 8. Exposure Controls/Personal Protection

### **Airborne Exposure Limits:**

-ACGIH Threshold Limit Value (TLV):

1 mg/m<sup>3</sup> (TWA) soluble iron salt as Fe

### **Ventilation System:**

A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, *Industrial Ventilation, A Manual of Recommended Practices*, most recent edition, for details.

### **Personal Respirators (NIOSH Approved):**

If the exposure limit is exceeded and engineering controls are not feasible, a full facepiece particulate respirator (NIOSH type N100 filters) may be worn for up to 50 times the exposure limit or the maximum use concentration specified by the appropriate regulatory agency or respirator supplier, whichever is lowest. If oil particles (e.g. lubricants, cutting fluids, glycerine, etc.) are present, use a NIOSH type R or P filter. For emergencies or instances where the exposure levels are not known, use a full-facepiece positive-pressure, air-supplied respirator. **WARNING:** Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.

### **Skin Protection:**

Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact.

### **Eye Protection:**

Use chemical safety goggles and/or full face shield where dusting or splashing of solutions is possible. Maintain eye wash fountain and quick-drench facilities in work area.

---

## 9. Physical and Chemical Properties

### **Appearance:**

Light green crystals.

### **Odor:**

Odorless.

### **Solubility:**

Appreciable (> 10%)

### **Specific Gravity:**

1.93

### **pH:**

No information found.

### **% Volatiles by volume @ 21C (70F):**

0

### **Boiling Point:**

1023C (1873F) (anhydrous)

### **Melting Point:**

110C (230F) Loses two waters.

**Vapor Density (Air=1):**

No information found.

**Vapor Pressure (mm Hg):**

10 @ 700C (1292F)

**Evaporation Rate (BuAc=1):**

No information found.

## 10. Stability and Reactivity

**Stability:**

Stable under ordinary conditions of use and storage.

**Hazardous Decomposition Products:**

May produce hydrogen chloride. Material dissolves in water to form an acidic solution.

**Hazardous Polymerization:**

Will not occur.

**Incompatibilities:**

Ethylene oxide, potassium, sodium.

**Conditions to Avoid:**

Incompatibles.

## 11. Toxicological Information

Anhydrous: Oral rat LD50: 450 mg/kg. Investigated as a mutagen.

-----\Cancer Lists\-----			
Ingredient	---NTP Carcinogen---		IARC Category
	Known	Anticipated	
Ferrous Chloride (7758-94-3)	No	No	None

## 12. Ecological Information

**Environmental Fate:**

No information found.

**Environmental Toxicity:**

No information found.

## 13. Disposal Considerations

Whatever cannot be saved for recovery or recycling should be managed in an appropriate and approved waste facility. Although not a listed RCRA hazardous waste, this material may exhibit one or more characteristics of a hazardous waste and require appropriate analysis to determine specific disposal requirements. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

## 14. Transport Information

**Domestic (Land, D.O.T.)**

-----

**Proper Shipping Name:** FERROUS CHLORIDE, SOLID

**Hazard Class:** 8

**UN/NA:** NA1759

**Packing Group:** II

**Information reported for product/size:** 2.5KG

**International (Water, I.M.O.)**

**Proper Shipping Name:** CORROSIVE SOLID, ACIDIC, INORGANIC, N.O.S. (FERROUS CHLORIDE)

**Hazard Class:** 8

**UN/NA:** UN3260

**Packing Group:** II

**Information reported for product/size:** 2.5KG

**International (Air, I.C.A.O.)**

**Proper Shipping Name:** CORROSIVE SOLID, ACIDIC, INORGANIC, N.O.S. (FERROUS CHLORIDE)

**Hazard Class:** 8

**UN/NA:** UN3260

**Packing Group:** II

**Information reported for product/size:** 2.5KG

## 15. Regulatory Information

-----\Chemical Inventory Status - Part 1\-----

Ingredient	TSCA	EC	Japan	Australia
Ferrous Chloride (7758-94-3)	Yes	Yes	Yes	Yes

-----\Chemical Inventory Status - Part 2\-----

Ingredient	Korea	DSL	NDSL	Phil.
Ferrous Chloride (7758-94-3)	Yes	Yes	No	Yes

-----\Federal, State & International Regulations - Part 1\-----

Ingredient	-SARA 302-	TPQ	List	-SARA 313-	Chemical Catg.
Ferrous Chloride (7758-94-3)	No	No	No	No	No

-----\Federal, State & International Regulations - Part 2\-----

Ingredient	CERCLA	-RCRA-	261.33	-TSCA-	8 (d)
Ferrous Chloride (7758-94-3)	100	No	No	No	No

Chemical Weapons Convention: No      TSCA 12(b): No      CDTA: No  
 SARA 311/312: Acute: Yes      Chronic: Yes      Fire: No      Pressure: No  
 Reactivity: No      (Pure / Solid)

**Australian Hazchem Code:** None allocated.

**Poison Schedule:** None allocated.

**WHMIS:**

This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

## 16. Other Information

**NFPA Ratings:** Health: **3** Flammability: **0** Reactivity: **0**

**Label Hazard Warning:**

DANGER! CORROSIVE. CAUSES SEVERE IRRITATION OR BURNS TO EVERY AREA OF CONTACT. HARMFUL IF SWALLOWED OR INHALED. AFFECTS THE LIVER.

**Label Precautions:**

Do not get in eyes, on skin, or on clothing.

Do not breathe dust.

Keep container closed.

Use only with adequate ventilation.

Wash thoroughly after handling.

**Label First Aid:**

In case of contact, wipe off excess material from skin then immediately flush eyes or skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. If swallowed, DO NOT INDUCE VOMITING. Give large quantities of water. Never give anything by mouth to an unconscious person. In all cases get medical attention immediately.

**Product Use:**

Laboratory Reagent.

**Revision Information:**

No Changes.

**Disclaimer:**

\*\*\*\*\*

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\*\*\*\*\*

**Prepared by:** Environmental Health & Safety

Phone Number: (314) 654-1600 (U.S.A.)

# FLINN SCIENTIFIC INC.

"Your Safer Source for Science Supplies"

## Material Safety Data Sheet (MSDS)

MSDS #: 348.00

Revision Date: November 25, 2002

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### Section 1 — Chemical Product and Company Identification

---

#### Ferrous Sulfate

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### Section 2 — Composition, Information on Ingredients

---

Ferrous Sulfate

Synonym: iron (II) sulfate

CAS#: 7782-63-0

---

### Section 3 — Hazards Identification

---

Light blue or light blue-green crystals. Odorless.

Slightly toxic by ingestion. Body tissue irritant. Avoid ingestion, inhalation and skin absorption.

#### FLINN AT-A-GLANCE

Health-1

Flammability-0

Reactivity-0

Exposure-1

Storage-1

0 is low hazard, 3 is high hazard

---

### Section 4 — First Aid Measures

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash continuously with fresh water for 15 minutes.

Internal: Give large quantities of water. Call a physician or poison control at once.

---

### Section 5 — Fire Fighting Measures

---

Non flammable solid.

When heated to decomposition, emits non-combustible toxic fumes of SO<sub>x</sub>.

**Fire Fighting Instructions:** Use triclass, dry chemical fire extinguisher. Firefighters should wear PPE and SCBA with full facepiece operated in positive pressure mode.

#### NFPA CODE

None Established

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### Section 6 — Accidental Release Measures

---

Restrict unprotected personnel from area. Sweep up, place in sealed bag or container and dispose. Ventilate area and wash spill site after material pickup is complete. See Sections 8 and 13 for further information.

---

### Section 7 — Handling and Storage

---

Flinn Suggested Chemical Storage Pattern: Inorganic #2. Store with acetates, halides, sulfates, sulfites, thiosulfates and phosphates. Store in a cool dry place. Deliquescent, store in Flinn Chem-Saf Bag. Air and moisture sensitive.

---

### Section 8 — Exposure Controls, Personal Protection

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron.

Use ventilation to keep airborne concentrations below exposure limits. Always wear a NIOSH-approved respirator with proper cartridges or a positive pressure, air-supplied respirator when handling this material in emergency situations (spill or fire).

Exposure guidelines: TWA 1 mg/m<sup>3</sup> (ACGIH)

### Section 9 — Physical and Chemical Properties

Light blue or light blue-green crystals. Odorless.  
Solubility: Soluble: water; not alcohol. Hygroscopic.  
Formula:  $\text{Fe}(\text{SO}_4) \cdot 7\text{H}_2\text{O}$   
Formula Weight: 278.03

Specific Gravity: 1.89  
Melting Point: 64 C

### Section 10 — Stability and Reactivity

Avoid contact with strong oxidizers.  
Shelf life: Fair to poor; hygroscopic.

### Section 11 — Toxicological Information

Acute effects: Irritant, Intestinal distress  
Chronic effects: N.A.  
Target organs: Gastrointestinal system, liver, kidneys

ORL-MUS LD50: 1520 mg/kg  
IHL-RAT LC50: N.A.  
SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

### Section 12 — Ecological Information

Data not yet available.

### Section 13 — Disposal Considerations

Please consult with state and local regulations.  
Flinn Suggested Disposal Method #26a is one option.

### Section 14 — Transport Information

Shipping Name: Not regulated  
Hazard Class: N/A  
UN Number: N/A

N/A = Not applicable

### Section 15 — Regulatory Information

TSCA-listed, EINECS-listed (231-753-5).

### Section 16 — Other Information

Consult your copy of the Flinn Scientific Catalog/Reference Manual for additional information about laboratory chemicals. This Material Safety Data Sheet (MSDS) is for guidance and is based upon information and tests believed to be reliable. Flinn Scientific Inc. makes no guarantee of the accuracy or completeness of the data and shall not be liable for any damages relating thereto. The data is offered solely for your consideration, investigation, and verification. Flinn Scientific Inc. assumes no legal responsibility for use or reliance upon this data.

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flinn@flinnsci.com www.flinnsci.com  
P.O. Box 219 Batavia IL 60510  
(800) 452-1261 Fax (866) 452-1436



MSDS Number: **F6552** \* \* \* \* \* *Effective Date: 11/21/08* \* \* \* \* \* *Supersedes: 01/16/06*

	<b>24 Hour Emergency Telephone: 908-859-2151</b> <b>CHEMTREC: 1-800-424-9300</b>
	<b>National Response in Canada</b> <b>CANUTEC: 613-996-6666</b>
<b>From: Mallinckrodt Baker, Inc.</b> <b>222 Red School Lane</b> <b>Phillipsburg, NJ 08865</b>	<b>Outside U.S. and Canada</b> <b>Chemtrec: 703-527-3887</b>
 	<b>NOTE: CHEMTREC, CANUTEC and National Response Center emergency numbers to be used only in the event of chemical emergencies involving a spill, leak, fire, exposure or accident involving chemicals.</b>
All non-emergency questions should be directed to Customer Service (1-800-582-2537) for assistance.	

# FRUCTOSE

## 1. Product Identification

**Synonyms:** D-fructopyranose; levulose, fruit sugar; d-(-)-fructose

**CAS No.:** 57-48-7

**Molecular Weight:** 180.16

**Chemical Formula:** OCH<sub>2</sub>(CHOH)<sub>3</sub>COHCH<sub>2</sub>OH

**Product Codes:**

J.T. Baker: M556

Mallinckrodt: 7756

## 2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
Fructose	57-48-7	90 - 100%	Yes

## 3. Hazards Identification

### Emergency Overview

**As part of good industrial and personal hygiene and safety procedure, avoid all unnecessary exposure to the chemical substance and ensure prompt removal from skin, eyes and clothing.**

**SAF-T-DATA<sup>(tm)</sup> Ratings** (Provided here for your convenience)

Health Rating: 1 - Slight

Flammability Rating: 1 - Slight

Reactivity Rating: 0 - None

Contact Rating: 1 - Slight

Lab Protective Equip: GOGGLES; LAB COAT; PROPER GLOVES

Storage Color Code: Green (General Storage)

---

## Potential Health Effects

---

**Inhalation:**

No adverse health effects expected from inhalation.

**Ingestion:**

Extremely large oral dosages may produce gastrointestinal disturbances.

**Skin Contact:**

Not expected to be a health hazard from skin exposure.

**Eye Contact:**

No adverse effects expected but dust may cause mechanical irritation.

**Chronic Exposure:**

No adverse health effects expected.

**Aggravation of Pre-existing Conditions:**

No adverse health effects expected.

---

## 4. First Aid Measures

**Inhalation:**

Not expected to require first aid measures.

**Ingestion:**

Give several glasses of water to drink to dilute. If large amounts were swallowed, get medical advice.

**Skin Contact:**

Not expected to require first aid measures.

**Eye Contact:**

Wash thoroughly with running water. Get medical advice if irritation develops.

---

## 5. Fire Fighting Measures

**Fire:**

Not considered to be a fire hazard.

**Explosion:**

Not considered to be an explosion hazard.

**Fire Extinguishing Media:**

Use any means suitable for extinguishing surrounding fire.

**Special Information:**

Use protective clothing and breathing equipment appropriate for the surrounding fire.

---

## 6. Accidental Release Measures

Ventilate area of leak or spill. Wear appropriate personal protective equipment as specified in Section 8. Spills: Sweep up and containerize for reclamation or disposal. Vacuuming or wet sweeping may be used to avoid dust dispersal.

---

## 7. Handling and Storage

Keep in a tightly closed container, stored in a cool, dry, ventilated area. Protect against physical damage. Isolate from incompatible substances. Containers of this material may be hazardous when empty since they retain

product residues (dust, solids); observe all warnings and precautions listed for the product.

---

## 8. Exposure Controls/Personal Protection

### **Airborne Exposure Limits:**

None established.

### **Ventilation System:**

In general, dilution ventilation is a satisfactory health hazard control for this substance. However, if conditions of use create discomfort to the worker, a local exhaust system should be considered.

### **Personal Respirators (NIOSH Approved):**

For conditions of use where exposure to dust or mist is apparent and engineering controls are not feasible, a particulate respirator (NIOSH type N95 or better filters) may be worn. If oil particles (e.g. lubricants, cutting fluids, glycerine, etc.) are present, use a NIOSH type R or P filter. For emergencies or instances where the exposure levels are not known, use a full-face positive-pressure, air-supplied respirator. **WARNING:**

Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.

### **Skin Protection:**

Wear protective gloves and clean body-covering clothing.

### **Eye Protection:**

Use chemical safety goggles. Maintain eye wash fountain and quick-drench facilities in work area.

---

## 9. Physical and Chemical Properties

### **Appearance:**

White crystals.

### **Odor:**

Odorless.

### **Solubility:**

Very soluble in water.

### **Density:**

No information found.

### **pH:**

No information found.

### **% Volatiles by volume @ 21C (70F):**

0

### **Boiling Point:**

Not applicable.

### **Melting Point:**

103 - 105C (217 - 221F) Decomposes.

### **Vapor Density (Air=1):**

No information found.

### **Vapor Pressure (mm Hg):**

No information found.

### **Evaporation Rate (BuAc=1):**

No information found.

---

## 10. Stability and Reactivity

### **Stability:**

Stable under ordinary conditions of use and storage.

### **Hazardous Decomposition Products:**

Carbon dioxide and carbon monoxide may form when heated to decomposition.

### **Hazardous Polymerization:**

Will not occur.

### **Incompatibilities:**

Strong, oxidizing agents.

**Conditions to Avoid:**

Incompatibles.

## 11. Toxicological Information

No LD50/LC50 information found relating to normal routes of occupational exposure.

-----\Cancer Lists\-----			
Ingredient	---NTP Carcinogen---		IARC Category
	Known	Anticipated	
Fructose (57-48-7)	No	No	None

## 12. Ecological Information

**Environmental Fate:**

No information found.

**Environmental Toxicity:**

No information found.

## 13. Disposal Considerations

Whatever cannot be saved for recovery or recycling should be managed in an appropriate and approved waste disposal facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

## 14. Transport Information

Not regulated.

## 15. Regulatory Information

-----\Chemical Inventory Status - Part 1\-----				
Ingredient	TSCA	EC	Japan	Australia
Fructose (57-48-7)	Yes	Yes	Yes	Yes

-----\Chemical Inventory Status - Part 2\-----				
Ingredient	Korea	--Canada--		Phil.
		DSL	NDSL	
Fructose (57-48-7)	Yes	Yes	No	Yes

-----\Federal, State & International Regulations - Part 1\-----				
Ingredient	-SARA 302-		-----SARA 313-----	
	RQ	TPQ	List	Chemical Catg.
Fructose (57-48-7)	No	No	No	No

-----\Federal, State & International Regulations - Part 2\-----			
Ingredient	CERCLA	-RCRA-	-TSCA-
		261.33	8 (d)

Fructose (57-48-7) No No No

Chemical Weapons Convention: No TSCA 12(b): No CDTA: No  
SARA 311/312: Acute: No Chronic: No Fire: No Pressure: No  
Reactivity: No (Pure / Solid)

**Australian Hazchem Code:** None allocated.

**Poison Schedule:** None allocated.

**WHMIS:**

This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

---

## 16. Other Information

**NFPA Ratings:** Health: **0** Flammability: **0** Reactivity: **0**

**Label Hazard Warning:**

As part of good industrial and personal hygiene and safety procedure, avoid all unnecessary exposure to the chemical substance and ensure prompt removal from skin, eyes and clothing.

**Label Precautions:**

None.

**Label First Aid:**

Not applicable.

**Product Use:**

Laboratory Reagent.

**Revision Information:**

No Changes.

**Disclaimer:**

\*\*\*\*\*

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\*\*\*\*\*

**Prepared by:** Environmental Health & Safety

Phone Number: (314) 654-1600 (U.S.A.)

# FLINN SCIENTIFIC, INC.

## Material Safety Data Sheet (MSDS)

MSDS #: 356.00

Revision Date: May 5, 2008

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### SECTION 1 — CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

---

#### Fuchsin Acid

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### SECTION 2 — COMPOSITION, INFORMATION ON INGREDIENTS

---

Fuchsin Acid

Synonym: Acid Fuchsin; C.I. 42685; Acid Magenta; Acid Violet 19

CAS#: 3244-88-0

---

### SECTION 3 — HAZARDS IDENTIFICATION

---

Dark green powder. Odorless.

Irritant. Avoid body contact.

#### FLINN AT-A-GLANCE

Health-0

Flammability-0

Reactivity-0

Exposure-1

Storage-0

0 is low hazard, 3 is high hazard

---

### SECTION 4 — FIRST AID MEASURES

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash continuously with fresh water for 15 minutes.

Internal: Give large quantities of water. Call a physician or poison control at once.

---

### SECTION 5 — FIRE FIGHTING MEASURES

---

Non-flammable solid.

When heated to decomposition, emits toxic fumes of NO<sub>x</sub> and SO<sub>x</sub>.

**Fire Fighting Instructions:** Use triclass, dry chemical fire extinguisher. Firefighters should wear PPE and SCBA with full facepiece operated in positive pressure mode.

#### NFPA CODE

H-1

F-0

R-0

---

### SECTION 6 — ACCIDENTAL RELEASE MEASURES

---

Restrict unprotected personnel from area. Sweep up, place in sealed bag or container and dispose. Avoid generating dusty conditions. Ventilate area and wash spill site after material pickup is complete. See Sections 8 and 13 for further information.

---

### SECTION 7 — HANDLING AND STORAGE

---

Flinn Suggested Chemical Storage Pattern: Organic #9. Store with dyes, indicators, and stains.

Store in a cool dry place.

---

### SECTION 8 — EXPOSURE CONTROLS, PERSONAL PROTECTION

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron. Use exhaust ventilation to keep airborne concentrations low.

---

**SECTION 9 — PHYSICAL AND CHEMICAL PROPERTIES**

---

Dark green powder. Odorless.  
Solubility: Soluble in alcohol and water.  
Formula: C<sub>20</sub>H<sub>17</sub>N<sub>3</sub>Na<sub>2</sub>O<sub>9</sub>S<sub>3</sub>  
Formula Weight: 585.55

---

**SECTION 10 — STABILITY AND REACTIVITY**

---

Avoid contact with strong oxidizers.  
Shelf life: Indefinite.

---

**SECTION 11 — TOXICOLOGICAL INFORMATION**

---

Acute effects: Irritant	ORL-RAT LD50: N.A.
Chronic effects: N.A.	IHL-RAT LC50: N.A.
Target organs: N.A.	SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

---

**SECTION 12 — ECOLOGICAL INFORMATION**

---

Data not yet available.

---

**SECTION 13 — DISPOSAL CONSIDERATIONS**

---

Please consult with state and local regulations.  
Flinn Suggested Disposal Method #26a is one option.

---

**SECTION 14 — TRANSPORT INFORMATION**

---

Shipping Name: Not regulated  
Hazard Class: N/A  
UN Number: N/A  
N/A = Not applicable

---

**SECTION 15 — REGULATORY INFORMATION**

---

TSCA-listed, EINECS-listed (221-816-5).

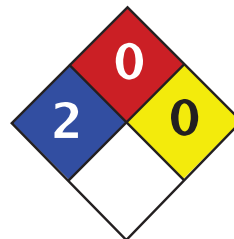
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**SECTION 16 — OTHER INFORMATION**

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**Consult your copy of the Flinn Chemical Catalog/Reference Manual  
for additional information about laboratory chemicals**



Health	2
Fire	0
Reactivity	0
Personal Protection	E

## Material Safety Data Sheet Fuller's Earth MSDS

### Section 1: Chemical Product and Company Identification

**Product Name:** Fuller's Earth

**Catalog Codes:** SLF1474

**CAS#:** 8031-18-3

**RTECS:** Not available.

**TSCA:** TSCA 8(b) inventory: Fuller's earth

**CI#:** Not available.

**Synonym:**

**Chemical Name:** Not available.

**Chemical Formula:** Not available.

**Contact Information:**

**Sciencelab.com, Inc.**  
14025 Smith Rd.  
Houston, Texas 77396

US Sales: **1-800-901-7247**  
International Sales: **1-281-441-4400**

Order Online: [ScienceLab.com](http://ScienceLab.com)

**CHEMTREC (24HR Emergency Telephone), call:**  
1-800-424-9300

**International CHEMTREC, call:** 1-703-527-3887

**For non-emergency assistance, call:** 1-281-441-4400

### Section 2: Composition and Information on Ingredients

**Composition:**

Name	CAS #	% by Weight
Fuller's earth	8031-18-3	100

**Toxicological Data on Ingredients:** Fuller's earth LD50: Not available. LC50: Not available.

### Section 3: Hazards Identification

**Potential Acute Health Effects:**

Hazardous in case of eye contact (irritant), of ingestion, of inhalation. Slightly hazardous in case of skin contact (irritant).

**Potential Chronic Health Effects:**

Hazardous in case of eye contact (irritant), of ingestion, of inhalation.  
Slightly hazardous in case of skin contact (irritant).

CARCINOGENIC EFFECTS: Not available.

MUTAGENIC EFFECTS: Not available.

TERATOGENIC EFFECTS: Not available.

DEVELOPMENTAL TOXICITY: Not available.

### Section 4: First Aid Measures



**Eye Contact:** Check for and remove any contact lenses. Do not use an eye ointment. Seek medical attention.

**Skin Contact:**

After contact with skin, wash immediately with plenty of water. Gently and thoroughly wash the contaminated skin with running water and non-abrasive soap. Be particularly careful to clean folds, crevices, creases and groin. Cover the irritated skin with an emollient. If irritation persists, seek medical attention.

**Serious Skin Contact:** Not available.

**Inhalation:** Allow the victim to rest in a well ventilated area. Seek immediate medical attention.

**Serious Inhalation:** Not available.

**Ingestion:**

Do not induce vomiting. Loosen tight clothing such as a collar, tie, belt or waistband. If the victim is not breathing, perform mouth-to-mouth resuscitation. Seek immediate medical attention.

**Serious Ingestion:** Not available.

### Section 5: Fire and Explosion Data

**Flammability of the Product:** Non-flammable.

**Auto-Ignition Temperature:** Not applicable.

**Flash Points:** Not applicable.

**Flammable Limits:** Not applicable.

**Products of Combustion:** Not available.

**Fire Hazards in Presence of Various Substances:** Not applicable.

**Explosion Hazards in Presence of Various Substances:**

Risks of explosion of the product in presence of mechanical impact: Not available.

Risks of explosion of the product in presence of static discharge: Not available.

**Fire Fighting Media and Instructions:** Not applicable.

**Special Remarks on Fire Hazards:** Not available.

**Special Remarks on Explosion Hazards:** Not available.

### Section 6: Accidental Release Measures

**Small Spill:**

Use appropriate tools to put the spilled solid in a convenient waste disposal container. Finish cleaning by spreading water on the contaminated surface and dispose of according to local and regional authority requirements.

**Large Spill:**

Use a shovel to put the material into a convenient waste disposal container. Finish cleaning by spreading water on the contaminated surface and allow to evacuate through the sanitary system.

### Section 7: Handling and Storage

**Precautions:**

Do not breathe dust. Avoid contact with eyes Wear suitable protective clothing In case of insufficient ventilation,

wear suitable respiratory equipment If you feel unwell, seek medical attention and show the label when possible.

**Storage:**

No specific storage is required. Use shelves or cabinets sturdy enough to bear the weight of the chemicals. Be sure that it is not necessary to strain to reach materials, and that shelves are not overloaded.

**Section 8: Exposure Controls/Personal Protection**

**Engineering Controls:**

Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.

**Personal Protection:**

Splash goggles. Lab coat. Dust respirator. Be sure to use an approved/certified respirator or equivalent. Gloves.

**Personal Protection in Case of a Large Spill:**

Splash goggles. Full suit. Dust respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

**Exposure Limits:** Not available.

**Section 9: Physical and Chemical Properties**

**Physical state and appearance:** Solid.

**Odor:** Not available.

**Taste:** Not available.

**Molecular Weight:** Not available.

**Color:** Not available.

**pH (1% soln/water):** Not available.

**Boiling Point:** Not available.

**Melting Point:** Decomposes.

**Critical Temperature:** Not available.

**Specific Gravity:** Not available.

**Vapor Pressure:** Not applicable.

**Vapor Density:** Not available.

**Volatility:** Not available.

**Odor Threshold:** Not available.

**Water/Oil Dist. Coeff.:** Not available.

**Ionicity (in Water):** Not available.

**Dispersion Properties:** Not available.

**Solubility:** Not available.

### Section 10: Stability and Reactivity Data

**Stability:** The product is stable.

**Instability Temperature:** Not available.

**Conditions of Instability:** Not available.

**Incompatibility with various substances:** Not available.

**Corrosivity:** Non-corrosive in presence of glass.

**Special Remarks on Reactivity:** Not available.

**Special Remarks on Corrosivity:** Not available.

**Polymerization:** No.

### Section 11: Toxicological Information

**Routes of Entry:** Eye contact. Inhalation. Ingestion.

**Toxicity to Animals:**

LD50: Not available.

LC50: Not available.

**Chronic Effects on Humans:** Not available.

**Other Toxic Effects on Humans:**

Hazardous in case of ingestion, of inhalation.

Slightly hazardous in case of skin contact (irritant).

**Special Remarks on Toxicity to Animals:** Not available.

**Special Remarks on Chronic Effects on Humans:** Not available.

**Special Remarks on other Toxic Effects on Humans:** Not available.

### Section 12: Ecological Information

**Ecotoxicity:** Not available.

**BOD5 and COD:** Not available.

**Products of Biodegradation:**

Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

**Toxicity of the Products of Biodegradation:** The products of degradation are as toxic as the original product.

**Special Remarks on the Products of Biodegradation:** Not available.

### Section 13: Disposal Considerations

**Waste Disposal:**

## Section 14: Transport Information

**DOT Classification:** Not a DOT controlled material (United States).

**Identification:** Not applicable.

**Special Provisions for Transport:** Not applicable.

## Section 15: Other Regulatory Information

**Federal and State Regulations:** TSCA 8(b) inventory: Fuller's earth

**Other Regulations:** Not available..

**Other Classifications:**

**WHMIS (Canada):** Not controlled under WHMIS (Canada).

**DSCL (EEC):** R36- Irritating to eyes.

**HMIS (U.S.A.):**

**Health Hazard:** 2

**Fire Hazard:** 0

**Reactivity:** 0

**Personal Protection:** E

**National Fire Protection Association (U.S.A.):**

**Health:** 2

**Flammability:** 0

**Reactivity:** 0

**Specific hazard:**

**Protective Equipment:**

Gloves.

Lab coat.

Dust respirator. Be sure to use an approved/certified respirator or equivalent.

Splash goggles.

## Section 16: Other Information

**References:** Not available.

**Other Special Considerations:** Not available.

**Created:** 10/09/2005 05:35 PM

**Last Updated:** 11/06/2008 12:00 PM

*The information above is believed to be accurate and represents the best information currently available to us. However, we*

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# FLINN SCIENTIFIC INC.

"Your Safer Source for Science Supplies"

## Material Safety Data Sheet (MSDS)

MSDS #: 361.00

Revision Date: November 25, 2002

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### Section 1 — Chemical Product and Company Identification

---

#### d(+)**Galactose**

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### Section 2 — Composition, Information on Ingredients

---

d(+)**Galactose**

CAS#: 59-23-4

---

### Section 3 — Hazards Identification

---

White, powder. Malt-like odor.

Substance not considered hazardous. However, not all health aspects of this substance have been thoroughly investigated.

#### FLINN AT-A-GLANCE

Health-0  
Flammability-0  
Reactivity-0  
Exposure-0  
Storage-0

0 is low hazard, 3 is high hazard

---

### Section 4 — First Aid Measures

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash continuously with fresh water for 15 minutes.

Internal: Give large quantities of water. Call a physician or poison control at once.

---

### Section 5 — Fire Fighting Measures

---

Non flammable solid.

#### NFPA CODE

None Established

---

### Section 6 — Accidental Release Measures

---

Restrict unprotected personnel from area. Sweep up, place in sealed bag or container and dispose. Ventilate area and wash spill site after material pickup is complete. See Sections 8 and 13 for further information.

---

### Section 7 — Handling and Storage

---

Flinn Suggested Chemical Storage Pattern: Organic #2. Store with alcohols, glycols, amines and amides.

---

### Section 8 — Exposure Controls , Personal Protection

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron.

### Section 9 — Physical and Chemical Properties

White powder. Malt-like odor.

Solubility: Soluble in hot water and pyridine.

Formula: C<sub>6</sub>H<sub>12</sub>O<sub>6</sub>

Formula Weight: 180.16

Specific Gravity: 1.5

Melting Point: 165-168 C

### Section 10 — Stability and Reactivity

Avoid contact with strong oxidizers.

Shelf life: Indefinite.

### Section 11 — Toxicological Information

Acute effects: N.A.

Chronic effects: N.A.

Target organs: N.A.

ORL-RAT LD50: N.A.

IHL-RAT LC50: N.A.

SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

### Section 12 — Ecological Information

Data not yet available.

### Section 13 — Disposal Considerations

Please consult with state and local regulations.

Flinn Suggested Disposal Method #26a is one option.

### Section 14 — Transport Information

Shipping Name: Not regulated

Hazard Class: N/A

UN Number: N/A

N/A = Not applicable

### Section 15 — Regulatory Information

TSCA-listed, EINECS-listed (200-416-4).

### Section 16 — Other Information

Consult your copy of the Flinn Scientific Catalog/Reference Manual for additional information about laboratory chemicals. This Material Safety Data Sheet (MSDS) is for guidance and is based upon information and tests believed to be reliable. Flinn Scientific Inc. makes no guarantee of the accuracy or completeness of the data and shall not be liable for any damages relating thereto. The data is offered solely for your consideration, investigation, and verification. Flinn Scientific Inc. assumes no legal responsibility for use or reliance upon this data.

**FLINN SCIENTIFIC INC.**

"Your Safer Source for Science Supplies"

*Improve Safety--Use Flinn Chemicals*

flinn@flinnsci.com www.flinnsci.com  
P.O. Box 219 Batavia IL 60510  
(800) 452-1261 Fax (866) 452-1436

# FLINN SCIENTIFIC INC.

"Your Safer Source for Science Supplies"

## Material Safety Data Sheet (MSDS)

MSDS #: 363.00

Revision Date: November 25, 2002

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### Section 1 — Chemical Product and Company Identification

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#### Gelatin

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### Section 2 — Composition, Information on Ingredients

---

Gelatin

CAS#: 9000-70-8

---

### Section 3 — Hazards Identification

---

Light amber granules. Faint, sour, animal-like odor.

Substance not considered hazardous. However, not all health aspects of this substance have been thoroughly investigated.

#### FLINN AT-A-GLANCE

Health-0  
Flammability-0  
Reactivity-0  
Exposure-0  
Storage-0

0 is low hazard, 3 is high hazard

---

### Section 4 — First Aid Measures

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash continuously with fresh water for 15 minutes.

Internal: Give large quantities of water. Call a physician or poison control at once.

---

### Section 5 — Fire Fighting Measures

---

Non flammable, non combustible solid.

#### NFPA CODE

None Established

---

### Section 6 — Accidental Release Measures

---

Restrict unprotected personnel from area. Sweep up, place in sealed bag or container and dispose. Ventilate area and wash spill site after material pickup is complete. See Sections 8 and 13 for further information.

---

### Section 7 — Handling and Storage

---

Flinn Suggested Chemical Storage Pattern: Organic #2. Store with alcohols, glycols, amines and amides.

---

### Section 8 — Exposure Controls, Personal Protection

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron.



---

### Section 9 — Physical and Chemical Properties

---

Granular, light amber color.  
Faint, sour, animal-like odor.  
Solubility: Soluble in water. Insoluble in most organic solvents.

---

### Section 10 — Stability and Reactivity

---

Shelf life: Indefinite.

---

### Section 11 — Toxicological Information

---

Acute effects: N.A.	ORL-RAT LD50: N.A.
Chronic effects: N.A.	IHL-RAT LC50: N.A.
Target organs: N.A.	SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

---

### Section 12 — Ecological Information

---

Shelf Life:

---

### Section 13 — Disposal Considerations

---

Please consult with state and local regulations.  
Flinn Suggested Disposal Method #26a is one option.

---

### Section 14 — Transport Information

---

Shipping Name: Not regulated  
Hazard Class: N/A  
UN Number: N/A

N/A = Not applicable

---

### Section 15 — Regulatory Information

---

Not listed.

---

### Section 16 — Other Information

---

Consult your copy of the Flinn Scientific Catalog/Reference Manual for additional information about laboratory chemicals. This Material Safety Data Sheet (MSDS) is for guidance and is based upon information and tests believed to be reliable. Flinn Scientific Inc. makes no guarantee of the accuracy or completeness of the data and shall not be liable for any damages relating thereto. The data is offered solely for your consideration, investigation, and verification. Flinn Scientific Inc. assumes no legal responsibility for use or reliance upon this data.

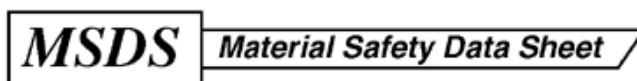
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MSDS Number: **G1580** \* \* \* \* *Effective Date: 02/01/07* \* \* \* \* *Supercedes: 06/18/04*



From: Mallinckrodt Baker, Inc.  
222 Red School Lane  
Phillipsburg, NJ 08865



24 Hour Emergency Telephone: 908-859-2151  
CHEMTREC: 1-800-424-9300

National Response in Canada  
CANUTEC: 613-996-6666

Outside U.S. and Canada  
Chemtrec: 703-527-3887

NOTE: CHEMTREC, CANUTEC and National Response Center emergency numbers to be used only in the event of chemical emergencies involving a spill, leak, fire, exposure or accident involving chemicals.

All non-emergency questions should be directed to Customer Service (1-800-582-2537) for assistance.

# GENTIAN VIOLET

## 1. Product Identification

**Synonyms:** Crystal violet; CI Basic Violet 3

**CAS No.:** 548-62-9

**Molecular Weight:** 407.99

**Chemical Formula:** C<sub>25</sub>H<sub>30</sub>CIN<sub>3</sub>

**Product Codes:** E518

## 2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
Hexamethyl-p-rosaniline Chloride	548-62-9	90 - 100%	Yes

## 3. Hazards Identification

### Emergency Overview

**WARNING! HARMFUL IF SWALLOWED. MAY BE HARMFUL IF INHALED. CAUSES SEVERE EYE IRRITATION. MAY CAUSE IRRITATION TO SKIN AND RESPIRATORY TRACT.**

**SAF-T-DATA<sup>(tm)</sup>** Ratings (Provided here for your convenience)

Health Rating: 2 - Moderate

Flammability Rating: 1 - Slight

Reactivity Rating: 1 - Slight

Contact Rating: 3 - Severe

Lab Protective Equip: GOGGLES & SHIELD; LAB COAT & APRON; VENT HOOD; PROPER GLOVES

Storage Color Code: Green (General Storage)

## Potential Health Effects

---

**Inhalation:**

Inhalation of dust may irritate the mucous membranes of the upper respiratory tract.

**Ingestion:**

Toxic. Results in symptoms of nausea, vomiting, diarrhea, and abdominal pain. Severe systemic poisonings have not been reported in man, but animal studies have shown blood pressure rise and death from respiratory paralysis. Estimated lethal human dose: 1 tsp - 1 oz.

**Skin Contact:**

May cause irritation. Can stain area of contacted skin.

**Eye Contact:**

Causes severe irritation. Contact may cause permanent eye damage.

**Chronic Exposure:**

No information found.

**Aggravation of Pre-existing Conditions:**

No information found.

---

## 4. First Aid Measures

**Inhalation:**

Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

**Ingestion:**

Give large amounts of water to drink. Never give anything by mouth to an unconscious person. Get medical attention.

**Skin Contact:**

Immediately flush skin with plenty of soap and water for at least 15 minutes. Remove contaminated clothing and shoes. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention if irritation develops.

**Eye Contact:**

Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention immediately.

**Note to Physician:**

Monitor for possible nitrite intoxication.

---

## 5. Fire Fighting Measures

**Fire:**

As with most organic solids, fire is possible at elevated temperatures or by contact with an ignition source.

**Explosion:**

Fine dust dispersed in air in sufficient concentrations, and in the presence of an ignition source is a potential dust explosion hazard.

**Fire Extinguishing Media:**

Water spray, dry chemical, alcohol foam, or carbon dioxide.

**Special Information:**

In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode.

---

## 6. Accidental Release Measures

Ventilate area of leak or spill. Keep unnecessary and unprotected people away from area of spill. Wear appropriate personal protective equipment as specified in Section 8. Spills: Pick up and place in a suitable

container for reclamation or disposal, using a method that does not generate dust.

---

## 7. Handling and Storage

Keep in a tightly closed container. Protect from physical damage. Store in a cool, dry, ventilated area away from sources of heat, moisture and incompatibilities. Containers of this material may be hazardous when empty since they retain product residues (dust, solids); observe all warnings and precautions listed for the product.

---

## 8. Exposure Controls/Personal Protection

### **Airborne Exposure Limits:**

None established.

### **Ventilation System:**

A system of local and/or general exhaust is recommended to keep employee exposures as low as possible. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, *Industrial Ventilation, A Manual of Recommended Practices*, most recent edition, for details.

### **Personal Respirators (NIOSH Approved):**

For conditions of use where exposure to dust or mist is apparent and engineering controls are not feasible, a particulate respirator (NIOSH type N95 or better filters) may be worn. If oil particles (e.g. lubricants, cutting fluids, glycerine, etc.) are present, use a NIOSH type R or P filter. For emergencies or instances where the exposure levels are not known, use a full-face positive-pressure, air-supplied respirator. **WARNING:**

Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.

### **Skin Protection:**

Wear protective gloves and clean body-covering clothing.

### **Eye Protection:**

Use chemical safety goggles and/or full face shield where dusting or splashing of solutions is possible. Maintain eye wash fountain and quick-drench facilities in work area.

---

## 9. Physical and Chemical Properties

### **Appearance:**

Dark green powder or greenish glistening pieces having a metallic luster.

### **Odor:**

Slight characteristic odor.

### **Solubility:**

Soluble in water.

### **Specific Gravity:**

No information found.

### **pH:**

No information found.

### **% Volatiles by volume @ 21C (70F):**

0

### **Boiling Point:**

Not applicable.

### **Melting Point:**

215C (419F)

### **Vapor Density (Air=1):**

No information found.

### **Vapor Pressure (mm Hg):**

No information found.

### **Evaporation Rate (BuAc=1):**

No information found.

---

## 10. Stability and Reactivity

### Stability:

Stable under ordinary conditions of use and storage.

### Hazardous Decomposition Products:

When heated to decomposition it emits toxic fumes of nitrogen oxides and hydrogen chloride.

### Hazardous Polymerization:

Will not occur.

### Incompatibilities:

Strong oxidizers.

### Conditions to Avoid:

Incompatibles.

## 11. Toxicological Information

Oral rat LD50: 420 mg/kg. Investigated as a tumorigen, mutagen, reproductive effector.

-----\Cancer Lists\-----			
Ingredient	---NTP Carcinogen---		IARC Category
	Known	Anticipated	
Hexamethyl-p-rosaniline Chloride (548-62-9)	No	No	None

## 12. Ecological Information

### Environmental Fate:

No information found.

### Environmental Toxicity:

No information found.

## 13. Disposal Considerations

Whatever cannot be saved for recovery or recycling should be managed in an appropriate and approved waste disposal facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

## 14. Transport Information

Not regulated.

## 15. Regulatory Information

-----\Chemical Inventory Status - Part 1\-----				
Ingredient	TSCA	EC	Japan	Australia
Hexamethyl-p-rosaniline Chloride (548-62-9)	Yes	Yes	Yes	Yes

-----\Chemical Inventory Status - Part 2\-----				
Ingredient	--Canada--			
	Korea	DSL	NDSL	Phil.

-----\Federal, State & International Regulations - Part 1\-----				
Ingredient	-SARA 302- RQ	TPQ	-SARA 313- List	Chemical Catg.
Hexamethyl-p-rosaniline Chloride (548-62-9)	Yes	Yes	No	Yes
-----\Federal, State & International Regulations - Part 2\-----				
Ingredient	CERCLA	-RCRA- 261.33	-TSCA- 8 (d)	
Hexamethyl-p-rosaniline Chloride (548-62-9)	No	No	No	

Chemical Weapons Convention: No      TSCA 12 (b): No      CDTA: No  
 SARA 311/312: Acute: Yes      Chronic: No      Fire: No      Pressure: No  
 Reactivity: No      (Pure / Solid)

**Australian Hazchem Code:** None allocated.

**Poison Schedule:** None allocated.

**WHMIS:**

This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

## 16. Other Information

**NFPA Ratings:** Health: 2 Flammability: 1 Reactivity: 0

**Label Hazard Warning:**

WARNING! HARMFUL IF SWALLOWED. MAY BE HARMFUL IF INHALED. CAUSES SEVERE EYE IRRITATION. MAY CAUSE IRRITATION TO SKIN AND RESPIRATORY TRACT.

**Label Precautions:**

Avoid breathing dust.  
 Store in a tightly closed container.  
 Use with adequate ventilation.  
 Wash thoroughly after handling.  
 Do not get in eyes.  
 Avoid contact with skin and clothing.

**Label First Aid:**

In case of eye contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention immediately. If swallowed, give large amounts of water to drink. Never give anything by mouth to an unconscious person. If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. In case of contact, immediately flush skin with plenty of water for at least 15 minutes. Get medical attention if irritation develops.

**Product Use:**

Laboratory Reagent.

**Revision Information:**

MSDS Section(s) changed since last revision of document include: 3.

**Disclaimer:**

\*\*\*\*\*

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**Prepared by:** Environmental Health & Safety  
Phone Number: (314) 654-1600 (U.S.A.)

MSDS Number: **G1902** \* \* \* \* *Effective Date: 02/09/09* \* \* \* \* *Supercedes: 04/10/06*

	<b>24 Hour Emergency Telephone: 908-859-2151</b> <b>CHEMTREC: 1-800-424-9300</b>
	<b>National Response in Canada</b> <b>CANUTEC: 613-996-6565</b>
<b>From: Mallinckrodt Baker, Inc.</b> <b>222 Red School Lane</b> <b>Phillipsburg, NJ 08865</b>	 
<b>NOTE: CHEMTREC, CANUTEC and National Response Center emergency numbers to be used only in the event of chemical emergencies involving a spill, leak, fire, exposure or accident involving chemicals.</b>	
All non-emergency questions should be directed to Customer Service (1-800-582-2537) for assistance.	

# GIEMSA STAIN

## 1. Product Identification

**Synonyms:** Giemsa stain certified; Giemsa's Stain

**CAS No.:** 51811-82-6

**Molecular Weight:** Not applicable to mixtures.

**Chemical Formula:** No information found.

**Product Codes:**

J.T. Baker: M702

Mallinckrodt: E060

## 2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
Giemsa Stain	51811-82-6	90 - 100%	Yes

## 3. Hazards Identification

### Emergency Overview

**WARNING! MAY BE HARMFUL IF SWALLOWED OR INHALED. MAY CAUSE IRRITATION TO SKIN, EYES, AND RESPIRATORY TRACT.**

**SAF-T-DATA<sup>(tm)</sup>** Ratings (Provided here for your convenience)

Health Rating: 1 - Slight

Flammability Rating: 1 - Slight

Reactivity Rating: 1 - Slight

Contact Rating: 2 - Moderate

Lab Protective Equip: GOGGLES; LAB COAT; PROPER GLOVES

Storage Color Code: Green (General Storage)



---

## Potential Health Effects

---

Information on the human health effects from exposure to this substance is limited.

**Inhalation:**

May cause irritation to the respiratory tract. Symptoms may include coughing and shortness of breath.

**Ingestion:**

Large oral doses may cause irritation to the gastrointestinal tract.

**Skin Contact:**

May cause irritation with redness and pain.

**Eye Contact:**

May cause irritation, redness and pain.

**Chronic Exposure:**

No information found.

**Aggravation of Pre-existing Conditions:**

No information found.

---

## 4. First Aid Measures

**Inhalation:**

Remove to fresh air. Get medical attention for any breathing difficulty.

**Ingestion:**

Give several glasses of water to drink to dilute. If large amounts were swallowed, get medical advice.

**Skin Contact:**

Immediately flush skin with plenty of water for at least 15 minutes. Remove contaminated clothing and shoes.

Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention if irritation develops.

**Eye Contact:**

Immediately flush eyes with plenty of water for at least 15 minutes, lifting upper and lower eyelids occasionally.

Get medical attention if irritation persists.

---

## 5. Fire Fighting Measures

**Fire:**

Not considered to be a fire hazard.

**Explosion:**

Not considered to be an explosion hazard.

**Fire Extinguishing Media:**

Use any means suitable for extinguishing surrounding fire.

**Special Information:**

In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode.

---

## 6. Accidental Release Measures

Ventilate area of leak or spill. Wear appropriate personal protective equipment as specified in Section 8. Spills: Sweep up and containerize for reclamation or disposal. Vacuuming or wet sweeping may be used to avoid dust dispersal.

---

## 7. Handling and Storage

Keep in a tightly closed container, stored in a cool, dry, ventilated area. Protect against physical damage. Isolate from incompatible substances. Containers of this material may be hazardous when empty since they retain product residues (dust, solids); observe all warnings and precautions listed for the product.

---

## 8. Exposure Controls/Personal Protection

### **Airborne Exposure Limits:**

None established.

### **Ventilation System:**

A system of local and/or general exhaust is recommended to keep employee exposures as low as possible. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, *Industrial Ventilation, A Manual of Recommended Practices*, most recent edition, for details.

### **Personal Respirators (NIOSH Approved):**

For conditions of use where exposure to dust or mist is apparent and engineering controls are not feasible, a particulate respirator (NIOSH type N95 or better filters) may be worn. If oil particles (e.g. lubricants, cutting fluids, glycerine, etc.) are present, use a NIOSH type R or P filter. For emergencies or instances where the exposure levels are not known, use a full-face positive-pressure, air-supplied respirator. **WARNING:**

Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.

### **Skin Protection:**

Wear protective gloves and clean body-covering clothing.

### **Eye Protection:**

Use chemical safety goggles. Maintain eye wash fountain and quick-drench facilities in work area.

---

## 9. Physical and Chemical Properties

### **Appearance:**

Purple-black crystals.

### **Odor:**

No information found.

### **Solubility:**

No information found.

### **Specific Gravity:**

No information found.

### **pH:**

No information found.

### **% Volatiles by volume @ 21C (70F):**

No information found.

### **Boiling Point:**

No information found.

### **Melting Point:**

300C (572F)

### **Vapor Density (Air=1):**

No information found.

### **Vapor Pressure (mm Hg):**

No information found.

### **Evaporation Rate (BuAc=1):**

No information found.

---

## 10. Stability and Reactivity

**Stability:**

Stable under ordinary conditions of use and storage.

**Hazardous Decomposition Products:**

No information found.

**Hazardous Polymerization:**

Will not occur.

**Incompatibilities:**

No information found.

**Conditions to Avoid:**

No information found.

## 11. Toxicological Information

No LD50/LC50 information found relating to normal routes of occupational exposure.

-----\Cancer Lists\-----			
Ingredient	---NTP Carcinogen---		IARC Category
	Known	Anticipated	
Giemsa Stain (51811-82-6)	No	No	None

## 12. Ecological Information

**Environmental Fate:**

No information found.

**Environmental Toxicity:**

No information found.

## 13. Disposal Considerations

Whatever cannot be saved for recovery or recycling should be managed in an appropriate and approved waste disposal facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

## 14. Transport Information

Not regulated.

## 15. Regulatory Information

-----\Chemical Inventory Status - Part 1\-----				
Ingredient	TSCA	EC	Japan	Australia
Giemsa Stain (51811-82-6)	Yes	Yes	No	Yes

-----\Chemical Inventory Status - Part 2\-----				
Ingredient	Korea	--Canada--		Phil.
		DSL	NDSL	
Giemsa Stain (51811-82-6)	No	Yes	No	No

-----\Federal, State & International Regulations - Part 1\-----

Ingredient	-SARA 302-		-----SARA 313-----	
	RQ	TPQ	List	Chemical Catg.
----- Giemsa Stain (51811-82-6)	No	No	No	No

-----\Federal, State & International Regulations - Part 2\-----

Ingredient	CERCLA	-RCRA-	-TSCA-
		261.33	8 (d)
----- Giemsa Stain (51811-82-6)	No	No	No

Chemical Weapons Convention: No      TSCA 12 (b): No      CDTA: No  
SARA 311/312: Acute: Yes      Chronic: No      Fire: No      Pressure: No  
Reactivity: No      (Pure / Solid)

**Australian Hazchem Code:** None allocated.

**Poison Schedule:** None allocated.

**WHMIS:**

This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

## 16. Other Information

**NFPA Ratings:** Health: **1** Flammability: **0** Reactivity: **0**

**Label Hazard Warning:**

WARNING! MAY BE HARMFUL IF SWALLOWED OR INHALED. MAY CAUSE IRRITATION TO SKIN, EYES, AND RESPIRATORY TRACT.

**Label Precautions:**

Avoid contact with eyes, skin and clothing.

Wash thoroughly after handling.

Avoid breathing dust.

Keep container closed.

Use with adequate ventilation.

**Label First Aid:**

If inhaled, remove to fresh air. Get medical attention for any breathing difficulty. In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes. Get medical attention if irritation develops or persists. If swallowed, give large amounts of water to drink. Never give anything by mouth to an unconscious person.

**Product Use:**

Laboratory Reagent.

**Revision Information:**

No Changes.

**Disclaimer:**

\*\*\*\*\*


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**Prepared by:** Environmental Health & Safety

Phone Number: (314) 654-1600 (U.S.A.)

MSDS Number: **D0835** \* \* \* \* *Effective Date: 11/21/08* \* \* \* \* *Supercedes: 02/16/06*

	24 Hour Emergency Telephone: 908-859-2151 CHEMTREC: 1-800-424-9300
	National Response in Canada CANUTEC: 613-996-6565
From: Mallinckrodt Baker, Inc. 222 Red School Lane Phillipsburg, NJ 08865	Outside U.S. and Canada Chemtrec: 703-527-3887
	NOTE: CHEMTREC, CANUTEC and National Response Center emergency numbers to be used only in the event of chemical emergencies involving a spill, leak, fire, exposure or accident involving chemicals.

All non-emergency questions should be directed to Customer Service (1-800-582-2537) for assistance.

# DEXTROSE , ANHYDROUS

## 1. Product Identification

**Synonyms:** D-glucose, anhydrous; dextrosol; dextrose U.S.P. anhydrous; corn sugar; grape sugar  
**CAS No.:** 50-99-7  
**Molecular Weight:** 180.16  
**Chemical Formula:** C<sub>6</sub>H<sub>12</sub>O<sub>6</sub>  
**Product Codes:**  
 J.T. Baker: 1916, 1919, 1920, 4893  
 Mallinckrodt: 4908, 4912, 4915, 7730

## 2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
Dextrose Anhydrous	50-99-7	90 - 100%	No

## 3. Hazards Identification

### Emergency Overview

**As part of good industrial and personal hygiene and safety procedure, avoid all unnecessary exposure to the chemical substance and ensure prompt removal from skin, eyes and clothing.**

**SAF-T-DATA<sup>(tm)</sup>** Ratings (Provided here for your convenience)

Health Rating: 0 - None  
 Flammability Rating: 1 - Slight  
 Reactivity Rating: 1 - Slight  
 Contact Rating: 0 - None  
 Lab Protective Equip: GOGGLES; LAB COAT; PROPER GLOVES  
 Storage Color Code: Green (General Storage)

---

## Potential Health Effects

---

**Inhalation:**

Not expected to be a health hazard.

**Ingestion:**

Extremely large oral dosages may produce gastrointestinal disturbances.

**Skin Contact:**

No adverse effects expected.

**Eye Contact:**

No adverse effects expected but dust may cause mechanical irritation.

**Chronic Exposure:**

No information found.

**Aggravation of Pre-existing Conditions:**

No information found.

---

## 4. First Aid Measures

**Inhalation:**

Not expected to require first aid measures.

**Ingestion:**

Not expected to require first aid measures.

**Skin Contact:**

Not expected to require first aid measures.

**Eye Contact:**

Wash thoroughly with running water. Get medical advice if irritation develops.

---

## 5. Fire Fighting Measures

**Fire:**

Not considered to be a fire hazard.

**Explosion:**

This material in sufficient quantity and reduced particle size is capable of creating a dust explosion

**Fire Extinguishing Media:**

Use any means suitable for extinguishing surrounding fire.

**Special Information:**

Wear full protective clothing and breathing equipment for high-intensity fire or potential explosion conditions.

---

## 6. Accidental Release Measures

Remove all sources of ignition. Ventilate area of leak or spill. Wear appropriate personal protective equipment as specified in Section 8. Spills: Clean up spills in a manner that does not disperse dust into the air. Use non-sparking tools and equipment. Reduce airborne dust and prevent scattering by moistening with water. Pick up spill for recovery or disposal and place in a closed container. Ventilate area of leak or spill. Wear appropriate personal protective equipment as specified in Section 8. Spills: Sweep up and containerize for reclamation or disposal. Vacuuming or wet sweeping may be used to avoid dust dispersal.

---

## 7. Handling and Storage

Keep in a tightly closed container, stored in a cool, dry, ventilated area. Protect against physical damage. Isolate from incompatible substances. Containers of this material may be hazardous when empty since they retain product residues (dust, solids); observe all warnings and precautions listed for the product.

---

## 8. Exposure Controls/Personal Protection

### **Airborne Exposure Limits:**

None established.

### **Ventilation System:**

In general, dilution ventilation is a satisfactory health hazard control for this substance. However, if conditions of use create discomfort to the worker, a local exhaust system should be considered.

### **Personal Respirators (NIOSH Approved):**

For conditions of use where exposure to dust or mist is apparent and engineering controls are not feasible, a particulate respirator (NIOSH type N95 or better filters) may be worn. If oil particles (e.g. lubricants, cutting fluids, glycerine, etc.) are present, use a NIOSH type R or P filter. For emergencies or instances where the exposure levels are not known, use a full-face positive-pressure, air-supplied respirator. **WARNING:** Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.

### **Skin Protection:**

Wear protective gloves and clean body-covering clothing.

### **Eye Protection:**

Use chemical safety goggles. Maintain eye wash fountain and quick-drench facilities in work area.

---

## 9. Physical and Chemical Properties

### **Appearance:**

Colorless crystals or white crystalline powder.

### **Odor:**

Odorless.

### **Solubility:**

1 g/1.1 ml water @ 25C (77F).

### **Density:**

1.54 @ 25C/4C

### **pH:**

5.9 For 0.5 M aqueous solution

### **% Volatiles by volume @ 21C (70F):**

0

### **Boiling Point:**

No information found.

### **Melting Point:**

146C (295F)

### **Vapor Density (Air=1):**

No information found.

### **Vapor Pressure (mm Hg):**

No information found.

### **Evaporation Rate (BuAc=1):**

No information found.

---

## 10. Stability and Reactivity

### **Stability:**

Stable under ordinary conditions of use and storage.

### **Hazardous Decomposition Products:**

Carbon dioxide and carbon monoxide may form when heated to decomposition.

### **Hazardous Polymerization:**



Will not occur.

**Incompatibilities:**

Reacts with sodium nitrite plus potassium nitrite, sodium peroxide plus potassium nitrate.

**Conditions to Avoid:**

Moisture and incompatibles.

## 11. Toxicological Information

Oral rat LD50: 25800 mg/kg. Investigated as a tumorigen, mutagen, reproductive effector.

-----\Cancer Lists\-----			
Ingredient	---NTP Carcinogen---		IARC Category
	Known	Anticipated	
Dextrose Anhydrous (50-99-7)	No	No	None

## 12. Ecological Information

**Environmental Fate:**

No information found.

**Environmental Toxicity:**

No information found.

## 13. Disposal Considerations

Whatever cannot be saved for recovery or recycling should be managed in an appropriate and approved waste disposal facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

## 14. Transport Information

Not regulated.

## 15. Regulatory Information

-----\Chemical Inventory Status - Part 1\-----				
Ingredient	TSCA	EC	Japan	Australia
Dextrose Anhydrous (50-99-7)	Yes	Yes	Yes	Yes

-----\Chemical Inventory Status - Part 2\-----				
Ingredient	Korea	--Canada--		
		DSL	NDSL	Phil.
Dextrose Anhydrous (50-99-7)	Yes	Yes	No	Yes

-----\Federal, State & International Regulations - Part 1\-----				
Ingredient	-SARA 302-		-----SARA 313-----	
	RQ	TPQ	List	Chemical Catg.
Dextrose Anhydrous (50-99-7)	No	No	No	No

-----\Federal, State & International Regulations - Part 2\-----		
	-RCRA-	-TSCA-

Ingredient	CERCLA	261.33	8 (d)
Dextrose Anhydrous (50-99-7)	No	No	No

Chemical Weapons Convention: No TSCA 12(b): No CDTA: No  
 SARA 311/312: Acute: No Chronic: No Fire: No Pressure: No  
 Reactivity: No (Pure / Solid)

**Australian Hazchem Code:** None allocated.

**Poison Schedule:** None allocated.

**WHMIS:**

This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

## 16. Other Information

**NFPA Ratings:** Health: 0 Flammability: 0 Reactivity: 0

**Label Hazard Warning:**

As part of good industrial and personal hygiene and safety procedure, avoid all unnecessary exposure to the chemical substance and ensure prompt removal from skin, eyes and clothing.

**Label Precautions:**

None.

**Label First Aid:**

Not applicable.

**Product Use:**

Laboratory Reagent.

**Revision Information:**

No Changes.

**Disclaimer:**

\*\*\*\*\*

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\*\*\*\*\*

**Prepared by:** Environmental Health & Safety

Phone Number: (314) 654-1600 (U.S.A.)

MSDS Number: **G4774** \* \* \* \* *Effective Date: 02/15/08* \* \* \* \* *Supercedes: 05/25/05*

	<b>24 Hour Emergency Telephone: 908-859-2151</b> <b>CHEMTREC: 1-800-424-9300</b>
	<b>National Response in Canada</b> <b>CANUTEC: 613-996-6666</b>
<b>From: Mallinckrodt Baker, Inc.</b> <b>222 Red School Lane</b> <b>Phillipsburg, NJ 08865</b>	 
<b>NOTE: CHEMTREC, CANUTEC and National Response Center emergency numbers to be used only in the event of chemical emergencies involving a spill, leak, fire, exposure or accident involving chemicals.</b>	
All non-emergency questions should be directed to Customer Service (1-800-582-2537) for assistance.	

# GLYCEROL

## 1. Product Identification

**Synonyms:** 1,2,3-propanetriol; glycerin; glycol alcohol; glycerol, anhydrous

**CAS No.:** 56-81-5

**Molecular Weight:** 92.10

**Chemical Formula:** C<sub>3</sub>H<sub>5</sub>(OH)<sub>3</sub>

**Product Codes:**

J.T. Baker: 2135, 2136, 2140, 2142, 2143, 2988, 4043, 5093, M778

Mallinckrodt: 0564, 5092, 5093, 5100

## 2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
Glycerin	56-81-5	90 - 100%	Yes

## 3. Hazards Identification

### Emergency Overview

**CAUTION! MAY CAUSE IRRITATION TO SKIN, EYES, AND RESPIRATORY TRACT. MAY AFFECT KIDNEYS.**

**SAF-T-DATA<sup>(tm)</sup>** Ratings (Provided here for your convenience)

Health Rating: 2 - Moderate (Life)

Flammability Rating: 1 - Slight

Reactivity Rating: 0 - None

Contact Rating: 1 - Slight

Lab Protective Equip: GOGGLES; LAB COAT; VENT HOOD; PROPER GLOVES

Storage Color Code: Green (General Storage)

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## Potential Health Effects

---

**Inhalation:**

Due to the low vapor pressure, inhalation of the vapors at room temperatures is unlikely. Inhalation of mist may cause irritation of respiratory tract.

**Ingestion:**

Low toxicity. May cause nausea, headache, diarrhea.

**Skin Contact:**

May cause irritation.

**Eye Contact:**

May cause irritation.

**Chronic Exposure:**

May cause kidney injury.

**Aggravation of Pre-existing Conditions:**

Persons with pre-existing skin disorders or eye problems or impaired liver or kidney function may be more susceptible to the effects of the substance.

---

## 4. First Aid Measures

**Inhalation:**

Remove to fresh air. Get medical attention for any breathing difficulty.

**Ingestion:**

Induce vomiting immediately as directed by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention.

**Skin Contact:**

Immediately flush skin with plenty of water for at least 15 minutes. Remove contaminated clothing and shoes.

Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention if irritation develops.

**Eye Contact:**

Immediately flush eyes with plenty of water for at least 15 minutes, lifting upper and lower eyelids occasionally.

Get medical attention if irritation persists.

---

## 5. Fire Fighting Measures

**Fire:**

Flash point: 199C (390F) CC

Autoignition temperature: 370C (698F)

Slight fire hazard when exposed to heat or flame. Slight fire hazard when exposed to heat or flame.

**Explosion:**

Above flash point, vapor-air mixtures may cause flash fire.

**Fire Extinguishing Media:**

Use any means suitable for extinguishing surrounding fire. Water spray may be used to extinguish surrounding fire and cool exposed containers. Water spray will also reduce fume and irritant gases.

**Special Information:**

In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode.

---

## 6. Accidental Release Measures

Ventilate area of leak or spill. Wear appropriate personal protective equipment as specified in Section 8. Contain and recover liquid when possible. Collect liquid in an appropriate container or absorb with an inert material (e. g., vermiculite, dry sand, earth), and place in a chemical waste container. Do not use combustible materials, such

as saw dust. Do not flush to sewer!

---

## 7. Handling and Storage

Keep in a tightly closed container, stored in a cool, dry, ventilated area. Protect against physical damage. Isolate from incompatible substances. Containers of this material may be hazardous when empty since they retain product residues (vapors, liquid); observe all warnings and precautions listed for the product.

---

## 8. Exposure Controls/Personal Protection

### **Airborne Exposure Limits:**

For Glycerin Mist:

- OSHA Permissible Exposure Limit (PEL):

Total Dust: 15 mg/m<sup>3</sup> (TWA);

Respirable Fraction: 5 mg/m<sup>3</sup>(TWA).

- ACGIH Threshold Limit Value (TLV):

10 mg/m<sup>3</sup>

### **Ventilation System:**

A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, *Industrial Ventilation, A Manual of Recommended Practices*, most recent edition, for details.

### **Personal Respirators (NIOSH Approved):**

If the exposure limit is exceeded and engineering controls are not feasible, a half facepiece particulate respirator (NIOSH type P95 or R95 filters) may be worn for up to ten times the exposure limit or the maximum use concentration specified by the appropriate regulatory agency or respirator supplier, whichever is lowest.. A full-face piece particulate respirator (NIOSH type P100 or R100 filters) may be worn up to 50 times the exposure limit, or the maximum use concentration specified by the appropriate regulatory agency, or respirator supplier, whichever is lowest. Please note that N filters are not recommended for this material. For emergencies or instances where the exposure levels are not known, use a full-facepiece positive-pressure, air-supplied respirator. **WARNING:** Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.

### **Skin Protection:**

Wear protective gloves and clean body-covering clothing.

### **Eye Protection:**

Use chemical safety goggles. Maintain eye wash fountain and quick-drench facilities in work area.

---

## 9. Physical and Chemical Properties

### **Appearance:**

Clear oily liquid.

### **Odor:**

Odorless.

### **Solubility:**

Miscible in water.

### **Specific Gravity:**

1.26 @ 20C/4C

### **pH:**

(neutral to litmus)

### **% Volatiles by volume @ 21C (70F):**

0

### **Boiling Point:**

290C (554F)

**Melting Point:**

18C (64F)

**Vapor Density (Air=1):**

3.17

**Vapor Pressure (mm Hg):**

0.0025 @ 50C (122F)

**Evaporation Rate (BuAc=1):**

No information found.

## 10. Stability and Reactivity

**Stability:**

Stable under ordinary conditions of use and storage.

**Hazardous Decomposition Products:**

Toxic gases and vapors may be released if involved in a fire. Glycerin decomposes upon heating above 290C, forming corrosive gas (acrolein).

**Hazardous Polymerization:**

Will not occur.

**Incompatibilities:**

Strong oxidizers. Can react violently with acetic anhydride, calcium oxychloride, chromium oxides and alkali metal hydrides.

**Conditions to Avoid:**

Heat, flames, ignition sources and incompatibles.

## 11. Toxicological Information

Oral rat LD50: 12,600 mg/kg. Investigated as a mutagen, reproductive effector.

Ingredient	---NTP Carcinogen---		IARC Category
	Known	Anticipated	
Glycerin (56-81-5)	No	No	None

## 12. Ecological Information

**Environmental Fate:**

When released into the soil, this material is expected to readily biodegrade. When released into the soil, this material is not expected to evaporate significantly. When released into water, this material is expected to readily biodegrade. This material is not expected to significantly bioaccumulate. When released into the air, this material may be moderately degraded by reaction with photochemically produced hydroxyl radicals. When released into the air, this material may be removed from the atmosphere to a moderate extent by wet deposition.

**Environmental Toxicity:**

This material is not expected to be toxic to aquatic life.

## 13. Disposal Considerations

Whatever cannot be saved for recovery or recycling should be managed in an appropriate and approved waste disposal facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

## 14. Transport Information

Not regulated.

## 15. Regulatory Information

```

-----\Chemical Inventory Status - Part 1\-----
Ingredient                                     TSCA  EC   Japan  Australia
-----
Glycerin (56-81-5)                            Yes   Yes   Yes    Yes

```

```

-----\Chemical Inventory Status - Part 2\-----
Ingredient                                     Korea  DSL   NDSL   Phil.
-----
Glycerin (56-81-5)                            Yes   Yes   No     Yes

```

```

-----\Federal, State & International Regulations - Part 1\-----
Ingredient                                     -SARA 302-  -SARA 313-
RQ   TPQ   List  Chemical Catg.
-----
Glycerin (56-81-5)                            No    No    No     No

```

```

-----\Federal, State & International Regulations - Part 2\-----
Ingredient                                     CERCLA  -RCRA-  -TSCA-
                                           261.33  8 (d)
-----
Glycerin (56-81-5)                            No      No      No

```

Chemical Weapons Convention: No      TSCA 12(b): No      CDTA: No  
 SARA 311/312: Acute: Yes      Chronic: Yes      Fire: No      Pressure: No  
 Reactivity: No      (Pure / Liquid)

**Australian Hazchem Code:** None allocated.

**Poison Schedule:** None allocated.

**WHMIS:**

This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

## 16. Other Information

**NFPA Ratings:** Health: 1 Flammability: 1 Reactivity: 0

**Label Hazard Warning:**

CAUTION! MAY CAUSE IRRITATION TO SKIN, EYES, AND RESPIRATORY TRACT. MAY AFFECT KIDNEYS.

**Label Precautions:**

Avoid breathing mist.

Avoid contact with eyes, skin and clothing.

Keep container closed.

Use with adequate ventilation.

Wash thoroughly after handling.

**Label First Aid:**

If inhaled, remove to fresh air. Get medical attention for any breathing difficulty. In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes. Get medical attention if irritation develops or persists.

**Product Use:**

Laboratory Reagent.

**Revision Information:**

No Changes.

**Disclaimer:**

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\*\*\*\*\*

**Prepared by:** Environmental Health & Safety

Phone Number: (314) 654-1600 (U.S.A.)



# FLINN SCIENTIFIC INC.

"Your Safer Source for Science Supplies"

## Material Safety Data Sheet (MSDS)

MSDS #: 412.00

Revision Date: November 25, 2002

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### Section 1 — Chemical Product and Company Identification

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#### Iodine Solution, Gram

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### Section 2 — Composition, Information on Ingredients

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Iodine (7553-56-2) <1%, Potassium Iodide (7681-11-0) <1%, and Water (7732-18-5) >99%.

CAS#: None Established

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### Section 3 — Hazards Identification

---

Deep brown-colored liquid. Iodine odor.

May be skin irritant.

Avoid all body tissue contact.

#### FLINN AT-A-GLANCE

Health-0

Flammability-0

Reactivity-1

Exposure-1

Storage-0

0 is low hazard, 3 is high hazard

---

### Section 4 — First Aid Measures

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash continuously with fresh water for 15 minutes.

Internal: Rinse out mouth, give 1 to 2 cups of water or milk, induce vomiting. Call a physician or poison control at once.

---

### Section 5 — Fire Fighting Measures

---

Non flammable, non combustible liquid.

#### NFPA CODE

None Established

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### Section 6 — Accidental Release Measures

---

Restrict unprotected personnel from area and ventilate area. Contain spill with sand or absorbent material; deposit in sealed bag or container. See Sections 8 and 13 for further information.

---

### Section 7 — Handling and Storage

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Flinn Suggested Chemical Storage Pattern: Inorganic #2. Store with acetates, halides, sulfates, sulfites, thiosulfates and phosphates. Store away from heat and direct light.

---

### Section 8 — Exposure Controls, Personal Protection

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron.

---

### Section 9 — Physical and Chemical Properties

---

Deep brown-colored liquid. Iodine odor.

---

### Section 10 — Stability and Reactivity

---

Shelf Life: Fair to poor.

---

### Section 11 — Toxicological Information

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Acute effects: Irritant, stomach cramps

Chronic effects: N.A.

Target organs: Thyroid

ORL-HUM LD50: 2-4 gm as iodine

IHL-RAT LC50: N.A.

SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

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### Section 12 — Ecological Information

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Data not yet available.

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### Section 13 — Disposal Considerations

---

Please consult with state and local regulations.

Flinn Suggested Disposal Method #12a is one option.

---

### Section 14 — Transport Information

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Shipping Name: Not regulated

Hazard Class: N/A

UN Number: N/A

N/A = Not applicable

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### Section 15 — Regulatory Information

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Not listed.

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### Section 16 — Other Information

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Consult your copy of the Flinn Scientific Catalog/Reference Manual for additional information about laboratory chemicals. This Material Safety Data Sheet (MSDS) is for guidance and is based upon information and tests believed to be reliable. Flinn Scientific Inc. makes no guarantee of the accuracy or completeness of the data and shall not be liable for any damages relating thereto. The data is offered solely for your consideration, investigation, and verification. Flinn Scientific Inc. assumes no legal responsibility for use or reliance upon this data.

**FLINN SCIENTIFIC INC.**

"Your Safer Source for Science Supplies"

*Flinn Is No. 1 in Safety*

flinn@flinnsci.com www.flinnsci.com  
P.O. Box 219 Batavia IL 60510  
(800) 452-1261 Fax (866) 452-1436

# Material Safety Data Sheet

## Gram Safranin

ACC# 89197

### Section 1 - Chemical Product and Company Identification

**MSDS Name:** Gram Safranin**Catalog Numbers:** 66760B**Synonyms:** Mixture**Company Identification:**

Fisher Diagnostics  
 Fisher Scientific Company, LLC  
 8365 Valley Pike  
 Middletown, VA 22645-0307

**For information, call:** 800-524-0294**Emergency Number:** 800-524-0294**For CHEMTREC assistance, call:** 800-424-9300**For International CHEMTREC assistance, call:** 703-527-3887

### Section 2 - Composition, Information on Ingredients

CAS#	Chemical Name	Percent	EINECS/ELINCS
7732-18-5	Deionized Water	79.3	231-791-2
64-17-5	Ethyl Alcohol	19	200-578-6
67-56-1	Methyl Alcohol	1	200-659-6
477-73-6	Safranin	<0.7	207-518-8

### Section 3 - Hazards Identification

#### EMERGENCY OVERVIEW

Appearance: red liquid. Flash Point: 82 deg F.

**Caution!** May cause severe eye irritation and possible injury. May be absorbed through intact skin.**Combustible liquid and vapor.** May cause respiratory tract irritation. May cause skin irritation. May cause central nervous system depression. May cause liver and kidney damage. May cause blindness if swallowed. May cause fetal effects based upon animal studies.**Target Organs:** Kidneys, central nervous system, liver, eyes.

#### Potential Health Effects

**Eye:** Produces irritation, characterized by a burning sensation, redness, tearing, inflammation, and possible corneal injury. Vapors may cause eye irritation. May cause painful sensitization to light.**Skin:** May cause skin irritation. May be absorbed through the skin in harmful amounts.**Ingestion:** May cause kidney damage. May cause systemic toxicity with acidosis. May cause liver and kidney damage. May cause central nervous system depression, characterized by excitement, followed by headache, dizziness, drowsiness, and nausea. Advanced stages may cause collapse, unconsciousness, coma and possible death due to respiratory failure. May cause blindness if swallowed.**Inhalation:** Harmful if inhaled. May cause respiratory tract irritation. May cause liver and kidney damage. May cause narcotic effects in high concentration. May cause drowsiness, unconsciousness, and

central nervous system depression.

**Chronic:** Prolonged or repeated skin contact may cause dermatitis. Chronic inhalation may cause effects similar to those of acute inhalation.

## Section 4 - First Aid Measures

**Eyes:** Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid immediately.

**Skin:** Get medical aid. Rinse area with large amounts of water for at least 15 minutes.

**Ingestion:** Call a poison control center. If swallowed, do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Get medical aid.

**Inhalation:** Get medical aid immediately. Remove from exposure and move to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen.

**Notes to Physician:** Treat symptomatically and supportively.

## Section 5 - Fire Fighting Measures

**General Information:** Containers can build up pressure if exposed to heat and/or fire. As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion. Use water spray to keep fire-exposed containers cool. Combustible liquid. Containers may explode when heated.

**Extinguishing Media:** Use water spray to cool fire-exposed containers. Use water spray, dry chemical, carbon dioxide, or chemical foam. Do NOT use straight streams of water. Cool containers with flooding quantities of water until well after fire is out.

**Flash Point:** 82e deg F ( 27.78 deg C)

**Autoignition Temperature:** Not available.

**Explosion Limits, Lower:**3.3

**Upper:** 19

**NFPA Rating:** (estimated) Health: 1; Flammability: 2; Instability: 0

## Section 6 - Accidental Release Measures

**General Information:** Use proper personal protective equipment as indicated in Section 8.

**Spills/Leaks:** Sweep up, then place into a suitable container for disposal. Remove all sources of ignition. Absorb spill using an absorbent, non-combustible material such as earth, sand, or vermiculite. Do not use combustible materials such as sawdust. Provide ventilation.

## Section 7 - Handling and Storage

**Handling:** Wash thoroughly after handling. Use with adequate ventilation. Avoid contact with eyes, skin, and clothing. Empty containers retain product residue, (liquid and/or vapor), and can be dangerous. Keep container tightly closed. Keep away from heat, sparks and flame. Avoid ingestion and inhalation. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose empty containers to heat, sparks or open flames.

**Storage:** Keep away from heat, sparks, and flame. Keep away from sources of ignition. Store in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances.

## Section 8 - Exposure Controls, Personal Protection

**Engineering Controls:** Use adequate general or local exhaust ventilation to keep airborne concentrations below the permissible exposure limits.

### Exposure Limits

Chemical Name	ACGIH	NIOSH	OSHA - Final PELs
Deionized Water	none listed	none listed	none listed
Ethyl Alcohol	1000 ppm TWA	1000 ppm TWA; 1900 mg/m <sup>3</sup> TWA 3300 ppm IDLH	1000 ppm TWA; 1900 mg/m <sup>3</sup> TWA
Methyl Alcohol	200 ppm TWA; 250 ppm STEL; skin - potential for cutaneous absorption	200 ppm TWA; 260 mg/m <sup>3</sup> TWA 6000 ppm IDLH	200 ppm TWA; 260 mg/m <sup>3</sup> TWA
Safranin	none listed	none listed	none listed

**OSHA Vacated PELs:** Deionized Water: No OSHA Vacated PELs are listed for this chemical. Ethyl Alcohol: 1000 ppm TWA; 1900 mg/m<sup>3</sup> TWA Methyl Alcohol: 200 ppm TWA; 260 mg/m<sup>3</sup> TWA Safranin: No OSHA Vacated PELs are listed for this chemical.

### Personal Protective Equipment

**Eyes:** Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

**Skin:** Wear appropriate protective gloves to prevent skin exposure.

**Clothing:** Wear appropriate protective clothing to prevent skin exposure.

**Respirators:** Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Always use a NIOSH or European Standard EN 149 approved respirator when necessary.

## Section 9 - Physical and Chemical Properties

**Physical State:** Liquid

**Appearance:** red

**Odor:** pungent odor

**pH:** Not available.

**Vapor Pressure:** 40 mm Hg @19C

**Vapor Density:** 1.59

**Evaporation Rate:** Not available.

**Viscosity:** Not available.

**Boiling Point:** 95 deg C

**Freezing/Melting Point:** Not available.

**Decomposition Temperature:** Not available.

**Solubility:** Soluble in water.

**Specific Gravity/Density:** 1

**Molecular Formula:** Not available.

**Molecular Weight:** Not available.

## Section 10 - Stability and Reactivity

**Chemical Stability:** Stable under normal temperatures and pressures.

**Conditions to Avoid:** Incompatible materials, ignition sources, excess heat.

**Incompatibilities with Other Materials:** Ethanol is incompatible with acetic anhydride, acetyl bromide, ammonia + silver nitrate, disulfuric acid + nitric acid, dichloromethane + sulfuric acid,

disulfuryl difluoride, magnesium perchlorate, nitric acid + silver, oxidants, phosphorus (III) oxide, platinum, potassium, potassium tert-butoxide, silver nitrate, silver oxide, sodium and tetrachlorosilane. Methanol is incompatible with acetyl bromide, alkylaluminum solutions, beryllium hydride, carbon tetrachloride + metals, chloroform + sodium, chloroform + sodium hydroxide, cyanuric chloride, dichloromethane, diethylzinc, metals, oxidants, phosphorus (III) oxide, and potassium tert-butoxide.

**Hazardous Decomposition Products:** Hydrogen chloride, carbon monoxide, oxides of nitrogen, carbon dioxide, formaldehyde.

**Hazardous Polymerization:** Will not occur.

## Section 11 - Toxicological Information

**RTECS#:**

**CAS#** 7732-18-5: ZC0110000

**CAS#** 64-17-5: KQ6300000

**CAS#** 67-56-1: PC1400000

**CAS#** 477-73-6: SG1623000

**LD50/LC50:**

CAS# 7732-18-5:

Oral, rat: LD50 = >90 mL/kg;

CAS# 64-17-5:

Draize test, rabbit, eye: 500 mg Severe;

Draize test, rabbit, eye: 500 mg/24H Mild;

Draize test, rabbit, skin: 20 mg/24H Moderate;

Inhalation, mouse: LC50 = 39 gm/m<sup>3</sup>/4H;

Inhalation, rat: LC50 = 20000 ppm/10H;

Oral, mouse: LD50 = 3450 mg/kg;

Oral, rabbit: LD50 = 6300 mg/kg;

Oral, rat: LD50 = 7060 mg/kg;

Oral, rat: LD50 = 9000 mg/kg;

CAS# 67-56-1:

Draize test, rabbit, eye: 40 mg Moderate;

Draize test, rabbit, eye: 100 mg/24H Moderate;

Draize test, rabbit, skin: 20 mg/24H Moderate;

Inhalation, rabbit: LC50 = 81000 mg/m<sup>3</sup>/14H;

Inhalation, rat: LC50 = 64000 ppm/4H;

Oral, mouse: LD50 = 7300 mg/kg;

Oral, rabbit: LD50 = 14200 mg/kg;

Oral, rat: LD50 = 5600 mg/kg;

Skin, rabbit: LD50 = 15800 mg/kg;

CAS# 477-73-6:

**Carcinogenicity:**

CAS# 7732-18-5: Not listed by ACGIH, IARC, NTP, or CA Prop 65.

CAS# 64-17-5: Not listed by ACGIH, IARC, NTP, or CA Prop 65.

CAS# 67-56-1: Not listed by ACGIH, IARC, NTP, or CA Prop 65.

CAS# 477-73-6: Not listed by ACGIH, IARC, NTP, or CA Prop 65.

**Epidemiology:** This product contains methanol and ethanol which have been shown to produce fetotoxicity in the embryo or fetus. Specific abnormalities for methanol include the cardiovascular, musculoskeletal and urogenital systems.

**Teratogenicity:** No data available.

**Reproductive Effects:** Methanol has been shown to produce reproductive effects in laboratory

animals. Prenatal exposure to ethanol is associated with a distinct pattern of congenital malformations that have been collectively termed the "fetal alcohol syndrome". Among the characteristics of this syndrome are intrauterine and postnatal growth deficiency, a distinctive pattern of physical malformation, and behavioral/cognitive impairment such as fine motor dysfunction and mental retardation. Not all affected children have all of the features of the syndrome.

**Neurotoxicity:** No data available.

**Mutagenicity:** Methanol has been shown to produce DNA damage in laboratory animals.

**Other Studies:** No data available.

## Section 12 - Ecological Information

No information available.

## Section 13 - Disposal Considerations

Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. US EPA guidelines for the classification determination are listed in 40 CFR Parts 261.3. Additionally, waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification.

**RCRA P-Series:** None listed.

**RCRA U-Series:** CAS# 67-56-1: waste number U154 (Ignitable waste).

## Section 14 - Transport Information

	US DOT	Canada TDG
<b>Shipping Name:</b>	No information available.	No information available.
<b>Hazard Class:</b>		
<b>UN Number:</b>		
<b>Packing Group:</b>		

## Section 15 - Regulatory Information

### US FEDERAL

#### TSCA

CAS# 7732-18-5 is listed on the TSCA inventory.

CAS# 64-17-5 is listed on the TSCA inventory.

CAS# 67-56-1 is listed on the TSCA inventory.

CAS# 477-73-6 is listed on the TSCA inventory.

#### Health & Safety Reporting List

None of the chemicals are on the Health & Safety Reporting List.

#### Chemical Test Rules

None of the chemicals in this product are under a Chemical Test Rule.

#### Section 12b

None of the chemicals are listed under TSCA Section 12b.

#### TSCA Significant New Use Rule

None of the chemicals in this material have a SNUR under TSCA.

#### SARA

#### CERCLA Hazardous Substances and corresponding RQs

CAS# 67-56-1: 5000 lb final RQ; 2270 kg final RQ

### **SARA Section 302 Extremely Hazardous Substances**

None of the chemicals in this product have a TPQ.

#### **SARA Codes**

CAS # 64-17-5: acute, chronic, flammable. CAS # 67-56-1: acute, flammable. CAS # 477-73-6: acute, reactive.

#### **Section 313**

This chemical is not at a high enough concentration to be reportable under Section 313. No chemicals are reportable under Section 313.

#### **Clean Air Act:**

CAS# 67-56-1 is listed as a hazardous air pollutant (HAP). This material does not contain any Class 1 Ozone depleters. This material does not contain any Class 2 Ozone depleters.

#### **Clean Water Act:**

None of the chemicals in this product are listed as Hazardous Substances under the CWA. None of the chemicals in this product are listed as Priority Pollutants under the CWA. None of the chemicals in this product are listed as Toxic Pollutants under the CWA.

#### **OSHA:**

None of the chemicals in this product are considered highly hazardous by OSHA.

#### **STATE**

CAS# 7732-18-5 is not present on state lists from CA, PA, MN, MA, FL, or NJ.

CAS# 64-17-5 can be found on the following state right to know lists: California, New Jersey, Pennsylvania, Minnesota, Massachusetts.

CAS# 67-56-1 can be found on the following state right to know lists: California, New Jersey, Pennsylvania, Minnesota, Massachusetts.

CAS# 477-73-6 is not present on state lists from CA, PA, MN, MA, FL, or NJ.

WARNING: This product contains Ethyl Alcohol, a chemical known to the state of California to cause developmental reproductive toxicity.

California No Significant Risk Level: None of the chemicals in this product are listed.

### **European/International Regulations**

#### **European Labeling in Accordance with EC Directives**

##### **Hazard Symbols:**

Not available.

##### **Risk Phrases:**

##### **Safety Phrases:**

##### **WGK (Water Danger/Protection)**

CAS# 7732-18-5: No information available.

CAS# 64-17-5: 0

CAS# 67-56-1: 1

CAS# 477-73-6: No information available.

##### **Canada - DSL/NDSL**

CAS# 7732-18-5 is listed on Canada's DSL List.

CAS# 64-17-5 is listed on Canada's DSL List.

CAS# 67-56-1 is listed on Canada's DSL List.

CAS# 477-73-6 is listed on Canada's DSL List.

##### **Canada - WHMIS**

This product has a WHMIS classification of B3, D2A.

##### **Canadian Ingredient Disclosure List**

CAS# 64-17-5 is listed on the Canadian Ingredient Disclosure List.

CAS# 67-56-1 is listed on the Canadian Ingredient Disclosure List.

## Section 16 - Additional Information

**MSDS Creation Date:** 8/04/1998

**Revision #6 Date:** 12/03/2002



*The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no event shall Fisher be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if Fisher has been advised of the possibility of such damages.*

# FLINN SCIENTIFIC INC.

"Your Safer Source for Science Supplies"

## Material Safety Data Sheet (MSDS)

MSDS #: 376.00

Revision Date: November 25, 2002

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### Section 1 — Chemical Product and Company Identification

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#### Graphite

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### Section 2 — Composition, Information on Ingredients

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Graphite

Synonyms: carbon, black lead, plumbago

CAS#: 7782-42-5

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### Section 3 — Hazards Identification

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Steel gray to black, greasy feeling, odorless solid.  
Dust is mildly irritating to lungs. Avoid inhalation.  
Combustible solid. Powder is a fire risk.

#### FLINN AT-A-GLANCE

Health-1  
Flammability-2  
Reactivity-0  
Exposure-1  
Storage-2

0 is low hazard, 3 is high hazard

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### Section 4 — First Aid Measures

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Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash continuously with fresh water for 15 minutes.

Internal: Rinse out mouth, give 1 to 2 cups of water or milk, induce vomiting. Call a physician or poison control at once.

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### Section 5 — Fire Fighting Measures

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Combustible solid.

Finely divided powder is a fire and explosion risk.

**Fire Fighting Instructions:** Use triclass, dry chemical fire extinguisher. Firefighters should wear PPE and SCBA with full facepiece operated in positive pressure mode.

#### NFPA CODE

None Established

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### Section 6 — Accidental Release Measures

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Restrict unprotected personnel from area. Sweep up, place in sealed bag or container and dispose. Ventilate area and wash spill site after material pickup is complete. See Sections 8 and 13 for further information.

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### Section 7 — Handling and Storage

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Flinn Suggested Chemical Storage Pattern: Inorganic #4. Store with hydroxides, oxides, silicates and carbonates.

Store in a cool dry place. Store in a Flinn Saf-Stor Can.

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### Section 8 — Exposure Controls, Personal Protection

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Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron.

Use ventilation to keep airborne concentrations below exposure limits. Always wear a NIOSH-approved respirator with proper cartridges or a positive pressure, air-supplied respirator when handling this material in emergency situations (spill or fire).

Exposure guidelines: TWA 2.5 mg/m<sup>3</sup> (NIOSH)

### Section 9 — Physical and Chemical Properties

Steel gray to black, greasy feeling. Odorless solid.

Specific Gravity: 2.0-2.25

Solubility: Generally insoluble.

Formula: C

Formula Weight: 12.011

### Section 10 — Stability and Reactivity

Avoid contact with strong oxidizers, halogens, and potassium superoxide.

Shelf life: Indefinite.

### Section 11 — Toxicological Information

Acute effects: Irritating dust

ORL-RAT LD50: N.A.

Chronic effects: N.A.

IHL-RAT LC50: N.A.

Target organs: Respiratory system, cardiovascular system

SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

### Section 12 — Ecological Information

Data not yet available.

### Section 13 — Disposal Considerations

Please consult with state and local regulations.

Flinn Suggested Disposal Method #26a is one option.

### Section 14 — Transport Information

Shipping Name: Not regulated

Hazard Class: N/A

UN Number: N/A

N/A = Not applicable

### Section 15 — Regulatory Information

TSCA-listed, EINECS-listed (231-955-3).

### Section 16 — Other Information

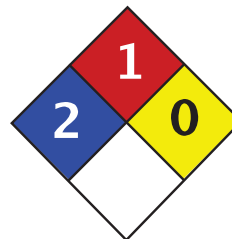
Consult your copy of the Flinn Scientific Catalog/Reference Manual for additional information about laboratory chemicals. This Material Safety Data Sheet (MSDS) is for guidance and is based upon information and tests believed to be reliable. Flinn Scientific Inc. makes no guarantee of the accuracy or completeness of the data and shall not be liable for any damages relating thereto. The data is offered solely for your consideration, investigation, and verification. Flinn Scientific Inc. assumes no legal responsibility for use or reliance upon this data.

**FLINN SCIENTIFIC INC.**

"Your Safer Source for Science Supplies"

*Improve Safety--Use Flinn Chemicals*

flinn@flinnsci.com www.flinnsci.com  
P.O. Box 219 Batavia IL 60510  
(800) 452-1261 Fax (866) 452-1436



Health	2
Fire	1
Reactivity	1
Personal Protection	E

## Material Safety Data Sheet Rosin (Gum) MSDS

### Section 1: Chemical Product and Company Identification

**Product Name:** Rosin (Gum)

**Catalog Codes:** SLR1003

**CAS#:** 8050-09-7

**RTECS:** VL04800000

**TSCA:** TSCA 8(b) inventory: Rosin (Gum)

**CI#:** Not available.

**Synonym:** Gum Rosin; colophony

**Chemical Name:** Not available.

**Chemical Formula:** Not available.

**Contact Information:**

**Sciencelab.com, Inc.**  
14025 Smith Rd.  
Houston, Texas 77396

US Sales: **1-800-901-7247**  
International Sales: **1-281-441-4400**

Order Online: [ScienceLab.com](http://ScienceLab.com)

**CHEMTREC (24HR Emergency Telephone), call:**  
1-800-424-9300

**International CHEMTREC, call:** 1-703-527-3887

**For non-emergency assistance, call:** 1-281-441-4400

### Section 2: Composition and Information on Ingredients

**Composition:**

Name	CAS #	% by Weight
Rosin (Gum)	8050-09-7	100

**Toxicological Data on Ingredients:** Rosin (Gum) LD50: Not available. LC50: Not available.

### Section 3: Hazards Identification

**Potential Acute Health Effects:**

Hazardous in case of ingestion. Slightly hazardous in case of skin contact (irritant), of eye contact (irritant), of inhalation.

**Potential Chronic Health Effects:**

Slightly hazardous in case of skin contact (sensitizer).

CARCINOGENIC EFFECTS: Not available.

MUTAGENIC EFFECTS: Not available.

TERATOGENIC EFFECTS: Not available.

DEVELOPMENTAL TOXICITY: Not available.

The substance may be toxic to lungs, skin.

Repeated or prolonged exposure to the substance can produce target organs damage.

### Section 4: First Aid Measures

**Eye Contact:**

Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention if irritation occurs.

**Skin Contact:**

In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Cover the irritated skin with an emollient. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention.

**Serious Skin Contact:**

Wash with a disinfectant soap and cover the contaminated skin with an anti-bacterial cream. Seek medical attention.

**Inhalation:**

If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

**Serious Inhalation:** Not available.

**Ingestion:**

Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. If large quantities of this material are swallowed, call a physician immediately. Loosen tight clothing such as a collar, tie, belt or waistband.

**Serious Ingestion:** Not available.

## Section 5: Fire and Explosion Data

**Flammability of the Product:** May be combustible at high temperature.

**Auto-Ignition Temperature:** Not available.

**Flash Points:** CLOSED CUP: 187°C (368.6°F). OPEN CUP: 205°C (401°F).

**Flammable Limits:** Not available.

**Products of Combustion:** Not available.

**Fire Hazards in Presence of Various Substances:**

Slightly flammable to flammable in presence of heat.

Non-flammable in presence of shocks.

**Explosion Hazards in Presence of Various Substances:**

Risks of explosion of the product in presence of mechanical impact: Not available.

Slightly explosive in presence of open flames and sparks.

**Fire Fighting Media and Instructions:**

SMALL FIRE: Use DRY chemical powder.

LARGE FIRE: Use water spray, fog or foam. Do not use water jet.

**Special Remarks on Fire Hazards:**

Thermal decomposition products include formaldehyde, acetone, methanol, aldehydes, carbon dioxide, carbon monoxide, methane, ethane, and acids.

**Special Remarks on Explosion Hazards:**

Fine dust dispersed in air in sufficient concentrations, and in the presence of an ignition source is a potential dust explosion hazard.

## Section 6: Accidental Release Measures

**Small Spill:**

Use appropriate tools to put the spilled solid in a convenient waste disposal container. Finish cleaning by spreading water on the contaminated surface and dispose of according to local and regional authority requirements.

**Large Spill:**

Use a shovel to put the material into a convenient waste disposal container. Finish cleaning by spreading water on the contaminated surface and allow to evacuate through the sanitary system. Be careful that the product is not present at a concentration level above TLV. Check TLV on the MSDS and with local authorities.

## Section 7: Handling and Storage

**Precautions:**

Keep away from heat. Keep away from sources of ignition. Ground all equipment containing material. Do not breathe dust. Keep away from incompatibles such as oxidizing agents.

**Storage:** Keep container tightly closed. Keep container in a cool, well-ventilated area.

## Section 8: Exposure Controls/Personal Protection

**Engineering Controls:**

Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.

**Personal Protection:** Safety glasses. Lab coat. Dust respirator. Be sure to use an approved/certified respirator or equivalent. Gloves.

**Personal Protection in Case of a Large Spill:**

Splash goggles. Full suit. Dust respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

**Exposure Limits:**

Rosin Core Solder Pyrolysis Products:

TWA: 0.1 (mg/m<sup>3</sup>) (as formaldehyde) from ACGIH (TLV) [United States]

Gum Rosin (solid):

TWA: 10 (mg/m<sup>3</sup>)

Consult local authorities for acceptable exposure limits.

## Section 9: Physical and Chemical Properties

**Physical state and appearance:** Solid.

**Odor:** Not available.

**Taste:** Not available.

**Molecular Weight:** Not available.

**Color:** Yellow. (Light.)

**pH (1% soln/water):** Not applicable.

**Boiling Point:** Not available.

**Melting Point:** 70°C (158°F) - 78 C.

**Critical Temperature:** Not available.

**Specific Gravity:** 1.06 - 1.08 @ 25 deg. C (Water = 1)

**Vapor Pressure:** Not applicable.

**Vapor Density:** Not available.

**Volatility:** Not available.

**Odor Threshold:** Not available.

**Water/Oil Dist. Coeff.:** Not available.

**Ionicity (in Water):** Not available.

**Dispersion Properties:** See solubility in water, diethyl ether.

**Solubility:**

Soluble in diethyl ether.

Insoluble in cold water, hot water.

Soluble in alcohol, oils, benzene, carbon tetrachloride, glacial acetic acid, aliphatic, aromatic, and chlorinated hydrocarbons.

### Section 10: Stability and Reactivity Data

**Stability:** The product is stable.

**Instability Temperature:** Not available.

**Conditions of Instability:** Excess heat

**Incompatibility with various substances:** Reactive with oxidizing agents.

**Corrosivity:** Non-corrosive in presence of glass.

**Special Remarks on Reactivity:** Not available.

**Special Remarks on Corrosivity:** Not available.

**Polymerization:** Will not occur.

### Section 11: Toxicological Information

**Routes of Entry:** Inhalation. Ingestion.

**Toxicity to Animals:**

LD50: Not available.

LC50: Not available.

**Chronic Effects on Humans:** May cause damage to the following organs: lungs, skin.

**Other Toxic Effects on Humans:**

Hazardous in case of of ingestion.

Slightly hazardous in case of skin contact (irritant), of inhalation.

**Special Remarks on Toxicity to Animals:** Not available.

**Special Remarks on Chronic Effects on Humans:** Not available.

**Special Remarks on other Toxic Effects on Humans:****Acute Potential Health Effects:**

Rosin has two types of hazards - from the rosin itself, and from the thermal decomposition products. The thermal decomposition products (aka Rosin Core Solder Pyrolysis Products) include formaldehyde, acetone, methanol, aldehydes, carbon dioxide, carbon monoxide, methane, ethane, and acids.

The handling of the rosin in the solid state is expected to be a low hazard. It may cause skin, eyes, and respiratory tract irritation. Ingestion may cause digestion tract irritation. The thermal decomposition products of Rosin (Rosin core solder pyrolysis products) can be irritating to the eyes, nose, throat in acute exposure.

**Chronic Potential Health Effects:**

**Skin:** Repeated or prolonged skin contact with the rosin itself can cause contact dermatitis, an allergic reaction. It can also cause eczema.

**Inhalation:** Repeated or prolonged inhalation of the rosin dust or smoke can cause asthma, an allergic reaction.

Rosin core solder pyrolysis products can be sensitizing, and exposures should be reduced to as low as possible

**Section 12: Ecological Information**

**Ecotoxicity:** Not available.

**BOD5 and COD:** Not available.

**Products of Biodegradation:**

Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

**Toxicity of the Products of Biodegradation:** Not available.

**Special Remarks on the Products of Biodegradation:** Not available.

**Section 13: Disposal Considerations****Waste Disposal:**

Waste must be disposed of in accordance with federal, state and local environmental control regulations.

**Section 14: Transport Information**

**DOT Classification:** Not a DOT controlled material (United States).

**Identification:** Not applicable.

**Special Provisions for Transport:** Not applicable.

**Section 15: Other Regulatory Information****Federal and State Regulations:**

Minnesota: Rosin (Gum)

TSCA 8(b) inventory: Rosin (Gum)

**Other Regulations:**

OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200).

EINECS: This product is on the European Inventory of Existing Commercial Chemical Substances.

**Other Classifications:**

**WHMIS (Canada):** CLASS D-2A: Material causing other toxic effects (VERY TOXIC).

**DSCL (EEC):**



R43- May cause sensitization by skin contact.

S24- Avoid contact with skin.

S37- Wear suitable gloves.

**HMIS (U.S.A.):**

**Health Hazard:** 2

**Fire Hazard:** 1

**Reactivity:** 1

**Personal Protection:** E

**National Fire Protection Association (U.S.A.):**

**Health:** 2

**Flammability:** 1

**Reactivity:** 0

**Specific hazard:**

**Protective Equipment:**

Gloves.

Lab coat.

Dust respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate.

Safety glasses.

## Section 16: Other Information

**References:** Not available.

**Other Special Considerations:** Not available.

**Created:** 10/09/2005 06:22 PM

**Last Updated:** 11/06/2008 12:00 PM

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# **MATERIAL SAFETY DATA SHEET**

GUM ARABIC  
CAROLINA BIOLOGICAL

Revised: 05/15/08  
Replaces: 01/10/08  
Printed: 05/20/08

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## **1. PRODUCT DESCRIPTION**

Product Name: Gum Arabic  
Product Code(s): 86-6108, 86-6110  
Size: 100 g, 500 g  
Chemical Name: Acacia Powder  
CAS Number: See section 2  
Formula: Composition varies  
Synonyms: Gum Arabic  
Distributor: Carolina Biological Supply Company  
2700 York Road  
Burlington, NC 27215

Chemical Information: 800-227-1150 (8am-5pm (ET) M-F)  
Chemtrec (Transportation Spill Response 24 hours): 800-424-9300

## **2. COMPOSITION/INFORMATION ON INGREDIENTS**

Principle Components: Gum Arabic (9000-01-5) 100%  
TLV and PEL units: None established

## **3. HAZARD IDENTIFICATION**

Emergency Overview: May cause allergic reaction. May be irritating to skin, eyes and mucus membranes.

Potential Health Effects:

Eyes: May cause irritation.

Skin: May cause irritation.

Ingestion: May cause gastrointestinal discomfort.

Inhalation: May cause irritation to respiratory tract.

## **4. FIRST AID MEASURES**

Emergency and First Aid Procedures:

Eyes - Flush thoroughly with water. Seek medical attention if irritation persists.

Skin - Wash exposed area with soap and water. Seek medical attention if irritation persists.

Ingestion - In quantities normally handled, symptoms would not be expected. If swallowed, if conscious, give water. Seek medical attention if gastrointestinal irritation or other unexpected symptoms develop.

Inhalation - Not expected to present a problem. However, if the exposed person is having trouble breathing, remove to fresh air. Give oxygen if breathing is difficult; give artificial respiration if breathing has stopped. Keep person warm and quiet, and get medical attention.

## **5. FIREFIGHTING PROCEDURES**

Flash Point(Method Used): N/A

NFPA Rating (est): Health: 0  
Fire: 0  
Reactivity: 0

Extinguisher Media:

Use dry chemical, CO2 or appropriate foam.

Flammable Limits in Air % by Volume: N/A

Autoignition Temperature: N/A

Special Firefighting Procedures:

Firefighters should wear full protective equipment and NIOSH approved self-contained breathing apparatus.

Unusual Fire and Explosion Hazards: None

## **MATERIAL SAFETY DATA SHEET**

GUM ARABIC  
CAROLINA BIOLOGICAL

Revised: 05/15/08  
Replaces: 01/10/08  
Printed: 05/20/08

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### **6. SPILL OR LEAK PROCEDURES**

Steps to be Taken in Case Material is Released or Spilled:

Ventilate area of spill. Clean-up personnel should wear proper protective equipment. Avoid creating dust. Sweep or scoop up and containerize for disposal.

### **7. SPECIAL PRECAUTIONS**

Precautions to be Taken in Handling or Storing: Keep container closed. Store at controlled room temperature.

Other Precautions: Do not breathe dust. Do not get in eyes, on skin, or on clothing.

### **8. SPECIAL PROTECTION INFORMATION**

Respiratory Protection(Specify Type):

None needed under normal conditions of use with adequate ventilation. NIOSH approved equipment should be worn if PELs are exceeded.

Ventilation:

Local Exhaust: Yes  
Mechanical(General): Yes  
Special: No  
Other: No

Protective Gloves:

Rubber, neoprene, PVC, or equivalent.

Eye Protection:

Splash proof chemical safety goggles should be worn at all times.

Other Protective Clothing or Equipment:

Lab apron, eye wash, and safety shower.

### **9. PHYSICAL DATA**

Molecular Weight: N/A  
Melting Point: N/A  
Boiling Point: N/A  
Vapor Pressure: N/A  
Vapor Density(Air=1): N/A  
Specific Gravity(H2O=1): N/A  
Percent Volatile by Volume: N/A  
Evaporation Rate(H2O=1): N/A  
Solubility in Water: Readily soluble  
Appearance and Odor: White powder or granules, practically odorless

### **10. REACTIVITY DATA**

Stability: Stable

Conditions to Avoid: Extreme heat

Incompatibility(Materials to Avoid): Ferric salts, borax, basic lead acetate, alcohol, sodium silicate, gelatin.

Hazardous Decomposition Products: COx

Hazardous Polymerization: Will not occur

### **11. TOXICITY DATA**

Toxicity Data: Oral Rat LD50: >16g/kg

Effects of Overexposure:

Acute: See section 3

Chronic: None found.

Conditions Aggravated by Overexposure: Contact may cause dermatitis.

# MATERIAL SAFETY DATA SHEET

GUM ARABIC  
CAROLINA BIOLOGICAL

Revised: 05/15/08  
Replaces: 01/10/08  
Printed: 05/20/08

---

Dust inhalation may cause hives, eczema, coughing, asthma, wheezing.  
Target Organs: Respiratory conditions.  
Primary Route(s) of Entry: Inhalation, ingestion

## **12. ECOLOGICAL DATA**

EPA Waste Numbers: None

## **13. DISPOSAL INFORMATION**

Waste Disposal Methods: Dispose in accordance with all applicable Federal, State and Local regulations.  
Always contact a permitted waste disposer (TSD) to assure compliance.

## **14. TRANSPORT INFORMATION**

Not regulated for transport

## **15. REGULATORY INFORMATION**

EPA TSCA Status: On TSCA Inventory  
Hazard Category for SARA Section 311/312 Reporting: Acute

Product or Components	SARA EHS Sec. 302 TPQ	SARA Sec. 313		CERCLA Sec. 103 RQ lbs.	RCRA Sec. 261.33
		Chemicals Name	Chemical List Category		
Arabic Gum	No	No	No	No	No

## **16. ADDITIONAL INFORMATION**

The information provided in this Material Safety Data Sheet represents a compilation of data drawn directly from various sources available to us. Carolina Biological Supply makes no representation or guarantee as to the suitability of this information to a particular application of the substance covered in the Material Safety Data Sheet. Any employer must carefully assess the applicability of any information contained herein in regards to the particular use to which the employer puts the material.

### Glossary

ACGIH.....American Conference of Governmental Industrial Hygienists  
CAS Number..Chemical Abstracts Service Number  
CERCLA.....Comprehensive Environmental Response, Compensation, and Liability Act  
DOT.....U.S. Department of Transportation  
IARC.....International Agency of Research on Cancer  
mppcf.....million particles per cubic foot  
N/A.....Not Available  
NTP.....National Toxicology Program  
OSHA.....Occupational Safety and Health Administration  
PEL.....Permissible Exposure Limit  
ppm.....parts per million  
RCRA.....Resource Conservation and Recovery Act  
SARA.....Superfund Amendments and Reauthorization Act  
TLV.....Threshold Limit Value  
TSCA.....Toxic Substances Control Act

# FLINN SCIENTIFIC INC.

"Your Safer Source for Science Supplies"

## Material Safety Data Sheet (MSDS)

MSDS #: 379.00

Revision Date: November 25, 2002

---

### Section 1 — Chemical Product and Company Identification

---

#### Helium Gas

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### Section 2 — Composition, Information on Ingredients

---

Helium Gas

CAS#: 7440-59-7

---

### Section 3 — Hazards Identification

---

Colorless, odorless gas.

Asphyxiant by displacing air. Substance not considered hazardous. However, not all health aspects of this substance have been thoroughly investigated.

#### FLINN AT-A-GLANCE

Health-0  
Flammability-0  
Reactivity-0  
Exposure-0  
Storage-0

0 is low hazard, 3 is high hazard

---

### Section 4 — First Aid Measures

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

---

### Section 5 — Fire Fighting Measures

---

Nonflammable gas.

Pressurized gas. Keep from heat.

#### NFPA CODE

None Established

---

### Section 6 — Accidental Release Measures

---

Allow gas to dissipate.

---

### Section 7 — Handling and Storage

---

Store with the bottled gases in a secure area.

Cylinder temperature should not exceed 125 F (52 C)

---

### Section 8 — Exposure Controls, Personal Protection

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron.

### Section 9 — Physical and Chemical Properties

Colorless, odorless gas  
Formula: He  
Formula Weight: 4.00

Specific Gravity: 0.1785 g/L @ 0 C  
Melting Point: -272.2 C @ 26 atm  
Boiling Point: -268 C

### Section 10 — Stability and Reactivity

Avoid contact with heat.  
Shelf Life: Indefinite.

### Section 11 — Toxicological Information

Acute effects: Nausea, dizziness and headache  
Chronic effects: N.A.  
Target organs: N.A.

ORL-RAT LD50: N.A.  
IHL-RAT LC50: N.A.  
SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

### Section 12 — Ecological Information

Data not yet available.

### Section 13 — Disposal Considerations

Please consult with state and local regulations.  
One option is to completely empty the cylinder in an operating fume hood or outdoors. Then dispose of empty cylinder in trash if

### Section 14 — Transport Information

Shipping Name: Helium, compressed  
Hazard Class: 2.2, Nonflammable gas  
UN Number: UN1046

N/A = Not applicable

### Section 15 — Regulatory Information

TSCA-listed, EINECS-listed (231-168-5).

### Section 16 — Other Information

Consult your copy of the Flinn Scientific Catalog/Reference Manual for additional information about laboratory chemicals. This Material Safety Data Sheet (MSDS) is for guidance and is based upon information and tests believed to be reliable. Flinn Scientific Inc. makes no guarantee of the accuracy or completeness of the data and shall not be liable for any damages relating thereto. The data is offered solely for your consideration, investigation, and verification. Flinn Scientific Inc. assumes no legal responsibility for use or reliance upon this data.

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P.O. Box 219 Batavia IL 60510  
(800) 452-1261 Fax (866) 452-1436

# FLINN SCIENTIFIC INC.

"Your Safer Source for Science Supplies"

## Material Safety Data Sheet (MSDS)

MSDS #: 389.00

Revision Date: March 14, 2001

---

### Section 1 — Chemical Product and Company Identification

---

#### Hexanes

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### Section 2 — Composition, Information on Ingredients

---

Hexanes

CAS#: 110-54-3

---

### Section 3 — Hazards Identification

---

Odorless, clear liquid. Faint paint-thinner odor.  
Irritant to body tissues. Mildly toxic by inhalation. Avoid all body contact.  
Flammable liquid.

#### FLINN AT-A-GLANCE

Health-1  
Flammability-3  
Reactivity-0  
Exposure-1  
Storage-3

0 is low hazard, 3 is high hazard

---

### Section 4 — First Aid Measures

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash continuously with fresh water for 15 minutes.

Internal: Rinse mouth out with water. Give mixture of 2 Tbs. of activated charcoal mixed with one cup of water. Call a physician or poison control at once.

---

### Section 5 — Fire Fighting Measures

---

Flammable liquid.

Flash Point: -10 F Upper: 7.7% Lower: 1.2% Autoignition Temperature: 482 F

When heated to decomposition, emits acrid smoke and irritating fumes.

**Fire Fighting Instructions:** Use triclass, dry chemical fire extinguisher. Firefighters should wear PPE and SCBA with full facepiece operated in positive pressure mode.

#### NFPA CODE

H-1  
F-3  
R-0

---

### Section 6 — Accidental Release Measures

---

Restrict unprotected personnel from area. Remove all ignition sources and ventilate area. Contain spill with sand and absorbent material; deposit in sealed bag or container. See Sections 8 and 13 for further information.

---

### Section 7 — Handling and Storage

---

Flinn Suggested Chemical Storage Pattern: Organic #3. Store with hydrocarbons, esters and aldehydes.

Store in a cool dry place. Use and dispense in a hood.

---

### Section 8 — Exposure Controls, Personal Protection

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron.

Use ventilation to keep airborne concentrations below exposure limits. Always wear a NIOSH-approved respirator with proper cartridges or a positive pressure, air-supplied respirator when handling this material in emergency situations (spill or fire).

Exposure guidelines: TWA 500 ppm, (OSHA)

### Section 9 — Physical and Chemical Properties

Colorless, clear liquid. Faint odor.  
Solubility: Soluble in alcohol and acetone; not water.  
Formula: C<sub>6</sub>H<sub>14</sub>  
Formula Weight: 86.20

Specific Gravity: 0.66  
Melting Point: -95 C  
Boiling Point: 69 C

### Section 10 — Stability and Reactivity

Avoid contact with strong oxidizers, chlorine, fluorine, magnesium perchlorate.  
Shelf life: Indefinite, if stored safely.

### Section 11 — Toxicological Information

Acute effects: Harmful vapor, irritant, coughing, chest pains, difficulty breathing, lung irritation and edema which may be fatal.  
Chronic effects: Neurological hazard  
Target organs: N.A.

ORL-RAT LD50: 28710 mg/kg  
IHL-RAT LC50: N.A.  
SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

### Section 12 — Ecological Information

Data not yet available.

### Section 13 — Disposal Considerations

Please consult with state and local regulations.  
Flinn Suggested Disposal Method #18a is one option.

### Section 14 — Transport Information

Shipping Name: Hexanes  
Hazard Class: 3, Flammable liquid  
UN Number: UN1208

N/A = Not applicable

### Section 15 — Regulatory Information

TSCA-listed, EINECS-listed (203-777-6), RCRA code D001.

### Section 16 — Other Information

Consult your copy of the Flinn Scientific Catalog/Reference Manual for additional information about laboratory chemicals. This Material Safety Data Sheet (MSDS) is for guidance and is based upon information and tests believed to be reliable. Flinn Scientific Inc. makes no guarantee of the accuracy or completeness of the data and shall not be liable for any damages relating thereto. The data is offered solely for your consideration, investigation, and verification. Flinn Scientific Inc. assumes no legal responsibility for use or reliance upon this data.

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(800) 452-1261 Fax (866) 452-1436



# FLINN SCIENTIFIC INC.

"Your Safer Source for Science Supplies"

## Material Safety Data Sheet (MSDS)

MSDS #: 395.00

Revision Date: March 14, 2001

---

### Section 1 — Chemical Product and Company Identification

---

## Hydrochloric Acid

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### Section 2 — Composition, Information on Ingredients

---

Hydrochloric Acid, 36.5-38.0%, concentrated

Synonym: Muriatic acid

CAS#: 7647-01-0

---

### Section 3 — Hazards Identification

---

Clear liquid; pungent odor; constantly fuming.

Highly toxic by inhalation and ingestion.

Severe corrosive to all body tissues, especially skin and eyes. Avoid all body contact.

#### FLINN AT-A-GLANCE

Health-3

Flammability-0

Reactivity-2

Exposure-3

Storage-3

0 is low hazard, 3 is high hazard

---

### Section 4 — First Aid Measures

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash continuously with fresh water for 15 minutes.

Internal: Give 1 to 2 cups of water or milk, followed by a gastric antacid, such as milk of magnesia. Do not induce vomiting. Call a physician or poison control at once.

---

### Section 5 — Fire Fighting Measures

---

Non flammable liquid.

When heated to decomposition, emits toxic fumes of Cl.

**Fire Fighting Instructions:** Use triclass, dry chemical fire extinguisher. Firefighters should wear PPE and SCBA with full facepiece operated in positive pressure mode.

#### NFPA CODE

None Established

---

### Section 6 — Accidental Release Measures

---

Restrict unprotected personnel from area. Remove all ignition sources and ventilate area. Contain spill with sand and absorbent material, neutralize with sodium bicarbonate or calcium hydroxide and deposit in sealed bag or container. See Sections 8 and 13 for further information.

---

### Section 7 — Handling and Storage

---

Flinn Suggested Chemical Storage Pattern: Inorganic #9. Store with inorganic acids.

Store in a dedicated acid cabinet and away from any source of water; if an acid cabinet is not available, store in Flinn Saf-Cube.

Use and dispense in a hood.

---

### Section 8 — Exposure Controls, Personal Protection

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron.

Use ventilation to keep airborne concentrations below exposure limits. Always wear a NIOSH-approved respirator with proper cartridges or a positive pressure, air-supplied respirator when handling this material in emergency situations (spill or fire).

Exposure guidelines: TWA 5 ppm (OSHA)

### Section 9 — Physical and Chemical Properties

Clear liquid; pungent odor; constantly fuming.  
Solubility: Soluble in water, alcohol and benzene.  
Formula: HCl  
Formula Weight: 36.46

Specific Gravity: 1.2

### Section 10 — Stability and Reactivity

Avoid contact with strong oxidizers, bases, amines, alkali metals, copper, copper alloys, aluminum. Corrodes steel and reacts violently with water.  
Shelf Life: Good, if stored safely.

### Section 11 — Toxicological Information

Acute effects: Poison, corrosive  
Chronic effects: N.A.  
Target organs: N.A.

ORL-RBT LD50: 900 mg/kg  
IHL-RAT LC50: 3124 ppm/1H  
SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

### Section 12 — Ecological Information

Data not yet available.

### Section 13 — Disposal Considerations

Please consult with state and local regulations.  
Flinn Suggested Disposal Method #24b is one option.

### Section 14 — Transport Information

Shipping Name: Hydrochloric acid  
Hazard Class: 8, Corrosive  
UN Number: UN1789

N/A = Not applicable

### Section 15 — Regulatory Information

TSCA-listed, EINECS-listed (231-595-7), RCRA code D002.

### Section 16 — Other Information

Consult your copy of the Flinn Scientific Catalog/Reference Manual for additional information about laboratory chemicals. This Material Safety Data Sheet (MSDS) is for guidance and is based upon information and tests believed to be reliable. Flinn Scientific Inc. makes no guarantee of the accuracy or completeness of the data and shall not be liable for any damages relating thereto. The data is offered solely for your consideration, investigation, and verification. Flinn Scientific Inc. assumes no legal responsibility for use or reliance upon this data.

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# FLINN SCIENTIFIC, INC.

## Material Safety Data Sheet (MSDS)

MSDS #: 398.00

Revision Date: May 29, 2009

---

### SECTION 1 — CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

---

#### Hydrogen Peroxide (30%)

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### SECTION 2 — COMPOSITION, INFORMATION ON INGREDIENTS

---

Hydrogen Peroxide

Synonyms: Hydrogen Dioxide

CAS#: 7722-84-1

---

### SECTION 3 — HAZARDS IDENTIFICATION

---

Clear, colorless, liquid with a slight acrid odor.

Harmful by ingestion, inhalation or skin contact. Corrosive and severe irritant to skin, eyes and respiratory tract. Causes severe burns. Avoid all body contact. Contact with eyes may cause blindness. 30% hydrogen peroxide will decompose rapidly when exposed to almost any substance and generate significant heat.

#### FLINN AT-A-GLANCE

Health-2  
Flammability-0  
Reactivity-3  
Exposure-3  
Storage-1

0 is low hazard, 3 is high hazard

---

### SECTION 4 — FIRST AID MEASURES

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for at least 15 minutes. Seek medical attention for further treatment.

External: Wash continuously with fresh water for at least 15 minutes.

Internal: Do not induce vomiting. Give large quantities of water. Call a physician or poison control at once.

---

### SECTION 5 — FIRE FIGHTING MEASURES

---

Noncombustible liquid, but a powerful oxidizer.

Strong oxidizing agent, a dangerous fire and explosion risk when in contact with combustible materials.

Fire Fighting Instructions: Use triclass, dry chemical fire extinguisher. Firefighters should wear PPE and SCBA with full facepiece operated in positive pressure mode.

#### NFPA CODE

Not  
established.

---

### SECTION 6 — ACCIDENTAL RELEASE MEASURES

---

Restrict unprotected personnel from area and ventilate area. Contain spill with sand or other inorganic absorbent material; deposit in sealed bag or container. See Sections 8 and 13 for further information.

---

### SECTION 7 — HANDLING AND STORAGE

---

Flinn Suggested Chemical Storage Pattern: Inorganic #6. Store with bromates and chlorates. Store away from organics, combustibles, reducing agents, and strong bases.

Light sensitive. Store in a dark, vented container. Use and dispense in a hood.

---

### SECTION 8 — EXPOSURE CONTROLS, PERSONAL PROTECTION

---

Avoid contact with eyes, skin, and clothing. Wear chemical splash goggles, chemical-resistant gloves, and chemical-resistant apron. Use ventilation to keep airborne concentrations below exposure limits. Always wear a NIOSH-approved respirator with proper cartridges or a positive pressure, air-supplied respirator when handling this material in emergency situations (spill or fire).  
Exposure guidelines: TWA 1 ppm (OSHA)

---

**SECTION 9 — PHYSICAL AND CHEMICAL PROPERTIES**

---

Clear, colorless, liquid with a slightly acid odor.  
Solubility: Soluble in water and alcohol.  
Formula: H<sub>2</sub>O<sub>2</sub>  
Formula Weight: 34.02

Specific Gravity: 1.112  
Melting Point: -25 C  
Boiling Point: 106 C  
Vapor density: 1.17  
pH (30%): 3.3

---

**SECTION 10 — STABILITY AND REACTIVITY**

---

Keep away from reducing agents, strong bases, organics, combustable material, and oxidizable materials. Avoid heating this substance.  
Shelf Life: Fair to poor. Stored at room temperature, this substance decomposes at about 0.5% per year.

---

**SECTION 11 — TOXICOLOGICAL INFORMATION**

---

Acute effects: Corrosive to all body tissues.  
Chronic effects: Dermatitis  
Target organs: N.A.

ORL-MAN LDLo: 1429 mg/kg  
IHL-RAT LC50: 2000 mg/m<sup>3</sup>  
SKN-RAT LD50: 3000 mg/kg

N.A. = Not available, not all health aspects of this substance have been fully investigated.

---

**SECTION 12 — ECOLOGICAL INFORMATION**

---

Carp LC50: 42 mg/L (48 hour); Daphnia EC50: 2.4 mg/L (48 hour)

---

**SECTION 13 — DISPOSAL CONSIDERATIONS**

---

Please consult with state and local regulations.  
Flinn Suggested Disposal Method #22a is one option.

---

**SECTION 14 — TRANSPORT INFORMATION**

---

Shipping Name: Hydrogen peroxide, aqueous solutions  
Hazard Class: 5.1, Oxidizer, corrosive  
UN Number: UN2014  
N/A = Not applicable

---

**SECTION 15 — REGULATORY INFORMATION**

---

TSCA-listed, EINECS-listed (231-765-0), RCRA code D001, D002.

---

**SECTION 16 — OTHER INFORMATION**

---

This Material Safety Data Sheet (MSDS) is for guidance and is based upon information and tests believed to be reliable. Flinn Scientific, Inc. makes no guarantee of the accuracy or completeness of the data and shall not be liable for any damages relating thereto. The data is offered solely for your consideration, investigation, and verification. The data should not be confused with local, state, federal or insurance mandates, regulations, or requirements and CONSTITUTE NO WARRANTY. Any use of this data and information must be determined by the science instructor to be in accordance with applicable local, state or federal laws and regulations. The conditions or methods of handling, storage, use and disposal of the product(s) described are beyond the control of Flinn Scientific, Inc. and may be beyond our knowledge. FOR THIS AND OTHER REASONS, WE DO NOT ASSUME RESPONSIBILITY AND EXPRESSLY DISCLAIM LIABILITY FOR LOSS, DAMAGE OR EXPENSE ARISING OUT OF OR IN ANY WAY CONNECTED WITH THE HANDLING, STORAGE, USE OR DISPOSAL OF THIS PRODUCT(S).

**Consult your copy of the Flinn Chemical Catalog/Reference Manual  
for additional information about laboratory chemicals**

# FLINN SCIENTIFIC INC.

"Your Safer Source for Science Supplies"

## Material Safety Data Sheet (MSDS)

MSDS #: 401.50

Revision Date: November 25, 2002

---

### Section 1 — Chemical Product and Company Identification

---

#### Immersion Oil-High & Low Viscosity

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### Section 2 — Composition, Information on Ingredients

---

Immersion Oil-high & low viscosity

CAS#: None Established

---

### Section 3 — Hazards Identification

---

Clear liquid with slight yellow color. Odorless.

This material is generally considered nonhazardous, however not all health aspects of this substance have been fully investigated.

#### FLINN AT-A-GLANCE

Health-0  
Flammability-0  
Reactivity-0  
Exposure-0  
Storage-0

0 is low hazard, 3 is high hazard

---

### Section 4 — First Aid Measures

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash continuously with fresh water for 15 minutes.

Internal: Give large quantities of water. Call a physician or poison control at once.

---

### Section 5 — Fire Fighting Measures

---

Non flammable liquid.

Burning may release acrid fumes and vapors.

**Fire Fighting Instructions:** Use triclass, dry chemical fire extinguisher. Firefighters should wear PPE and SCBA with full facepiece operated in positive pressure mode.

#### NFPA CODE

None Established

---

### Section 6 — Accidental Release Measures

---

Restrict unprotected personnel from area and ventilate area. Contain spill with sand or absorbent material; deposit in sealed bag or container. See Sections 8 and 13 for further information.

---

### Section 7 — Handling and Storage

---

Flinn Suggested Chemical Storage Pattern: Organic #3. Store with hydrocarbons, esters, aldehydes, and oils.

Keep away from extreme heat or open flame.

---

### Section 8 — Exposure Controls, Personal Protection

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron.

### Section 9 — Physical and Chemical Properties

Clear liquid with slight yellow color. Odorless.  
Solubility: Not soluble in water. Material is a proprietary mineral oil mixture.

Boiling Point: 205 C  
Specific Gravity: 0.9236

### Section 10 — Stability and Reactivity

Shelf Life: Indefinite.

### Section 11 — Toxicological Information

Acute effects: N.A.  
Chronic effects: N.A.  
Target organs: N.A.

ORL-RAT LD50: N.A.  
IHL-RAT LC50: N.A.  
SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

### Section 12 — Ecological Information

Data not yet available.

### Section 13 — Disposal Considerations

Please consult with state and local regulations.  
Flinn Suggested Disposal Method 18b is one option.

### Section 14 — Transport Information

Shipping Name: Not regulated  
Hazard Class: N/A  
UN Number: N/A

N/A = Not applicable

### Section 15 — Regulatory Information

Not listed.

### Section 16 — Other Information

Consult your copy of the Flinn Scientific Catalog/Reference Manual for additional information about laboratory chemicals. This Material Safety Data Sheet (MSDS) is for guidance and is based upon information and tests believed to be reliable. Flinn Scientific Inc. makes no guarantee of the accuracy or completeness of the data and shall not be liable for any damages relating thereto. The data is offered solely for your consideration, investigation, and verification. Flinn Scientific Inc. assumes no legal responsibility for use or reliance upon this data.

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# FLINN SCIENTIFIC INC.

"Your Safer Source for Science Supplies"

## Material Safety Data Sheet (MSDS)

MSDS #: 402.00

Revision Date: November 25, 2002

---

### Section 1 — Chemical Product and Company Identification

---

#### Indigo Carmine

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### Section 2 — Composition, Information on Ingredients

---

Indigo Carmine

Synonyms: acid blue 74, C.I. 73015

CAS#: 860-22-0

---

### Section 3 — Hazards Identification

---

Dark blue, crystalline powder. Odorless.

Irritating to mucous membranes and upper respiratory tract. Slightly toxic by ingestion.

Causes eye and skin irritation. Avoid contact with all body tissues.

Decomposition releases toxic fumes.

#### FLINN AT-A-GLANCE

Health-1

Flammability-0

Reactivity-0

Exposure-1

Storage-0

0 is low hazard, 3 is high hazard

---

### Section 4 — First Aid Measures

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash continuously with fresh water for 15 minutes.

Internal: Give large quantities of water. Call a physician or poison control at once.

---

### Section 5 — Fire Fighting Measures

---

Non flammable solid.

When heated to decomposition, emits acrid and irritating fumes.

**Fire Fighting Instructions:** Use triclass, dry chemical fire extinguisher. Firefighters should wear PPE and SCBA with full facepiece operated in positive pressure mode.

#### NFPA CODE

None Established

---

### Section 6 — Accidental Release Measures

---

Restrict unprotected personnel from area. Sweep up, place in sealed bag or container and dispose. Ventilate area and wash spill site after material pickup is complete. See Sections 8 and 13 for further information.

---

### Section 7 — Handling and Storage

---

Flinn Suggested Chemical Storage Pattern: Organic #9. Store with dyes, indicators, and stains.

Store in a cool dry place. Keep container tightly closed.

---

### Section 8 — Exposure Controls, Personal Protection

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron.

---

### Section 9 — Physical and Chemical Properties

---

Dark blue, crystalline powder. Odorless.  
Solubility: Water soluble; slightly in alcohol.  
Formula: C<sub>16</sub>H<sub>8</sub>N<sub>2</sub>O<sub>8</sub>S<sub>2</sub>Na<sub>2</sub>  
Formula Weight: 466.37

---

### Section 10 — Stability and Reactivity

---

Avoid contact with strong oxidizers.  
Shelf life: Indefinite, protect from light.

---

### Section 11 — Toxicological Information

---

Acute effects: Irritant	ORL-RAT LD50: 2 gm/kg
Chronic effects: N.A.	IHL-RAT LC50: N.A.
Target organs: N.A.	SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

---

### Section 12 — Ecological Information

---

Data not yet available.

---

### Section 13 — Disposal Considerations

---

Please consult with state and local regulations.  
Flinn Suggested Disposal Method #26a is one option.

---

### Section 14 — Transport Information

---

Shipping Name: Not regulated  
Hazard Class: N/A  
UN Number: N/A

N/A = Not applicable

---

### Section 15 — Regulatory Information

---

TSCA-listed, EINECS-listed (212-728-8).

---

### Section 16 — Other Information

---

Consult your copy of the Flinn Scientific Catalog/Reference Manual for additional information about laboratory chemicals. This Material Safety Data Sheet (MSDS) is for guidance and is based upon information and tests believed to be reliable. Flinn Scientific Inc. makes no guarantee of the accuracy or completeness of the data and shall not be liable for any damages relating thereto. The data is offered solely for your consideration, investigation, and verification. Flinn Scientific Inc. assumes no legal responsibility for use or reliance upon this data.

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# FLINN SCIENTIFIC INC.

"Your Safer Source for Science Supplies"

## Material Safety Data Sheet (MSDS)

MSDS #: 303.00

Revision Date: November 25, 2002

---

### Section 1 — Chemical Product and Company Identification

---

## 2,6-Dichloroindophenol

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### Section 2 — Composition, Information on Ingredients

---

2, 6-Dichloroindophenol, sodium salt

Synonym: Tillmans reagent

CAS#: 620-45-1

---

### Section 3 — Hazards Identification

---

Dark green to black powder. Odor of throat lozenge.

Substance not considered hazardous. However, not all health aspects of this substance have been thoroughly investigated.

#### FLINN AT-A-GLANCE

Health-0

Flammability-0

Reactivity-0

Exposure-0

Storage-0

0 is low hazard, 3 is high hazard

---

### Section 4 — First Aid Measures

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash continuously with fresh water for 15 minutes.

Internal: Give large quantities of water. Call a physician or poison control at once.

---

### Section 5 — Fire Fighting Measures

---

Non flammable solid.

When decomposed toxic fumes of carbon monoxide, carbon dioxide, hydrogen chloride gas, and nitrogen oxides could be produced.

#### NFPA CODE

None Established

---

### Section 6 — Accidental Release Measures

---

Restrict unprotected personnel from area. Sweep up, place in sealed bag or container and dispose. Ventilate area and wash spill site after material pickup is complete. See Sections 8 and 13 for further information.

---

### Section 7 — Handling and Storage

---

Flinn Suggested Chemical Storage Pattern: Organic #8. Store with phenols and cresols.

Solutions of this indicator have a poor shelf life; make fresh solution for best results.

---

### Section 8 — Exposure Controls, Personal Protection

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron.

### Section 9 — Physical and Chemical Properties

Dark green to black powder. Odor of throat lozenge.

Solubility: Soluble: water and alcohol.

Formula: NaOC<sub>6</sub>H<sub>4</sub>N:C<sub>6</sub>H<sub>2</sub>(Cl<sub>2</sub>):O

Formula Weight: 290.09

### Section 10 — Stability and Reactivity

Avoid contact with strong oxidizers.

Shelf life: Poor, substance hygroscopic.

### Section 11 — Toxicological Information

Acute effects: N.A.

Chronic effects: N.A.

Target organs: N.A.

ORL-RAT LD50: N.A.

IHL-RAT LC50: N.A.

SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

### Section 12 — Ecological Information

Data not yet available.

### Section 13 — Disposal Considerations

Please consult with state and local regulations.

Flinn Suggested Disposal Method #5 is one option.

### Section 14 — Transport Information

Shipping Name: Not regulated

Hazard Class: N/A

UN Number: N/A

N/A = Not applicable

### Section 15 — Regulatory Information

TSCA-listed, EINECS-listed (210-640-4).

### Section 16 — Other Information

Consult your copy of the Flinn Scientific Catalog/Reference Manual for additional information about laboratory chemicals. This Material Safety Data Sheet (MSDS) is for guidance and is based upon information and tests believed to be reliable. Flinn Scientific Inc. makes no guarantee of the accuracy or completeness of the data and shall not be liable for any damages relating thereto. The data is offered solely for your consideration, investigation, and verification. Flinn Scientific Inc. assumes no legal responsibility for use or reliance upon this data.

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# FLINN SCIENTIFIC INC.

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## Material Safety Data Sheet (MSDS)

MSDS #: 406.00

Revision Date: November 25, 2002

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### Section 1 — Chemical Product and Company Identification

---

#### Invertase

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### Section 2 — Composition, Information on Ingredients

---

Invertase

CAS#: 9001-57-4

---

### Section 3 — Hazards Identification

---

Tan powder. Odor of dry dog food.

Substance not considered hazardous. However, not all health aspects of this substance have been thoroughly investigated.

#### FLINN AT-A-GLANCE

Health-0  
Flammability-0  
Reactivity-0  
Exposure-0  
Storage-0

0 is low hazard, 3 is high hazard

---

### Section 4 — First Aid Measures

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash continuously with fresh water for 15 minutes.

Internal: Give large quantities of water. Call a physician or poison control at once.

---

### Section 5 — Fire Fighting Measures

---

Non flammable solid.

#### NFPA CODE

None Established

---

### Section 6 — Accidental Release Measures

---

Restrict unprotected personnel from area. Sweep up, place in sealed bag or container and dispose. Ventilate area and wash spill site after material pickup is complete. See Sections 8 and 13 for further information.

---

### Section 7 — Handling and Storage

---

Flinn Suggested Chemical Storage Pattern: Organic #2. Store with alcohols, glycols, amines and amides.

---

### Section 8 — Exposure Controls, Personal Protection

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron.

---

### Section 9 — Physical and Chemical Properties

---

Tan powder, odor of dry dog food.  
Enzyme produced by yeast.  
Solubility: Soluble in water.

---

### Section 10 — Stability and Reactivity

---

Shelf Life: Indefinite.

---

### Section 11 — Toxicological Information

---

Acute effects: Overexposure may result in sensitization	ORL-RAT LD50: N.A.
Chronic effects: N.A.	IHL-RAT LC50: N.A.
Target organs: N.A.	SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

---

### Section 12 — Ecological Information

---

Data not yet available.

---

### Section 13 — Disposal Considerations

---

Please consult with state and local regulations.  
Flinn Suggested Disposal Method #26a is one option.

---

### Section 14 — Transport Information

---

Shipping Name: Not regulated  
Hazard Class: N/A  
UN Number: N/A

N/A = Not applicable

---

### Section 15 — Regulatory Information

---

TSCA-listed, EINECS-listed (232-615-7).

---

### Section 16 — Other Information

---

Consult your copy of the Flinn Scientific Catalog/Reference Manual for additional information about laboratory chemicals. This Material Safety Data Sheet (MSDS) is for guidance and is based upon information and tests believed to be reliable. Flinn Scientific Inc. makes no guarantee of the accuracy or completeness of the data and shall not be liable for any damages relating thereto. The data is offered solely for your consideration, investigation, and verification. Flinn Scientific Inc. assumes no legal responsibility for use or reliance upon this data.

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# FLINN SCIENTIFIC, INC.

## Material Safety Data Sheet (MSDS)

MSDS #: 408.00

Revision Date: October 27, 2006

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### SECTION 1 — CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

---

#### Iodine, Tincture

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### SECTION 2 — COMPOSITION, INFORMATION ON INGREDIENTS

---

Iodine (7553-56-2) 5%, Potassium Iodide (7681-11-0) 5%, Water (7732-18-5) 6%, and Ethyl Alcohol (64-17-5) 84%.

CAS#: None Established

---

### SECTION 3 — HAZARDS IDENTIFICATION

---

Reddish-brown liquid; odor of iodine and alcohol.  
Toxic by ingestion, inhalation, and skin absorption.  
Contains ethyl alcohol; flammable liquid. Avoid all sources of ignition.

#### FLINN AT-A-GLANCE

Health-3  
Flammability-3  
Reactivity-1  
Exposure-1  
Storage-3

0 is low hazard, 3 is high hazard

---

### SECTION 4 — FIRST AID MEASURES

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash continuously with fresh water for 15 minutes.

Internal: Rinse out mouth, give 1 to 2 cups of water or milk, induce vomiting. Call a physician or poison control at once.

---

### SECTION 5 — FIRE FIGHTING MEASURES

---

Combustible liquid.

Contains ethyl alcohol; when heated to decomposition, emits toxic fumes of iodide.

**Fire Fighting Instructions:** Use triclass, dry chemical fire extinguisher. Firefighters should wear PPE and SCBA with full facepiece operated in positive pressure mode.

#### NFPA CODE

None  
Established

---

### SECTION 6 — ACCIDENTAL RELEASE MEASURES

---

Restrict unprotected personnel from area. Sweep up, place in sealed bag or container and dispose. Ventilate area and wash spill site after material pickup is complete. See Sections 8 and 13 for further information.

---

### SECTION 7 — HANDLING AND STORAGE

---

Flinn Suggested Chemical Storage Pattern: Inorganic #2. Store with acetates, halides, sulfates, sulfites, thiosulfates and phosphates. Store in a Flinn Chem-Saf bag. Store in a dedicated flammables cabinet. If a flammables cabinet is not available, store in Flinn Saf-Stor can. Use and dispense in a hood.

---

### SECTION 8 — EXPOSURE CONTROLS, PERSONAL PROTECTION

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron. Use exhaust ventilation to keep airborne concentrations low.

---

**SECTION 9 — PHYSICAL AND CHEMICAL PROPERTIES**

---

Reddish-brown liquid; odor of iodine and alcohol.

---

**SECTION 10 — STABILITY AND REACTIVITY**

---

This material should not be used as medication. It is sold for use as a laboratory reagent only.  
Shelf life: Good, if stored safely.

---

**SECTION 11 — TOXICOLOGICAL INFORMATION**

---

Acute effects: Poison, irritant, nausea, dizziness, and headaches	ORL-RAT LD50: N.A.
Chronic effects: N.A.	IHL-RAT LC50: N.A.
Target organs: N.A.	SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

---

**SECTION 12 — ECOLOGICAL INFORMATION**

---

Data not yet available.

---

**SECTION 13 — DISPOSAL CONSIDERATIONS**

---

Please consult with state and local regulations.  
Flinn Suggested Disposal Method 12a is one option.

---

**SECTION 14 — TRANSPORT INFORMATION**

---

Shipping Name: Ethyl Alcohol  
Hazard Class: 3, Flammable liquid  
UN Number: UN1170  
N/A = Not applicable

---

**SECTION 15 — REGULATORY INFORMATION**

---

Not listed.

---

**SECTION 16 — OTHER INFORMATION**

---

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**Consult your copy of the Flinn Chemical Catalog/Reference Manual  
for additional information about laboratory chemicals**

# FLINN SCIENTIFIC INC.

"Your Safer Source for Science Supplies"

## Material Safety Data Sheet (MSDS)

MSDS #: 407.00

Revision Date: November 25, 2002

---

### Section 1 — Chemical Product and Company Identification

---

#### Iodine

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### Section 2 — Composition, Information on Ingredients

---

Iodine

CAS#: 7553-56-2

---

### Section 3 — Hazards Identification

---

Gray-black flakes, metallic luster, characteristic odor.  
Highly toxic by ingestion and inhalation.  
Irritating and corrosive to skin. Avoid all body contact.

#### FLINN AT-A-GLANCE

Health-3  
Flammability-0  
Reactivity-2  
Exposure-3  
Storage-1

0 is low hazard, 3 is high hazard

---

### Section 4 — First Aid Measures

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash continuously with fresh water for 15 minutes.

Internal: Rinse out mouth, give 1 to 2 cups of water or milk, induce vomiting. Call a physician or poison control at once.

---

### Section 5 — Fire Fighting Measures

---

Non-flammable, noncombustible solid.

When heated to decomposition, emits toxic fumes of iodide and various iodine compounds.

**Fire Fighting Instructions:** Use triclass, dry chemical fire extinguisher. Firefighters should wear PPE and SCBA with full facepiece operated in positive pressure mode.

#### NFPA CODE

None Established

---

### Section 6 — Accidental Release Measures

---

Restrict unprotected personnel from area. Sweep up, place in sealed bag or container and dispose. Ventilate area and wash spill site after material pickup is complete. See Sections 8 and 13 for further information.

---

### Section 7 — Handling and Storage

---

Flinn Suggested Chemical Storage Pattern: Inorganic #2. Store with acetates, halides, sulfates, sulfites, thiosulfates and phosphates. Store in a cool dry place. Store in a Flinn Chem-Saf bag; the substance sublimates. Frequently oxidizes metal shelves or metal containers in proximity to the iodine. Use and dispense in a hood.

---

### Section 8 — Exposure Controls, Personal Protection

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron. Use ventilation to keep airborne concentrations below exposure limits. Always wear a NIOSH-approved respirator with proper cartridges or a positive pressure, air-supplied respirator when handling this material in emergency situations (spill or fire).

Exposure guidelines: ceiling 0.1 ppm (OSHA)

### Section 9 — Physical and Chemical Properties

Gray-black flakes, metallic luster, characteristic odor.  
Solubility: Soluble in alcohol and other organic solvents;  
not in water.

Formula: I<sub>2</sub>

Formula Weight: 253.80

Boiling Point: 185.24 C

Specific gravity: 4.98

Melting Point: 113.5 C

### Section 10 — Stability and Reactivity

Avoid contact with magnesium, zinc, ammonia, aluminum, corrodes steel. Reacts violently with acetaldehyde.  
Shelf Life: Fair; the substance sublimates. Frequently oxidizes metal shelves or metal containers in proximity to the iodine.

### Section 11 — Toxicological Information

Acute effects: Highly toxic, harmful vapor, corrosive, severe  
lachrymatol, sensitizer, stomach pains, vomiting.

Chronic effects: Dermatitis

Target organs: Thyroid

ORL-HUM LD50: 2-4 gm for an adult

IHL-RAT LC50: N.A.

SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

### Section 12 — Ecological Information

Data not yet available.

### Section 13 — Disposal Considerations

Please consult with state and local regulations.  
Flinn Suggested Disposal Method #12a is one option.

### Section 14 — Transport Information

Shipping Name: Toxic solid, inorganic, n.o.s.

Hazard Class: 6.1 Keep away from food

UN Number: UN3288

N/A = Not applicable

### Section 15 — Regulatory Information

TSCA-listed, EINECS-listed (231-442-4), RCRA code D002.

### Section 16 — Other Information

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# FLINN SCIENTIFIC INC.

"Your Safer Source for Science Supplies"

## Material Safety Data Sheet (MSDS)

MSDS #: 416.00

Revision Date: November 25, 2002

---

### Section 1 — Chemical Product and Company Identification

---

#### Iron

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### Section 2 — Composition, Information on Ingredients

---

Iron

CAS#: 7439-89-6

---

### Section 3 — Hazards Identification

---

Silver-white, malleable metal. Forms: filings, nails, powder, and sheets. Odorless.  
Substance not considered hazardous. However, not all health aspects of this substance have been thoroughly investigated.  
Flammable solid in dust form.

#### FLINN AT-A-GLANCE

Health-0  
Flammability-0  
Reactivity-0  
Exposure-0  
Storage-0

0 is low hazard, 3 is high hazard

---

### Section 4 — First Aid Measures

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.  
Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.  
Eye: Immediately flush with fresh water for 15 minutes.  
External: Wash continuously with fresh water for 15 minutes.  
Internal: Give large quantities of water. Call a physician or poison control at once.

---

### Section 5 — Fire Fighting Measures

---

Finely divided iron can be flammable.

**Fire Fighting Instructions:** Use triclass, dry chemical fire extinguisher. Firefighters should wear PPE and SCBA with full facepiece operated in positive pressure mode.

#### NFPA CODE

None Established

---

### Section 6 — Accidental Release Measures

---

Restrict unprotected personnel from area. Sweep up, place in sealed bag or container and dispose. Ventilate area and wash spill site after material pickup is complete. See Sections 8 and 13 for further information.

---

### Section 7 — Handling and Storage

---

Flinn Suggested Chemical Storage Pattern: Inorganic #1. Store with metals and metal hydrides.  
Moisture sensitive material.

---

### Section 8 — Exposure Controls, Personal Protection

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron.

### Section 9 — Physical and Chemical Properties

Silver-white, malleable metal. Odorless.  
Solubility: Insoluble in water. Soluble in sulfuric, hydrochloric and nitric acids.  
Formula: Fe  
Formula Weight: 55.85

Specific Gravity: 7.87  
Melting Point: 1536 C

### Section 10 — Stability and Reactivity

Avoid contact with acids, moisture, strong oxidizing agents, halogens, phosphorus and oxygen.  
Shelf Life: Indefinite.

### Section 11 — Toxicological Information

Acute effects: Harmful dust  
Chronic effects: N.A.  
Target organs: N.A.

ORL-RAT LD50: 30 gm/kg  
IHL-RAT LC50: N.A.  
SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

### Section 12 — Ecological Information

Data not yet available.

### Section 13 — Disposal Considerations

Please consult with state and local regulations.  
Flinn Suggested Disposal Method #26a is one option.

### Section 14 — Transport Information

Shipping Name: Not regulated  
Hazard Class: N/A  
UN Number: N/A

N/A = Not applicable

### Section 15 — Regulatory Information

TSCA-listed, EINECS-listed (231-096-4), RCRA code D001.

### Section 16 — Other Information

Consult your copy of the Flinn Scientific Catalog/Reference Manual for additional information about laboratory chemicals. This Material Safety Data Sheet (MSDS) is for guidance and is based upon information and tests believed to be reliable. Flinn Scientific Inc. makes no guarantee of the accuracy or completeness of the data and shall not be liable for any damages relating thereto. The data is offered solely for your consideration, investigation, and verification. Flinn Scientific Inc. assumes no legal responsibility for use or reliance upon this data.

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## **MATERIAL SAFETY DATA SHEET**

2-PROPANOL  
CAROLINA BIOLOGICAL

Revised: 09/07/07  
Replaces: 07/10/07  
Printed: 05/20/08

---

### **1. PRODUCT DESCRIPTION**

Product Name: 2-Propanol  
Product Code(s): 88-4890, 88-4892, 88-4865  
Size: 500ml, 4L, 20L  
Chemical Name: Alcohols  
CAS Number: See section 2  
Formula:  $\text{CH}_2\text{CHOHCH}_3$   
Synonyms: Isopropyl Alcohol; Isopropanol; IPA; Sec-Propanol;  
Dimethylcarbinol  
Distributor: Carolina Biological Supply Company  
2700 York Road  
Burlington, NC 27215  
Chemical Information: 800-227-1150 (8am-5pm (ET) M-F)  
Chemtrec (Transportation Spill Response 24 hours): 800-424-9300

### **2. COMPOSITION/INFORMATION ON INGREDIENTS**

Principal Hazardous Components: 2-Propanol (CAS#67-63-0) 99-100%  
TLV and PEL units: ACGIH-TLV: 400 ppm (STEL) 200 ppm (TWA)  
OSHA-PEL : 400 ppm (TWA)

### **3. HAZARD IDENTIFICATION**

Emergency Overview: Highly flammable. Keep container tightly closed.  
Keep away from sources of ignition- No smoking.  
Potential Health Effects:  
Eyes: Vapors may cause irritation; eye splash causes severe irritation,  
possibly eye damage.  
Skin: May cause irritation with redness and pain.  
Ingestion: May cause gastrointestinal discomfort. May cause drowsiness  
or unconsciousness. Large amounts (8 oz or more) may be fatal.  
Inhalation: May cause irritation to respiratory tract.

### **4. FIRST AID MEASURES**

Emergency and First Aid Procedures:  
Eyes - Flush with water for at least 15 minutes, raising and lowering  
eyelids occasionally. Get medical attention immediately.  
Skin - Thoroughly wash exposed area for at least 15 minutes. Remove  
contaminated clothing. Launder contaminated clothing before reuse. Get  
medical attention if irritation persists.  
Ingestion - If swallowed, if conscious, give plenty of water. Get  
immediate medical help. Never give anything by mouth to an unconscious  
person.  
Inhalation - Remove to fresh air. Give oxygen if breathing is  
difficult; give artificial respiration if breathing has stopped. Keep  
person warm and quiet, and get medical attention.

### **5. FIREFIGHTING PROCEDURES**

Flash Point (Method Used): (TCC) 53F; (TOC) 63F  
NFPA Rating: Health: 1  
Fire: 3  
Reactivity: 0

Extinguisher Media:

Use dry chemical, CO2 or appropriate foam.

Flammable Limits in Air % by Volume: 12.7 upper, 2.0 lower

Autoignition Temperature: 399 C (750 F)

Special Firefighting Procedures:

## **MATERIAL SAFETY DATA SHEET**

2-PROPANOL  
CAROLINA BIOLOGICAL

Revised: 09/07/07  
Replaces: 07/10/07  
Printed: 05/20/08

---

Firefighters should wear full protective equipment and NIOSH approved self-contained breathing apparatus.  
Unusual Fire and Explosion Hazards: Vapors may flow along surfaces to distant ignition sources and flash back. Closed containers exposed to heat may explode. Contact with strong oxidizers may cause fire.

### **6. SPILL OR LEAK PROCEDURES**

Steps to be Taken in Case Material is Released or Spilled:

Ventilate area of spill. Eliminate all sources of ignition.  
Remove all non-essential personnel from area. Clean-up personnel should wear proper protective equipment and clothing. Absorb material with suitable absorbent and containerize for disposal.

### **7. SPECIAL PRECAUTIONS**

Precautions to be Taken in Handling or Storing: Keep container tightly closed. Store in a cool, dry, well-ventilated, flammable liquid storage area, away from oxidizing materials.  
Other Precautions: Bond and ground containers when transferring liquid. Wash hands thoroughly after handling.

### **8. SPECIAL PROTECTION INFORMATION**

Respiratory Protection(Specify Type):

A NIOSH/MSHA chemical cartridge respirator should be worn if PEL or TLV is exceeded.

Ventilation:

Local Exhaust:	Yes
Mechanical(General):	Yes
Special:	No
Other:	No

Protective Gloves:

Rubber, neoprene, PVC, or equivalent.

Eye Protection:

Splash proof chemical safety goggles should be worn at all times.

Other Protective Clothing or Equipment:

Lab apron, eye wash, and safety shower.

### **9. PHYSICAL DATA**

Molecular Weight:	60.10
Melting Point:	-88.5 to -89.5 C
Boiling Point:	82.5 C( 179 F)
Vapor Pressure:	33 mm Hg at 20 C
Vapor Density(Air=1):	2.07
Specific Gravity(H2O=1):	0.7861 at 20 C
Percent Volatile by Volume:	99%
Evaporation Rate(H2O=1):	2.3
Solubility in Water:	Miscible
Appearance and Odor:	Clear colorless liquid with characteristic alcohol odor.

### **10. REACTIVITY DATA**

Stability: Stable

Conditions to Avoid: Heat, flame, other sources of ignition

Incompatibility(Materials to Avoid): Strong oxidizing agents, aluminum, strong acids, nitric acid, sulfuric acid, halogens, active halogen compounds, amines and ammonia, aldehydes.

Hazardous Decomposition Products: Carbon monoxide, carbon dioxide

# MATERIAL SAFETY DATA SHEET

2-PROPANOL  
CAROLINA BIOLOGICAL

Revised: 09/07/07  
Replaces: 07/10/07  
Printed: 05/20/08

---

Hazardous Polymerization: Will not occur

## 11. TOXICITY DATA

Toxicity Data: oral-rat LD50: 5045 mg/kg  
oral-mouse LD50: 3600 mg/kg

Effects of Overexposure:

Acute: See section 3

Chronic: None

Conditions Aggravated by Overexposure: Irritation of the skin and eyes.  
Rapid absorption to the skin. Irritation of nose throat, headache, nausea.

Target Organs: Eyes, skin respiratory system, lungs, central nervous system, liver, kidneys.

Primary Route(s) of Entry: Inhalation, ingestion, skin contact, eye contact, absorption.

## 12. ECOLOGICAL DATA

EPA Waste Numbers: D001

## 13. DISPOSAL INFORMATION

Waste Disposal Methods: Dispose in accordance with all applicable Federal, State and Local regulations.

Always contact a permitted waste disposer (TSD) to assure compliance.

## 14. TRANSPORT INFORMATION

Description: Isopropanol, 3, UN1219, II

## 15. REGULATORY INFORMATION

EPA TSCA Status: On TSCA Inventory

Hazard Category for SARA Section 311/312 Reporting: Acute, Chronic, Fire

Product or Components	SARA EHS Sec. 302 TPQ	SARA Sec. 313 Chemicals		CERCLA Sec. 103 RQ lbs.	RCRA Sec. 261.33
		Name	Category		
2-Propanol	No	Yes	No	No	No

## 16. ADDITIONAL INFORMATION

The information provided in this Material Safety Data Sheet represents a compilation of data drawn directly from various sources available to us. Carolina Biological Supply makes no representation or guarantee as to the suitability of this information to a particular application of the substance covered in the Material Safety Data Sheet. Any employer must carefully assess the applicability of any information contained herein in regards to the particular use to which the employer puts the material.

Glossary

ACGIH.....American Conference of Governmental Industrial Hygienists

CAS Number..Chemical Abstracts Service Number

CERCLA.....Comprehensive Environmental Response, Compensation, and Liability Act

DOT.....U.S. Department of Transportation

IARC.....International Agency of Research on Cancer

mppcf.....million particles per cubic foot

## **MATERIAL SAFETY DATA SHEET**

2-PROPANOL  
CAROLINA BIOLOGICAL

Revised: 09/07/07  
Replaces: 07/10/07  
Printed: 05/20/08

---

N/A.....Not Available  
NTP.....National Toxicology Program  
OSHA.....Occupational Safety and Health Administration  
PEL.....Permissible Exposure Limit  
ppm.....parts per million  
RCRA.....Resource Conservation and Recovery Act  
SARA.....Superfund Amendments and Reauthorization Act  
TLV.....Threshold Limit Value  
TSCA.....Toxic Substances Control Act

# FLINN SCIENTIFIC INC.

"Your Safer Source for Science Supplies"

## Material Safety Data Sheet (MSDS)

MSDS #: 421.00

Revision Date: November 25, 2002

---

### Section 1 — Chemical Product and Company Identification

---

#### Janus Green B

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### Section 2 — Composition, Information on Ingredients

---

Janus Green B

Synonym: C.I. 11050

CAS#: 2869-83-2

---

### Section 3 — Hazards Identification

---

Black/green powder. Odorless.

Substance not considered hazardous. However, not all health aspects of this substance have been thoroughly investigated.

#### FLINN AT-A-GLANCE

Health-0

Flammability-0

Reactivity-0

Exposure-0

Storage-0

0 is low hazard, 3 is high hazard

---

### Section 4 — First Aid Measures

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash continuously with fresh water for 15 minutes.

Internal: Give large quantities of water. Call a physician or poison control at once.

---

### Section 5 — Fire Fighting Measures

---

Non flammable solid.

When heated to decomposition, emits toxic fumes of NO<sub>x</sub>.

**Fire Fighting Instructions:** Use triclass, dry chemical fire extinguisher. Firefighters should wear PPE and SCBA with full facepiece operated in positive pressure mode.

#### NFPA CODE

None Established

---

### Section 6 — Accidental Release Measures

---

Restrict unprotected personnel from area. Sweep up, place in sealed bag or container and dispose. Ventilate area and wash spill site after material pickup is complete. See Sections 8 and 13 for further information.

---

### Section 7 — Handling and Storage

---

Flinn Suggested Chemical Storage Pattern: Organic #9. Store with dyes, indicators, and stains.

Store in a cool dry place.

---

### Section 8 — Exposure Controls, Personal Protection

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron.

### Section 9 — Physical and Chemical Properties

Biological stain. Black/green powder. Odorless.

Solubility: Soluble in water and alcohol.

Formula: C<sub>30</sub>H<sub>31</sub>CIN<sub>6</sub>

Formula Weight: 511.12

### Section 10 — Stability and Reactivity

Avoid contact with strong oxidizers.

Shelf Life: Indefinite.

### Section 11 — Toxicological Information

Acute effects: N.A.

Chronic effects: N.A.

Target organs: N.A.

ORL-RAT LD50: N.A.

IHL-RAT LC50: N.A.

SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

### Section 12 — Ecological Information

Data not yet available.

### Section 13 — Disposal Considerations

Please consult with state and local regulations.

Flinn Suggested Disposal Method #5 is one option.

### Section 14 — Transport Information

Shipping Name: Not regulated

Hazard Class: N/A

UN Number: N/A

N/A = Not applicable

### Section 15 — Regulatory Information

TSCA-listed, EINECS-listed (220-695-6).

### Section 16 — Other Information

Consult your copy of the Flinn Scientific Catalog/Reference Manual for additional information about laboratory chemicals. This Material Safety Data Sheet (MSDS) is for guidance and is based upon information and tests believed to be reliable. Flinn Scientific Inc. makes no guarantee of the accuracy or completeness of the data and shall not be liable for any damages relating thereto. The data is offered solely for your consideration, investigation, and verification. Flinn Scientific Inc. assumes no legal responsibility for use or reliance upon this data.

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# FLINN SCIENTIFIC INC.

"Your Safer Source for Science Supplies"

## Material Safety Data Sheet (MSDS)

MSDS #: 424.00

Revision Date: November 25, 2002

---

### Section 1 — Chemical Product and Company Identification

---

#### Kaolin

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### Section 2 — Composition, Information on Ingredients

---

Kaolin

CAS#: 1332-58-7

---

### Section 3 — Hazards Identification

---

White, yellowish-gray powder. Odorless.

Dust may be irritating. Substance not considered hazardous. However, not all health aspects of this substance have been thoroughly investigated.

#### FLINN AT-A-GLANCE

Health-0  
Flammability-0  
Reactivity-0  
Exposure-0  
Storage-0

0 is low hazard, 3 is high hazard

---

### Section 4 — First Aid Measures

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash continuously with fresh water for 15 minutes.

Internal: Rinse out mouth, give 1 to 2 cups of water or milk, induce vomiting. Call a physician or poison control at once.

---

### Section 5 — Fire Fighting Measures

---

Non flammable solid.

#### NFPA CODE

None Established

---

### Section 6 — Accidental Release Measures

---

Restrict unprotected personnel from area. Sweep up, place in sealed bag or container and dispose. Ventilate area and wash spill site after material pickup is complete. See Sections 8 and 13 for further information.

---

### Section 7 — Handling and Storage

---

Flinn Suggested Chemical Storage Pattern: Inorganic #4. Store with hydroxides, oxides, silicates and carbonates.

Store in a cool dry place.

---

### Section 8 — Exposure Controls, Personal Protection

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron.

Use ventilation to keep airborne concentrations below exposure limits. Always wear a NIOSH-approved respirator with proper cartridges or a positive pressure, air-supplied respirator when handling this material in emergency situations (spill or fire).

Exposure guidelines: TWA 15 mg/m<sup>3</sup> (OSHA)

### Section 9 — Physical and Chemical Properties

Aluminum silicate.

Specific Gravity: 1.8-2.6

Solubility: Insoluble in water, dilute acids and alkali hydroxides.

### Section 10 — Stability and Reactivity

Avoid contact with strong oxidizers.

Shelf Life: Indefinite.

### Section 11 — Toxicological Information

Acute effects: Irritating dust

ORL-RAT LD50: N.A.

Chronic effects: N.A.

IHL-RAT LC50: N.A.

Target organs: N.A.

SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

### Section 12 — Ecological Information

Data not yet available.

### Section 13 — Disposal Considerations

Please consult with state and local regulations.

Flinn Suggested Disposal Method #26a is one option.

### Section 14 — Transport Information

Shipping Name: Not regulated

Hazard Class: N/A

UN Number: N/A

N/A = Not applicable

### Section 15 — Regulatory Information

TSCA-listed.

### Section 16 — Other Information

Consult your copy of the Flinn Scientific Catalog/Reference Manual for additional information about laboratory chemicals. This Material Safety Data Sheet (MSDS) is for guidance and is based upon information and tests believed to be reliable. Flinn Scientific Inc. makes no guarantee of the accuracy or completeness of the data and shall not be liable for any damages relating thereto. The data is offered solely for your consideration, investigation, and verification. Flinn Scientific Inc. assumes no legal responsibility for use or reliance upon this data.

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## Material Safety Data Sheet (MSDS)

MSDS #: 427.00

Revision Date: November 25, 2002

---

### Section 1 — Chemical Product and Company Identification

---

#### Lactic Acid

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### Section 2 — Composition, Information on Ingredients

---

Lactic Acid

Synonym: acetic acid

CAS#: 50-21-5

---

### Section 3 — Hazards Identification

---

Colorless or yellowish, hygroscopic syrupy liquid. Odorless.

Corrosive to eyes; irritates skin and respiratory tract. Slightly toxic by ingestion.

#### FLINN AT-A-GLANCE

Health-1

Flammability-1

Reactivity-1

Exposure-2

Storage-1

0 is low hazard, 3 is high hazard

---

### Section 4 — First Aid Measures

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash continuously with fresh water for 15 minutes.

Internal: Give large quantities of water. Call a physician or poison control at once.

---

### Section 5 — Fire Fighting Measures

---

Combustible liquid.

Flash Point: 230 F

When heated to decomposition, emits toxic acrid smoke and irritating fumes.

**Fire Fighting Instructions:** Use triclass, dry chemical fire extinguisher. Firefighters should wear PPE and SCBA with full facepiece operated in positive pressure mode.

#### NFPA CODE

None Established

---

### Section 6 — Accidental Release Measures

---

Restrict unprotected personnel from area and ventilate area. Contain spill with sand or absorbent material; deposit in sealed bag or container. See Sections 8 and 13 for further information.

---

### Section 7 — Handling and Storage

---

Flinn Suggested Chemical Storage Pattern: Organic #1. Store with acids, anhydrides and peracids.

Store in a cool dry place. Deliquescent, store in Flinn Chem-Saf Bag. Use and dispense in a hood.

---

### Section 8 — Exposure Controls, Personal Protection

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron.

Use exhaust ventilation to keep airborne concentrations low.

### Section 9 — Physical and Chemical Properties

Colorless or yellowish, hygroscopic syrupy liquid. Odorless.  
Solubility: Miscible with water and other solvents.  
Formula: C<sub>3</sub>H<sub>6</sub>O<sub>3</sub>  
Formula Weight: 90.09

Specific Gravity: 1.2  
Melting Point: 18 C

### Section 10 — Stability and Reactivity

Avoid contact with bases, oxidizing agents and reducing agents.  
Shelf life: Poor; substance hygroscopic.

### Section 11 — Toxicological Information

Acute effects: Corrosive  
Chronic effects: N.A.  
Target organs: N.A.

ORL-RAT LD50: 3730 mg/kg  
IHL-RAT LC50: N.A.  
SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

### Section 12 — Ecological Information

Data not yet available.

### Section 13 — Disposal Considerations

Please consult with state and local regulations.  
Flinn Suggested Disposal Method #24a is one option.

### Section 14 — Transport Information

Shipping Name: Not regulated  
Hazard Class: N/A  
UN Number: N/A

N/A = Not applicable

### Section 15 — Regulatory Information

TSCA-listed, EINECS-listed (200-018-0), RCRA code D002.

### Section 16 — Other Information

Consult your copy of the Flinn Scientific Catalog/Reference Manual for additional information about laboratory chemicals. This Material Safety Data Sheet (MSDS) is for guidance and is based upon information and tests believed to be reliable. Flinn Scientific Inc. makes no guarantee of the accuracy or completeness of the data and shall not be liable for any damages relating thereto. The data is offered solely for your consideration, investigation, and verification. Flinn Scientific Inc. assumes no legal responsibility for use or reliance upon this data.

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## Material Safety Data Sheet (MSDS)

MSDS #: 428.00

Revision Date: November 25, 2002

---

### Section 1 — Chemical Product and Company Identification

---

#### Lactose

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### Section 2 — Composition, Information on Ingredients

---

Lactose

Synonym: milk sugar

CAS#: 63-42-3

---

### Section 3 — Hazards Identification

---

White crystalline powder.

Substance not considered hazardous. However, not all health aspects of this substance have been thoroughly investigated.

#### FLINN AT-A-GLANCE

Health-0

Flammability-0

Reactivity-0

Exposure-0

Storage-0

0 is low hazard, 3 is high hazard

---

### Section 4 — First Aid Measures

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash continuously with fresh water for 15 minutes.

Internal: Give large quantities of water. Call a physician or poison control at once.

---

### Section 5 — Fire Fighting Measures

---

Non flammable solid.

When heated to decomposition, emits acrid smoke and irritating fumes.

**Fire Fighting Instructions:** Use triclass, dry chemical fire extinguisher. Firefighters should wear PPE and SCBA with full facepiece operated in positive pressure mode.

#### NFPA CODE

None Established

---

### Section 6 — Accidental Release Measures

---

Restrict unprotected personnel from area. Sweep up, place in sealed bag or container and dispose. Ventilate area and wash spill site after material pickup is complete. See Sections 8 and 13 for further information.

---

### Section 7 — Handling and Storage

---

Flinn Suggested Chemical Storage Pattern: Organic #2. Store with alcohols, glycols, amines and amides.

---

### Section 8 — Exposure Controls, Personal Protection

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron.

### Section 9 — Physical and Chemical Properties

White crystalline powder.

Solubility: Soluble in water; slightly in alcohol.

Formula: C<sub>12</sub>H<sub>22</sub>O<sub>11</sub>

Formula Weight: 342.34

Specific Gravity: 1.525

Melting point (dec.) at 203.5 C

### Section 10 — Stability and Reactivity

Shelf Life: Indefinite.

### Section 11 — Toxicological Information

Acute effects: N.A.

Chronic effects: N.A.

Target organs: N.A.

ORL-RAT LD50: N.A.

IHL-RAT LC50: N.A.

SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

### Section 12 — Ecological Information

Data not yet available.

### Section 13 — Disposal Considerations

Please consult with state and local regulations.

Flinn Suggested Disposal Method #26a is one option.

### Section 14 — Transport Information

Shipping Name: Not regulated

Hazard Class: N/A

UN Number: N/A

N/A = Not applicable

### Section 15 — Regulatory Information

Not listed.

### Section 16 — Other Information

Consult your copy of the Flinn Scientific Catalog/Reference Manual for additional information about laboratory chemicals. This Material Safety Data Sheet (MSDS) is for guidance and is based upon information and tests believed to be reliable. Flinn Scientific Inc. makes no guarantee of the accuracy or completeness of the data and shall not be liable for any damages relating thereto. The data is offered solely for your consideration, investigation, and verification. Flinn Scientific Inc. assumes no legal responsibility for use or reliance upon this data.

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# FLINN SCIENTIFIC INC.

"Your Safer Source for Science Supplies"

## Material Safety Data Sheet (MSDS)

MSDS #: 429.00

Revision Date: March 15, 2001

---

### Section 1 — Chemical Product and Company Identification

---

#### Lanolin

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### Section 2 — Composition, Information on Ingredients

---

Lanolin

Synonym: wool fat

CAS#: 8006-54-0

---

### Section 3 — Hazards Identification

---

Yellow moist solid. Shoe polish odor.

Substance not considered hazardous. However, not all health aspects of this substance have been thoroughly investigated.

#### FLINN AT-A-GLANCE

Health-0

Flammability-1

Reactivity-0

Exposure-0

Storage-1

0 is low hazard, 3 is high hazard

---

### Section 4 — First Aid Measures

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash continuously with fresh water for 15 minutes.

Internal: Give large quantities of water. Call a physician or poison control at once.

---

### Section 5 — Fire Fighting Measures

---

Combustible solid.

Flash Point: 230 F Autoignition Temperature: 833 F

**Fire Fighting Instructions:** Use triclass, dry chemical fire extinguisher. Firefighters should wear PPE and SCBA with full facepiece operated in positive pressure mode.

#### NFPA CODE

H-0

F-1

R-0

---

### Section 6 — Accidental Release Measures

---

Place in school trash.

---

### Section 7 — Handling and Storage

---

Flinn Suggested Chemical Storage Pattern: Organic #3. Store with hydrocarbons, esters, aldehydes, and oils.

Store in a cool dry place. Store in a Flinn Chem-Saf bag.

---

### Section 8 — Exposure Controls, Personal Protection

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron.

### Section 9 — Physical and Chemical Properties

Yellow moist solid.  
Solubility: Practically insoluble in water; soluble in many common organic solvents.

Specific Gravity: 0.95  
Melting Point: 38-42 C  
Boiling Point: 175 C (dec.)

### Section 10 — Stability and Reactivity

Shelf life: Good, if kept cool and dry.

### Section 11 — Toxicological Information

Acute effects: Aspiration or inhalation may cause chemical pneumonitis.

Chronic effects: N.A.

Target organs: N.A.

ORL-RAT LD50: N.A.

IHL-RAT LC50: N.A.

SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

### Section 12 — Ecological Information

Data not yet available.

### Section 13 — Disposal Considerations

Please consult with state and local regulations.

Flinn Suggested Disposal Method #26a is one option.

### Section 14 — Transport Information

Shipping Name: Not regulated

Hazard Class: N/A

UN Number: N/A

N/A = Not applicable

### Section 15 — Regulatory Information

TSCA-listed, EINECS-listed (232-348-6).

### Section 16 — Other Information

Consult your copy of the Flinn Scientific Catalog/Reference Manual for additional information about laboratory chemicals. This Material Safety Data Sheet (MSDS) is for guidance and is based upon information and tests believed to be reliable. Flinn Scientific Inc. makes no guarantee of the accuracy or completeness of the data and shall not be liable for any damages relating thereto. The data is offered solely for your consideration, investigation, and verification. Flinn Scientific Inc. assumes no legal responsibility for use or reliance upon this data.

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# FLINN SCIENTIFIC INC.

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## Material Safety Data Sheet (MSDS)

MSDS #: 431.00

Revision Date: November 25, 2002

---

### Section 1 — Chemical Product and Company Identification

---

#### Lauric Acid

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### Section 2 — Composition, Information on Ingredients

---

Lauric Acid

Synonym: dodecanoic acid

CAS#: 143-07-7

---

### Section 3 — Hazards Identification

---

Colorless, needle-like crystals; slight odor of bay oil.  
Irritating to body tissues. Avoid all body tissue contact.  
Combustible solid.

#### FLINN AT-A-GLANCE

Health-0  
Flammability-1  
Reactivity-0  
Exposure-1  
Storage-0

0 is low hazard, 3 is high hazard

---

### Section 4 — First Aid Measures

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash continuously with fresh water for 15 minutes.

Internal: Give large quantities of water. Call a physician or poison control at once.

---

### Section 5 — Fire Fighting Measures

---

Class IIIB combustible solid.

When heated to decomposition, emits acrid smoke and irritating fumes.

**Fire Fighting Instructions:** Use triclass, dry chemical fire extinguisher. Firefighters should wear PPE and SCBA with full facepiece operated in positive pressure mode.

#### NFPA CODE

None Established

---

### Section 6 — Accidental Release Measures

---

Restrict unprotected personnel from area. Sweep up, place in sealed bag or container and dispose. Ventilate area and wash spill site after material pickup is complete. See Sections 8 and 13 for further information.

---

### Section 7 — Handling and Storage

---

Flinn Suggested Chemical Storage Pattern: Organic #1. Store with acids, anhydrides and peracids.

Store in a cool dry place.

---

### Section 8 — Exposure Controls, Personal Protection

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron.

### Section 9 — Physical and Chemical Properties

Colorless, needle-like crystals; slight odor of bay oil.  
Solubility: Insoluble in water. Soluble in ether and benzene.  
Formula: CH<sub>3</sub>(CH<sub>2</sub>)<sub>10</sub>COOH  
Formula Weight: 200.32

Specific Gravity: 0.833  
Melting Point: 43-45 C  
Boiling Point: 225 C @ 100mm

### Section 10 — Stability and Reactivity

Avoid contact with bases, oxidizing agents and reducing agents.  
Shelf Life: Indefinite.

### Section 11 — Toxicological Information

Acute effects: Irritant  
Chronic effects: N.A.  
Target organs: N.A.

ORL-RAT LD50: 12 gm/kg  
IHL-RAT LC50: N.A.  
SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

### Section 12 — Ecological Information

Data not yet available.

### Section 13 — Disposal Considerations

Please consult with state and local regulations.  
Flinn Suggested Disposal Method #24a is one option.

### Section 14 — Transport Information

Shipping Name: Not regulated  
Hazard Class: N/A  
UN Number: N/A

N/A = Not applicable

### Section 15 — Regulatory Information

TSCA-listed, EINECS-listed (205-582-1).

### Section 16 — Other Information

Consult your copy of the Flinn Scientific Catalog/Reference Manual for additional information about laboratory chemicals. This Material Safety Data Sheet (MSDS) is for guidance and is based upon information and tests believed to be reliable. Flinn Scientific Inc. makes no guarantee of the accuracy or completeness of the data and shall not be liable for any damages relating thereto. The data is offered solely for your consideration, investigation, and verification. Flinn Scientific Inc. assumes no legal responsibility for use or reliance upon this data.

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# FLINN SCIENTIFIC, INC.

## Material Safety Data Sheet (MSDS)

MSDS #: 437.00

Revision Date: May 20, 2008

---

### SECTION 1 — CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

---

#### Lead Nitrate

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### SECTION 2 — COMPOSITION, INFORMATION ON INGREDIENTS

---

Lead Nitrate

Synonym: lead (II) nitrate

CAS#: 10099-74-8

---

### SECTION 3 — HAZARDS IDENTIFICATION

---

White crystals. Slight nitric acid odor.

Moderately toxic by ingestion or inhalation. Toxic as lead dust or lead fume. Probable carcinogen.

Severe eye, skin and mucous membrane irritant. Avoid all body contact.

Chronic exposure to inorganic lead via inhalation or ingestion can result in accumulation in and damage to the soft tissues and bones.

#### FLINN AT-A-GLANCE

Health-2

Flammability-0

Reactivity-3

Exposure-2

Storage-0

0 is low hazard, 3 is high hazard

---

### SECTION 4 — FIRST AID MEASURES

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash continuously with fresh water for 15 minutes.

Internal: Rinse out mouth, give 1 to 2 cups of water or milk, induce vomiting. After vomiting, give mixture of 2 Tbs. of activated charcoal mixed with one cup of water. Call a physician or poison control at once.

---

### SECTION 5 — FIRE FIGHTING MEASURES

---

Non flammable solid.

Strong oxidizer, dangerous fire risk in contact with organic materials.

When heated to decomposition, emits toxic fumes of Pb and NOx.

**Fire Fighting Instructions:** Use triclass, dry chemical fire extinguisher. Firefighters should wear PPE and SCBA with full facepiece operated in positive pressure mode.

#### NFPA CODE

None

Established

---

### SECTION 6 — ACCIDENTAL RELEASE MEASURES

---

Restrict unprotected personnel from area. Sweep up, place in sealed bag or container and dispose. Ventilate area and wash spill site after material pickup is complete. See Sections 8 and 13 for further information.

---

### SECTION 7 — HANDLING AND STORAGE

---

Flinn Suggested Chemical Storage Pattern: Inorganic #3. Store with amides, nitrates and nitrites.

Store in a cool dry place. Use and dispense in a hood.

---

### SECTION 8 — EXPOSURE CONTROLS, PERSONAL PROTECTION

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron.

Use ventilation to keep airborne concentrations below exposure limits. Always wear a NIOSH-approved respirator with proper cartridges or a positive pressure, air-supplied respirator when handling this material in emergency situations (spill or fire).

Exposure guidelines: TWA 0.15 mg/m<sup>3</sup> (Pb) (ACGIH)

---

**SECTION 9 — PHYSICAL AND CHEMICAL PROPERTIES**

---

White crystals. Slight nitric acid odor.  
Solubility: Soluble in water and alcohol. Decomposes at 470 C  
Formula: Pb(NO<sub>3</sub>)<sub>2</sub>  
Formula Weight: 331.21

Specific Gravity: 4.53  
Melting Point: 470 C (dec.)

---

**SECTION 10 — STABILITY AND REACTIVITY**

---

Avoid contact with strong reducers, finely powdered metals.  
Shelf Life: Indefinite.

---

**SECTION 11 — TOXICOLOGICAL INFORMATION**

---

Acute effects: Harmful dust, irritant  
Chronic effects: Probable carcinogen, reproductive hazard  
Target organs: Blood, kidneys, nerves, male/female reproductive system

ORL-RAT LD50: N.A.  
IHL-RAT LC50: N.A.  
SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

---

**SECTION 12 — ECOLOGICAL INFORMATION**

---

Data not yet available.

---

**SECTION 13 — DISPOSAL CONSIDERATIONS**

---

Please consult with state and local regulations.  
Flinn Suggested Disposal Method #27f is one option.

---

**SECTION 14 — TRANSPORT INFORMATION**

---

Shipping Name: Lead nitrate  
Hazard Class: 5.1, Oxidizer, poison  
UN Number: UN1469  
N/A = Not applicable

---

**SECTION 15 — REGULATORY INFORMATION**

---

TSCA-listed, EINECS-listed (233-245-9), RCRA code D001, D008.

---

**SECTION 16 — OTHER INFORMATION**

---

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**Consult your copy of the Flinn Chemical Catalog/Reference Manual  
for additional information about laboratory chemicals**

# FLINN SCIENTIFIC, INC.

## Material Safety Data Sheet (MSDS)

MSDS #: 432.00

Revision Date: December 21, 2007

---

### SECTION 1 — CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

---

#### Lead

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### SECTION 2 — COMPOSITION, INFORMATION ON INGREDIENTS

---

Lead

CAS#: 7439-92-1

---

### SECTION 3 — HAZARDS IDENTIFICATION

---

Heavy, ductile, gray solid. Forms: foil, sheets, shot, strips, and wire. Odorless.

Lead as a powder or dust is toxic by ingestion or inhalation. Lead and lead compounds are possible carcinogens. Avoid ingestion and inhalation.

Emits highly toxic fumes of Pb when heated.

Chronic exposure to inorganic lead via inhalation or ingestion can result in accumulation in and damage to the soft tissues and bones.

#### FLINN AT-A-GLANCE

Health-0

Flammability-0

Reactivity-0

Exposure-0

Storage-0

0 is low hazard, 3 is high hazard

---

### SECTION 4 — FIRST AID MEASURES

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash continuously with fresh water for 15 minutes.

Internal: Rinse out mouth, give 1 to 2 cups of water or milk, induce vomiting. After vomiting, give mixture of 2 Tbs. of activated charcoal mixed with one cup of water. Call a physician or poison control at once.

---

### SECTION 5 — FIRE FIGHTING MEASURES

---

Finely divided lead dust is flammable.

Emits highly toxic fumes of Pb when heated.

**Fire Fighting Instructions:** Use triclass, dry chemical fire extinguisher. Firefighters should wear PPE and SCBA with full facepiece operated in positive pressure mode.

#### NFPA CODE

None

Established

---

### SECTION 6 — ACCIDENTAL RELEASE MEASURES

---

Restrict unprotected personnel from area. Sweep up, place in sealed bag or container and dispose. Ventilate area and wash spill site after material pickup is complete. See Sections 8 and 13 for further information.

---

### SECTION 7 — HANDLING AND STORAGE

---

Flinn Suggested Chemical Storage Pattern: Inorganic #1. Store with metals and metal hydrides.

Use fume hood when handling powder form.

---

### SECTION 8 — EXPOSURE CONTROLS, PERSONAL PROTECTION

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron.

Use ventilation to keep airborne concentrations below exposure limits. Always wear a NIOSH-approved respirator with proper cartridges or a positive pressure, air-supplied respirator when handling this material in emergency situations (spill or fire).

Exposure guidelines: TWA 0.15 mg/m<sup>3</sup> (ACGIH)

---

## **SECTION 9 — PHYSICAL AND CHEMICAL PROPERTIES**

---

Heavy, ductile, gray solid.  
Solubility: Soluble in dilute nitric acid. Insoluble in water.  
Lead wire also contains 1% antimony (CAS #7440-36-0)  
Formula: Pb  
Formula Weight: 207.19

Specific Gravity: 11.35  
Melting Point: 327.4 C

---

## **SECTION 10 — STABILITY AND REACTIVITY**

---

Avoid strong acids, ammonium nitrate, hydrogen peroxide, sodium azide, zirconium, sodium acetylide and chlorine.  
Shelf Life: Indefinite.

---

## **SECTION 11 — TOXICOLOGICAL INFORMATION**

---

Acute effects: N.A.  
Chronic effects: Anemia, reproductive hazard  
Target organs: Nerves, blood, kidneys, female/male reproductive system

ORL-RAT LD50: N.A.  
IHL-RAT LC50: N.A.  
SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

---

## **SECTION 12 — ECOLOGICAL INFORMATION**

---

Data not yet available.

---

## **SECTION 13 — DISPOSAL CONSIDERATIONS**

---

Please consult with state and local regulations.  
Flinn Suggested Disposal Method #27d is one option.

---

## **SECTION 14 — TRANSPORT INFORMATION**

---

Shipping Name: Not regulated  
Hazard Class: N/A  
UN Number: N/A  
N/A = Not applicable

---

## **SECTION 15 — REGULATORY INFORMATION**

---

TSCA-listed, EINECS-listed (231-100-4), RCRA code D008.

---

## **SECTION 16 — OTHER INFORMATION**

---

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**Consult your copy of the Flinn Chemical Catalog/Reference Manual  
for additional information about laboratory chemicals**

# FLINN SCIENTIFIC INC.

"Your Safer Source for Science Supplies"

## Material Safety Data Sheet (MSDS)

MSDS #: 454.00

Revision Date: November 25, 2002

---

### Section 1 — Chemical Product and Company Identification

---

#### Lithium Chloride

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### Section 2 — Composition, Information on Ingredients

---

Lithium Chloride

CAS#: 7447-41-8

---

### Section 3 — Hazards Identification

---

White, odorless crystals.

Moderately toxic by ingestion. Irritant to body tissues. Avoid body tissue contact.

#### FLINN AT-A-GLANCE

Health-2

Flammability-0

Reactivity-0

Exposure-1

Storage-1

0 is low hazard, 3 is high hazard

---

### Section 4 — First Aid Measures

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash continuously with fresh water for 15 minutes.

Internal: Give large quantities of water. Call a physician or poison control at once.

---

### Section 5 — Fire Fighting Measures

---

Non flammable solid.

#### NFPA CODE

None Established

---

### Section 6 — Accidental Release Measures

---

Restrict unprotected personnel from area. Sweep up, place in sealed bag or container and dispose. Ventilate area and wash spill site after material pickup is complete. See Sections 8 and 13 for further information.

---

### Section 7 — Handling and Storage

---

Flinn Suggested Chemical Storage Pattern: Inorganic #2. Store with acetates, halides, sulfates, sulfites, thiosulfates and phosphates. Store in a cool dry place. Deliquescent, store in Flinn Chem-Saf Bag. Use and dispense in a hood.

---

### Section 8 — Exposure Controls, Personal Protection

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron.

### Section 9 — Physical and Chemical Properties

White, odorless crystals.

Solubility: Soluble in water and alcohol. Hygroscopic.

Formula: LiCl

Formula Weight: 42.39

Specific Gravity: 2.068

Melting Point: 614 C

Boiling Point: 1350 C

### Section 10 — Stability and Reactivity

Avoid contact with strong oxidizers and strong acids.

Shelf life: Fair to poor

### Section 11 — Toxicological Information

Acute effects: Irritant

Chronic effects: Possible teratogen

Target organs: Central nervous system

ORL-RAT LD50: 526 mg/kg

IHL-RAT LC50: N.A.

SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

### Section 12 — Ecological Information

Data not yet available.

### Section 13 — Disposal Considerations

Please consult with state and local regulations.

Flinn Suggested Disposal Method #26a is one option.

### Section 14 — Transport Information

Shipping Name: Not regulated

Hazard Class: N/A

UN Number: N/A

N/A = Not applicable

### Section 15 — Regulatory Information

TSCA-listed, EINECS-listed (231-212-3).

### Section 16 — Other Information

Consult your copy of the Flinn Scientific Catalog/Reference Manual for additional information about laboratory chemicals. This Material Safety Data Sheet (MSDS) is for guidance and is based upon information and tests believed to be reliable. Flinn Scientific Inc. makes no guarantee of the accuracy or completeness of the data and shall not be liable for any damages relating thereto. The data is offered solely for your consideration, investigation, and verification. Flinn Scientific Inc. assumes no legal responsibility for use or reliance upon this data.

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(800) 452-1261 Fax (866) 452-1436



# FLINN SCIENTIFIC INC.

"Your Safer Source for Science Supplies"

## Material Safety Data Sheet (MSDS)

MSDS #: 456.00

Revision Date: November 25, 2002

---

### Section 1 — Chemical Product and Company Identification

---

#### Lithium Nitrate

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### Section 2 — Composition, Information on Ingredients

---

Lithium Nitrate

CAS#: 7790-69-4

---

### Section 3 — Hazards Identification

---

Colorless odorless powder.

Slightly toxic by ingestion and inhalation. Irritant to body tissues.

Strong oxidizer, explosion risk when shocked or heated.

#### FLINN AT-A-GLANCE

Health-1

Flammability-0

Reactivity-3

Exposure-1

Storage-2

0 is low hazard, 3 is high hazard

---

### Section 4 — First Aid Measures

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash continuously with fresh water for 15 minutes.

Internal: Give large quantities of water. Call a physician or poison control at once.

---

### Section 5 — Fire Fighting Measures

---

Non flammable solid.

Oxidizer; explosion risk when shocked or heated.

When heated to decomposition, emits toxic fumes of NOx.

**Fire Fighting Instructions:** Use triclass, dry chemical fire extinguisher. Firefighters should wear PPE and SCBA with full facepiece operated in positive pressure mode.

#### NFPA CODE

None Established

---

### Section 6 — Accidental Release Measures

---

Restrict unprotected personnel from area. Sweep up, place in sealed bag or container and dispose. Ventilate area and wash spill site after material pickup is complete. See Sections 8 and 13 for further information.

---

### Section 7 — Handling and Storage

---

Flinn Suggested Chemical Storage Pattern: Inorganic #3. Store with amides, nitrates and nitrites.

Store in a Flinn Chem-Saf bag and then inside a Flinn Saf-Stor can.

---

### Section 8 — Exposure Controls, Personal Protection

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron.

### Section 9 — Physical and Chemical Properties

Colorless, odorless powder.

Solubility: Soluble in water and alcohol.

Formula: LiNO<sub>3</sub>

Formula Weight: 68.95

Specific Gravity: 2.38

Melting Point: 261 C

### Section 10 — Stability and Reactivity

Avoid contact with strong reducers and organic materials.

Shelf life: Indefinite, if stored safely.

### Section 11 — Toxicological Information

Acute effects: Irritant, stomach pains, vomiting, diarrhea, nausea, dizziness and headache

Chronic effects: Convulsions

Target organs: Blood, central nervous system

ORL-RAT LD50: N.A.

IHL-RAT LC50: N.A.

SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

### Section 12 — Ecological Information

Data not yet available.

### Section 13 — Disposal Considerations

Please consult with state and local regulations.

Flinn Suggested Disposal Method #26a is one option.

### Section 14 — Transport Information

Shipping Name: Lithium nitrate

Hazard Class: 5.1, Oxidizer

UN Number: UN2722

N/A = Not applicable

### Section 15 — Regulatory Information

TSCA-listed, EINECS-listed (232-218-9), RCRA code D001.

### Section 16 — Other Information

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# FLINN SCIENTIFIC, INC.

## Material Safety Data Sheet (MSDS)

MSDS #: 459.00

Revision Date: May 10, 2007

---

### SECTION 1 — CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

---

#### Litmus

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### SECTION 2 — COMPOSITION, INFORMATION ON INGREDIENTS

---

Litmus

Synonym: lichen blue

CAS#: 1393-92-6

---

### SECTION 3 — HAZARDS IDENTIFICATION

---

Dark-purple powder. Odor of decaying plant.

Substance not considered hazardous. However, not all health aspects of this substance have been thoroughly investigated.

#### FLINN AT-A-GLANCE

Health-0

Flammability-0

Reactivity-0

Exposure-0

Storage-1

0 is low hazard, 3 is high hazard

---

### SECTION 4 — FIRST AID MEASURES

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash continuously with fresh water for 15 minutes.

Internal: Give large quantities of water. Call a physician or poison control at once.

---

### SECTION 5 — FIRE FIGHTING MEASURES

---

Non flammable solid.

#### NFPA CODE

None

Established

---

### SECTION 6 — ACCIDENTAL RELEASE MEASURES

---

Restrict unprotected personnel from area. Sweep up, place in sealed bag or container and dispose. Ventilate area and wash spill site after material pickup is complete. See Sections 8 and 13 for further information.

---

### SECTION 7 — HANDLING AND STORAGE

---

Flinn Suggested Chemical Storage Pattern: Organic #9. Store with dyes, indicators, and stains.

Store in a cool dry place. Moisture sensitive material. Store in a Flinn Chem-Saf bag.

---

### SECTION 8 — EXPOSURE CONTROLS, PERSONAL PROTECTION

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron.

---

**SECTION 9 — PHYSICAL AND CHEMICAL PROPERTIES**

---

Dark-purple powder. Odor of decaying plant.  
Solubility: Soluble in water.  
Acid/Base indicator: pH 4.5 red to 8.3 blue.

---

**SECTION 10 — STABILITY AND REACTIVITY**

---

Avoid contact with strong oxidizers.  
Shelf life: Indefinite, if bottle kept tightly closed.

---

**SECTION 11 — TOXICOLOGICAL INFORMATION**

---

Acute effects: N.A.	ORL-RAT LD50: N.A.
Chronic effects: N.A.	IHL-RAT LC50: N.A.
Target organs: N.A.	SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

---

**SECTION 12 — ECOLOGICAL INFORMATION**

---

Data not yet available.

---

**SECTION 13 — DISPOSAL CONSIDERATIONS**

---

Please consult with state and local regulations.  
Flinn Suggested Disposal Method #26a is one option.

---

**SECTION 14 — TRANSPORT INFORMATION**

---

Shipping Name: Not regulated  
Hazard Class: N/A  
UN Number: N/A  
N/A = Not applicable

---

**SECTION 15 — REGULATORY INFORMATION**

---

EINECS-listed (215-739-6).

---

**SECTION 16 — OTHER INFORMATION**

---

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**Consult your copy of the Flinn Chemical Catalog/Reference Manual  
for additional information about laboratory chemicals**

## **MATERIAL SAFETY DATA SHEET**

LUGOL SOLUTION  
CAROLINA BIOLOGICAL

Revised: 05/15/08  
Replaces: 07/10/07  
Printed: 05/20/08

---

### **1. PRODUCT DESCRIPTION**

Product Name: Lugol Solution  
Product Code(s): 87-2793, 87-2795  
Size: 100 ML, 500 ML  
Chemical Name: Product is mixture  
CAS Number: See section 2  
Formula: See section 2  
Synonyms: Donaldson's Amoeba Stain 2  
Distributor: Carolina Biological Supply Company  
2700 York Road  
Burlington, NC 27215

Chemical Information: 800-227-1150 (8am-5pm (ET) M-F)  
Chemtrec (Transportation Spill Response 24 hours): 800-424-9300

### **2. COMPOSITION/INFORMATION ON INGREDIENTS**

Principal Hazardous Components:  
Potassium Iodide(CAS# 7681-11-0)10%  
Iodine(CAS# 7553-56-2)5%

TLV and PEL units:

Potassium Iodide: No information found  
Iodine: ACGIH-TLV Ceiling 0.1 ppm  
OSHA-PEL Ceiling 0.1 ppm, Ceiling 1 mg/m3

### **3. HAZARD IDENTIFICATION**

Emergency Overview: Harmful if swallowed, inhaled or absorbed through the skin. May cause irritation to eyes, skin and mucous membranes. Symptoms of exposure may include burning sensation, coughing, wheezing, laryngitis, shortness of breath, headache, nausea and vomiting.

Potential Health Effects:

Eyes: May cause irritation.

Skin: May cause irritation.

Ingestion: May cause gastrointestinal discomfort.

Inhalation: May cause irritation to respiratory tract.

### **4. FIRST AID MEASURES**

Emergency and First Aid Procedures:

Eyes - Flush with water for at least 15 minutes, raising and lowering eyelids occasionally. Get medical attention if irritation persists.

Skin - Thoroughly wash exposed area for at least 15 minutes. Remove contaminated clothing. Launder contaminated clothing before reuse. Get medical attention if irritation persists.

Ingestion - If swallowed, if conscious, give plenty of water to dilute, and get medical attention immediately. Never give anything by mouth to an unconscious person.

Inhalation - Remove to fresh air. Give oxygen if breathing is difficult; give artificial respiration if breathing has stopped. Keep person warm and quiet, and get medical attention.

### **5. FIREFIGHTING PROCEDURES**

Flash Point(Method Used): No information available.

NFPA Rating: None established

Extinguisher Media:

Use dry chemical, CO2 or appropriate foam.

Flammable Limits in Air % by Volume: No information available

Autoignition Temperature: No information available.

## **MATERIAL SAFETY DATA SHEET**

LUGOL SOLUTION  
CAROLINA BIOLOGICAL

Revised: 05/15/08  
Replaces: 07/10/07  
Printed: 05/20/08

---

### Special Firefighting Procedures:

Firefighters should wear full protective equipment and NIOSH approved self-contained breathing apparatus.

Unusual Fire and Explosion Hazards: When heated to excessive temperatures may emit toxic and corrosive fumes of iodine.

### **6. SPILL OR LEAK PROCEDURES**

Steps to be Taken in Case Material is Released or Spilled:

Ventilate area of spill. Eliminate all sources of ignition.

Remove all non-essential personnel from area. Clean-up personnel should wear proper protective equipment and clothing. Absorb material with suitable absorbent and containerize for disposal.

### **7. SPECIAL PRECAUTIONS**

Precautions to be Taken in Handling or Storing: Store tightly closed in a cool, dry, well ventilated area away from incompatible materials. Suitable for storage in any general chemical storage area.

### **8. SPECIAL PROTECTION INFORMATION**

Respiratory Protection(Specify Type):

A NIOSH/MSHA chemical cartridge respirator should be worn if PEL or TLV is exceeded.

Ventilation:

Local Exhaust:	Preferred
Mechanical(General):	Acceptable
Special:	No
Other:	No

Protective Gloves:

Rubber, neoprene, PVC, or equivalent.

Eye Protection:

Splash proof chemical safety goggles should be worn at all times.

Other Protective Clothing or Equipment:

Lab apron, eye wash, and safety shower.

### **9. PHYSICAL DATA**

Molecular Weight:	No information available
Melting Point:	No information available
Boiling Point:	Approximately 100C
Vapor Pressure:	Approximately 17.535 @ 20C
Vapor Density(Air=1):	No information available
Specific Gravity(H2O=1):	1.0
Percent Volatile by Volume:	98%
Evaporation Rate(H2O=1):	1
Solubility in Water:	Complete, product is aqueous solution
Appearance and Odor:	Deep amber liquid with characteristic odor of iodine.

### **10. REACTIVITY DATA**

Stability: Stable

Conditions to Avoid: High temperatures or excessive heat.

Incompatibility(Materials to Avoid): Contact with ammonia fumes may cause formation of explosive nitroiodide.

Hazardous Decomposition Products: Free Iodine

Hazardous Polymerization: Will not occur

### **11. TOXICITY DATA**

## MATERIAL SAFETY DATA SHEET

LUGOL SOLUTION  
CAROLINA BIOLOGICAL

Revised: 05/15/08  
Replaces: 07/10/07  
Printed: 05/20/08

---

Toxicity Data: Mixture has not been thoroughly evaluated. Data is listed for individual components.

Potassium Iodide: orl-mus LCLo: 1862 mg/kg

Iodine: orl-rat LD50: 14g/kg

Effects of Overexposure:

Acute: See section 3

Chronic:

Potassium Iodide and Iodine: Mutation data cited. Reproductive data cited. Not listed as causing by IARC, NTP, OR OSHA

Conditions Aggravated by Overexposure: Preexisting conditions of the eyes, skin, nose and throat.

Target Organs: No information available.

Primary Route(s) of Entry: Inhalation, ingestion, irritation in eyes or skin contact.

### **12. ECOLOGICAL DATA**

EPA Waste Numbers: None

### **13. DISPOSAL INFORMATION**

Waste Disposal Methods: Dispose in accordance with all applicable Federal, State and Local regulations.

Always contact a permitted waste disposer (TSD) to assure compliance.

### **14. TRANSPORT INFORMATION**

Non-regulated

### **15. REGULATORY INFORMATION**

EPA TSCA Status: On TSCA Inventory

Hazard Category for SARA Section 311/312 Reporting: Acute

Product or Components	SARA EHS Sec. 302 TPQ	SARA Sec. 313 Chemicals Name List	SARA Sec. 313 Chemical Category	CERCLA Sec. 103 RQ lbs.	RCRA Sec. 261.33
Potassium Iodide	No	No	No	No	No
Iodine	No	No	No	No	No

### **16. ADDITIONAL INFORMATION**

The information provided in this Material Safety Data Sheet represents a compilation of data drawn directly from various sources available to us. Carolina Biological Supply makes no representation or guarantee as to the suitability of this information to a particular application of the substance covered in the Material Safety Data Sheet. Any employer must carefully assess the applicability of any information contained herein in regards to the particular use to which the employer puts the material.

Glossary

ACGIH.....American Conference of Governmental Industrial Hygienists

CAS Number..Chemical Abstracts Service Number

CERCLA.....Comprehensive Environmental Response, Compensation, and Liability Act

DOT.....U.S. Department of Transportation

IARC.....International Agency of Research on Cancer

mppcf.....million particles per cubic foot

## **MATERIAL SAFETY DATA SHEET**

LUGOL SOLUTION  
CAROLINA BIOLOGICAL

Revised: 05/15/08  
Replaces: 07/10/07  
Printed: 05/20/08

---

N/A.....Not Available  
NTP.....National Toxicology Program  
OSHA.....Occupational Safety and Health Administration  
PEL.....Permissible Exposure Limit  
ppm.....parts per million  
RCRA.....Resource Conservation and Recovery Act  
SARA.....Superfund Amendments and Reauthorization Act  
TLV.....Threshold Limit Value  
TSCA.....Toxic Substances Control Act



# FLINN SCIENTIFIC INC.

"Your Safer Source for Science Supplies"

## Material Safety Data Sheet (MSDS)

MSDS #: 463.00

Revision Date: November 25, 2002

---

### Section 1 — Chemical Product and Company Identification

---

#### Luminol

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### Section 2 — Composition, Information on Ingredients

---

Luminol

Synonyms: 5-amino-2,3-dihydro-1,4-phthalazinedione & 3-aminophthalhydrazide

CAS#: 521-31-3

---

### Section 3 — Hazards Identification

---

Yellow odorless powder.

Body tissue irritant. Avoid body tissue contact and inhalation of dust.

#### FLINN AT-A-GLANCE

Health-0

Flammability-0

Reactivity-0

Exposure-1

Storage-0

0 is low hazard, 3 is high hazard

---

### Section 4 — First Aid Measures

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash continuously with fresh water for 15 minutes.

Internal: Give large quantities of water. Call a physician or poison control at once.

---

### Section 5 — Fire Fighting Measures

---

Non flammable solid.

When heated to decomposition, emits toxic fumes of NO<sub>x</sub> under fire conditions.

**Fire Fighting Instructions:** Use triclass, dry chemical fire extinguisher. Firefighters should wear PPE and SCBA with full facepiece operated in positive pressure mode.

#### NFPA CODE

None Established

---

### Section 6 — Accidental Release Measures

---

Restrict unprotected personnel from area. Sweep up, place in sealed bag or container and dispose. Ventilate area and wash spill site after material pickup is complete. See Sections 8 and 13 for further information.

---

### Section 7 — Handling and Storage

---

Flinn Suggested Chemical Storage Pattern: Organic #2. Store with alcohols, glycols, amines and amides.

Store in a cool dry place.

---

### Section 8 — Exposure Controls, Personal Protection

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron.

### Section 9 — Physical and Chemical Properties

Yellow odorless powder.

Melting Point: 280 C

Solubility: Soluble in alcohol. Slightly soluble in water.

Formula: C<sub>8</sub>H<sub>7</sub>N<sub>3</sub>O<sub>2</sub>

Formula Weight: 177.17

### Section 10 — Stability and Reactivity

Avoid contact with strong oxidizers, strong acids, strong bases, strong reducers.

Shelf life: Poor

### Section 11 — Toxicological Information

Acute effects: Irritant

ORL-RAT LD50: N.A.

Chronic effects: N.A.

IHL-RAT LC50: N.A.

Target organs: N.A.

SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

### Section 12 — Ecological Information

Data not yet available.

### Section 13 — Disposal Considerations

Please consult with state and local regulations.

Flinn Suggested Disposal Method #5 is one option.

### Section 14 — Transport Information

Shipping Name: Not regulated

Hazard Class: N/A

UN Number: N/A

N/A = Not applicable

### Section 15 — Regulatory Information

TSCA-listed, EINECS-listed (208-309-4).

### Section 16 — Other Information

Consult your copy of the Flinn Scientific Catalog/Reference Manual for additional information about laboratory chemicals. This Material Safety Data Sheet (MSDS) is for guidance and is based upon information and tests believed to be reliable. Flinn Scientific Inc. makes no guarantee of the accuracy or completeness of the data and shall not be liable for any damages relating thereto. The data is offered solely for your consideration, investigation, and verification. Flinn Scientific Inc. assumes no legal responsibility for use or reliance upon this data.

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# FLINN SCIENTIFIC INC.

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## Material Safety Data Sheet (MSDS)

MSDS #: 473.00

Revision Date: November 25, 2002

---

### Section 1 — Chemical Product and Company Identification

---

## Magnesium Chloride

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### Section 2 — Composition, Information on Ingredients

---

Magnesium Chloride

CAS#: 7791-18-6

---

### Section 3 — Hazards Identification

---

Colorless, white crystals or flakes. Odorless.

Slightly toxic by ingestion. Irritant. Avoid ingestion, inhalation, skin absorption.

#### FLINN AT-A-GLANCE

Health-1

Flammability-0

Reactivity-1

Exposure-1

Storage-1

0 is low hazard, 3 is high hazard

---

### Section 4 — First Aid Measures

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash continuously with fresh water for 15 minutes.

Internal: Give large quantities of water. Call a physician or poison control at once.

---

### Section 5 — Fire Fighting Measures

---

Non flammable solid.

#### NFPA CODE

None Established

---

### Section 6 — Accidental Release Measures

---

Restrict unprotected personnel from area. Sweep up, place in sealed bag or container and dispose. Ventilate area and wash spill site after material pickup is complete. See Sections 8 and 13 for further information.

---

### Section 7 — Handling and Storage

---

Flinn Suggested Chemical Storage Pattern: Inorganic #2. Store with acetates, halides, sulfates, sulfites, thiosulfates and phosphates. Store in a cool dry place. Deliquescent, store in Flinn Chem-Saf Bag.

---

### Section 8 — Exposure Controls, Personal Protection

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron. Use exhaust ventilation to keep airborne concentrations low.

### Section 9 — Physical and Chemical Properties

Colorless, white crystals or flakes. Odorless.  
Solubility: Soluble in water and alcohol.  
Formula:  $MgCl_2 \cdot 6H_2O$   
Formula Weight: 203.33

Specific Gravity: 1.56  
Melting Point: 116-118 C (if heated rapidly) -  
with decomposition.

### Section 10 — Stability and Reactivity

Avoid contact with strong oxidizers.  
Shelf life: Fair to poor; substance deliquescent.

### Section 11 — Toxicological Information

Acute effects: Irritant, stomach pains, vomiting, diarrhea  
Chronic effects: N.A.  
Target organs: Central nervous system, kidneys

ORL-RAT LD50: 2800 mg/kg  
IHL-RAT LC50: N.A.  
SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

### Section 12 — Ecological Information

Data not yet available.

### Section 13 — Disposal Considerations

Please consult with state and local regulations.  
Flinn Suggested Disposal Method #26a is one option.

### Section 14 — Transport Information

Shipping Name: Not regulated  
Hazard Class: N/A  
UN Number: N/A

N/A = Not applicable

### Section 15 — Regulatory Information

EINECS-listed (232-094-6).

### Section 16 — Other Information

Consult your copy of the Flinn Scientific Catalog/Reference Manual for additional information about laboratory chemicals. This Material Safety Data Sheet (MSDS) is for guidance and is based upon information and tests believed to be reliable. Flinn Scientific Inc. makes no guarantee of the accuracy or completeness of the data and shall not be liable for any damages relating thereto. The data is offered solely for your consideration, investigation, and verification. Flinn Scientific Inc. assumes no legal responsibility for use or reliance upon this data.

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# FLINN SCIENTIFIC INC.

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## Material Safety Data Sheet (MSDS)

MSDS #: 475.00

Revision Date: November 25, 2002

---

### Section 1 — Chemical Product and Company Identification

---

## Magnesium Hydroxide

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### Section 2 — Composition, Information on Ingredients

---

Magnesium Hydroxide

Synonym: magnesium hydrate

CAS#: 1309-42-8

---

### Section 3 — Hazards Identification

---

White, odorless powder.

Substance not considered hazardous. However, not all health aspects of this substance have been thoroughly investigated.

#### FLINN AT-A-GLANCE

Health-0

Flammability-0

Reactivity-0

Exposure-0

Storage-0

0 is low hazard, 3 is high hazard

---

### Section 4 — First Aid Measures

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash continuously with fresh water for 15 minutes.

Internal: Give large quantities of water. Call a physician or poison control at once.

---

### Section 5 — Fire Fighting Measures

---

Not combustible solid.

#### NFPA CODE

None Established

---

### Section 6 — Accidental Release Measures

---

Restrict unprotected personnel from area. Sweep up, place in sealed bag or container and dispose. Ventilate area and wash spill site after material pickup is complete. See Sections 8 and 13 for further information.

---

### Section 7 — Handling and Storage

---

Flinn Suggested Chemical Storage Pattern: Inorganic #4. Store with hydroxides, oxides, silicates and carbonates.

Store in a cool dry place. Use and dispense in a hood.

---

### Section 8 — Exposure Controls, Personal Protection

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron.

### Section 9 — Physical and Chemical Properties

White, odorless powder.

Specific Gravity: 2.36

Solubility: Almost insoluble in water and alcohol. Soluble in solutions of ammonium salts and dilute acids.

Formula: Mg(OH)<sub>2</sub>

Formula Weight: 58.34

### Section 10 — Stability and Reactivity

Avoid contact with strong acids.

Shelf Life: Indefinite.

### Section 11 — Toxicological Information

Acute effects: Dust may be irritant

ORL-RAT LD50: N.A.

Chronic effects: Diarrhea and abdominal pain

IHL-RAT LC50: N.A.

Target organs: N.A.

SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

### Section 12 — Ecological Information

Data not yet available.

### Section 13 — Disposal Considerations

Please consult with state and local regulations.

Flinn Suggested Disposal Method #26a is one option.

### Section 14 — Transport Information

Shipping Name: Not regulated

Hazard Class: N/A

UN Number: N/A

N/A = Not applicable

### Section 15 — Regulatory Information

TSCA-listed, EINECS-listed (215-170-3).

### Section 16 — Other Information

Consult your copy of the Flinn Scientific Catalog/Reference Manual for additional information about laboratory chemicals. This Material Safety Data Sheet (MSDS) is for guidance and is based upon information and tests believed to be reliable. Flinn Scientific Inc. makes no guarantee of the accuracy or completeness of the data and shall not be liable for any damages relating thereto. The data is offered solely for your consideration, investigation, and verification. Flinn Scientific Inc. assumes no legal responsibility for use or reliance upon this data.

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# FLINN SCIENTIFIC INC.

"Your Safer Source for Science Supplies"

## Material Safety Data Sheet (MSDS)

MSDS #: 476.00

Revision Date: March 14, 2001

---

### Section 1 — Chemical Product and Company Identification

---

## Magnesium Nitrate

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### Section 2 — Composition, Information on Ingredients

---

Magnesium Nitrate, hydrate

CAS#: 13446-18-9

---

### Section 3 — Hazards Identification

---

White odorless crystals.

Body tissue irritant. Avoid contact with body tissues.

Strong oxidizer; fire risk when in contact with combustible materials.

#### FLINN AT-A-GLANCE

Health-0

Flammability-0

Reactivity-3

Exposure-1

Storage-1

0 is low hazard, 3 is high hazard

---

### Section 4 — First Aid Measures

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash continuously with fresh water for 15 minutes.

Internal: Rinse out mouth, give 1 to 2 cups of water or milk, induce vomiting. Call a physician or poison control at once.

---

### Section 5 — Fire Fighting Measures

---

Non flammable solid.

Strong oxidizer; fire risk when in contact with combustible materials.

When heated to decomposition, emits toxic fumes of NO<sub>x</sub>.

**Fire Fighting Instructions:** Use triclass, dry chemical fire extinguisher. Firefighters should wear PPE and SCBA with full facepiece operated in positive pressure mode.

#### NFPA CODE

None Established

---

### Section 6 — Accidental Release Measures

---

Restrict unprotected personnel from area. Sweep up, place in sealed bag or container and dispose. Ventilate area and wash spill site after material pickup is complete. See Sections 8 and 13 for further information.

---

### Section 7 — Handling and Storage

---

Flinn Suggested Chemical Storage Pattern: Inorganic #3. Store with amides, nitrates and nitrites.

Store in a cool dry place. Deliquescent, store in Flinn Chem-Saf Bag. Use and dispense in a hood.

---

### Section 8 — Exposure Controls, Personal Protection

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron.

Use exhaust ventilation to keep airborne concentrations low.

### Section 9 — Physical and Chemical Properties

White odorless crystals.

Solubility: Soluble in water and alcohol. Decomposes at 330 C.

Formula:  $Mg(NO_3)_2 \cdot 6H_2O$

Formula Weight: 256.43

Specific Gravity: 1.45

Melting Point: 95-100 C

### Section 10 — Stability and Reactivity

Avoid contact with strong reducers, strong acids.

Shelf life: Fair to poor

### Section 11 — Toxicological Information

Acute effects: Irritant

Chronic effects: N.A.

Target organs: N.A.

ORL-RAT LD50: 5440 mg/kg

IHL-RAT LC50: N.A.

SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

### Section 12 — Ecological Information

Data not yet available.

### Section 13 — Disposal Considerations

Please consult with state and local regulations.

Flinn Suggested Disposal Method #26a is one option.

### Section 14 — Transport Information

Shipping Name: Magnesium Nitrate

Hazard Class: 5.1, Oxidizer

UN Number: UN1474

N/A = Not applicable

### Section 15 — Regulatory Information

TSCA-listed, EINECS-listed (233-826-7), RCRA code D001.

### Section 16 — Other Information

Consult your copy of the Flinn Scientific Catalog/Reference Manual for additional information about laboratory chemicals. This Material Safety Data Sheet (MSDS) is for guidance and is based upon information and tests believed to be reliable. Flinn Scientific Inc. makes no guarantee of the accuracy or completeness of the data and shall not be liable for any damages relating thereto. The data is offered solely for your consideration, investigation, and verification. Flinn Scientific Inc. assumes no legal responsibility for use or reliance upon this data.

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# FLINN SCIENTIFIC INC.

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## Material Safety Data Sheet (MSDS)

MSDS #: 478.00

Revision Date: November 25, 2002

---

### Section 1 — Chemical Product and Company Identification

---

## Magnesium Oxide

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### Section 2 — Composition, Information on Ingredients

---

Magnesium Oxide

Synonym: magnesia

CAS#: 1309-48-4

---

### Section 3 — Hazards Identification

---

White, odorless powder.

Inhalation may cause respiratory irritation. Slight eye irritant.

#### FLINN AT-A-GLANCE

Health-0

Flammability-0

Reactivity-1

Exposure-1

Storage-1

0 is low hazard, 3 is high hazard

---

### Section 4 — First Aid Measures

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash continuously with fresh water for 15 minutes.

Internal: Give large quantities of water. Call a physician or poison control at once.

---

### Section 5 — Fire Fighting Measures

---

Non combustible solid.

#### NFPA CODE

None Established

---

### Section 6 — Accidental Release Measures

---

Restrict unprotected personnel from area. Sweep up, place in sealed bag or container and dispose. Ventilate area and wash spill site after material pickup is complete. See Sections 8 and 13 for further information.

---

### Section 7 — Handling and Storage

---

Flinn Suggested Chemical Storage Pattern: Inorganic #4. Store with hydroxides, oxides, silicates and carbonates.

Store in a cool dry place. Air and moisture sensitive. Store in a Flinn Chem-Saf bag.

---

### Section 8 — Exposure Controls, Personal Protection

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron.

Use ventilation to keep airborne concentrations below exposure limits. Always wear a NIOSH-approved respirator with proper cartridges or a positive pressure, air-supplied respirator when handling this material in emergency situations (spill or fire).

Exposure guidelines: TWA 15 mg/m<sup>3</sup> (OSHA)

### Section 9 — Physical and Chemical Properties

White, odorless powder.  
Solubility: Only slightly soluble in water; soluble in acids and ammonium salts solutions.  
Formula: MgO  
Formula Weight: 40.32

Specific Gravity: 2.4 (varies)  
Melting Point: 2800 C  
Boiling Point: 3600 C

### Section 10 — Stability and Reactivity

Avoid contact with strong oxidizers and acids.  
Shelf life: Fair to poor.

### Section 11 — Toxicological Information

Acute effects: Irritant, laxative effect  
Chronic effects: N.A.  
Target organs: N.A.

ORL-RAT LD50: N.A.  
IHL-RAT LC50: N.A.  
SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

### Section 12 — Ecological Information

Data not yet available.

### Section 13 — Disposal Considerations

Please consult with state and local regulations.  
Flinn Suggested Disposal Method #26a is one option.

### Section 14 — Transport Information

Shipping Name: Not regulated  
Hazard Class: N/A  
UN Number: N/A

N/A = Not applicable

### Section 15 — Regulatory Information

TSCA-listed, EINECS-listed (215-171-9).

### Section 16 — Other Information

Consult your copy of the Flinn Scientific Catalog/Reference Manual for additional information about laboratory chemicals. This Material Safety Data Sheet (MSDS) is for guidance and is based upon information and tests believed to be reliable. Flinn Scientific Inc. makes no guarantee of the accuracy or completeness of the data and shall not be liable for any damages relating thereto. The data is offered solely for your consideration, investigation, and verification. Flinn Scientific Inc. assumes no legal responsibility for use or reliance upon this data.

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# FLINN SCIENTIFIC INC.

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## Material Safety Data Sheet (MSDS)

MSDS #: 480.00

Revision Date: November 25, 2002

---

### Section 1 — Chemical Product and Company Identification

---

## Magnesium Sulfate

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### Section 2 — Composition, Information on Ingredients

---

Magnesium Sulfate anhydrous or heptahydrate

Synonym: epsom salts

CAS#: 7487-88-9 (anhydrous), 10034-99-8 (heptahydrate)

---

### Section 3 — Hazards Identification

---

White, odorless powder.

Avoid inhalation. May irritate eyes and respiratory tract.

Avoid body tissue contact.

#### FLINN AT-A-GLANCE

Health-0

Flammability-0

Reactivity-0

Exposure-1

Storage-0

0 is low hazard, 3 is high hazard

---

### Section 4 — First Aid Measures

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash continuously with fresh water for 15 minutes.

Internal: Give large quantities of water. Call a physician or poison control at once.

---

### Section 5 — Fire Fighting Measures

---

Non flammable solid.

#### NFPA CODE

None Established

---

### Section 6 — Accidental Release Measures

---

Restrict unprotected personnel from area. Sweep up, place in sealed bag or container and dispose. Ventilate area and wash spill site after material pickup is complete. See Sections 8 and 13 for further information.

---

### Section 7 — Handling and Storage

---

Flinn Suggested Chemical Storage Pattern: Inorganic #2. Store with acetates, halides, sulfates, sulfites, thiosulfates and phosphates.

Store in a cool dry place.

---

### Section 8 — Exposure Controls, Personal Protection

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron.

Use exhaust ventilation to keep airborne concentrations low.

### Section 9 — Physical and Chemical Properties

White, odorless powder.

Solubility: Very soluble in water. Soluble in glycerol.

Anhydrous decomposes at 1124 C.

Formula: MgSO<sub>4</sub> 7H<sub>2</sub>O or MgSO<sub>4</sub> (Anhydrous)

Formula Weight: 246.50 or 120.37

Specific Gravity: 2.65 (for anhydrous)

1.678 (for hydrous).

### Section 10 — Stability and Reactivity

Shelf Life: Poor; substance hygroscopic.

### Section 11 — Toxicological Information

Acute effects: Irritant, abdominal pain

Chronic effects: N.A.

Target organs: Central nervous system, GI system

ORL-RAT LD50: N.A.

IHL-RAT LC50: N.A.

SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

### Section 12 — Ecological Information

Data not yet available.

### Section 13 — Disposal Considerations

Please consult with state and local regulations.

Flinn Suggested Disposal Method #26a is one option.

### Section 14 — Transport Information

Shipping Name: Not regulated

Hazard Class: N/A

UN Number: N/A

N/A = Not applicable

### Section 15 — Regulatory Information

TSCA-listed, EINECS-listed (231-298-2).

### Section 16 — Other Information

Consult your copy of the Flinn Scientific Catalog/Reference Manual for additional information about laboratory chemicals. This Material Safety Data Sheet (MSDS) is for guidance and is based upon information and tests believed to be reliable. Flinn Scientific Inc. makes no guarantee of the accuracy or completeness of the data and shall not be liable for any damages relating thereto. The data is offered solely for your consideration, investigation, and verification. Flinn Scientific Inc. assumes no legal responsibility for use or reliance upon this data.

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# FLINN SCIENTIFIC INC.

"Your Safer Source for Science Supplies"

## Material Safety Data Sheet (MSDS)

MSDS #: 468.00

Revision Date: March 14, 2001

---

### Section 1 — Chemical Product and Company Identification

---

## Magnesium

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### Section 2 — Composition, Information on Ingredients

---

Magnesium

CAS#: 7439-95-4

---

### Section 3 — Hazards Identification

---

Silvery-white, odorless, metal, turnings or ribbon.

Flammable solid.

Substance not considered hazardous. However, not all health aspects of this substance have been thoroughly investigated.

#### FLINN AT-A-GLANCE

Health-0

Flammability-2

Reactivity-2

Exposure-0

Storage-2

0 is low hazard, 3 is high hazard

---

### Section 4 — First Aid Measures

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash continuously with fresh water for 15 minutes.

Internal: Rinse out mouth, give 1 to 2 cups of water or milk, induce vomiting. Call a physician or poison control at once.

---

### Section 5 — Fire Fighting Measures

---

Flammable solid.

Water reactive metal; avoid contact with acids or water.

**Fire Fighting Instructions:** Use Class D, Met-L-X, or dry sand as a fire extinguisher. Avoid water contact, violent reaction with water. Firefighters should wear PPE and SCBA with full facepiece operating in positive mode.

#### NFPA CODE

H-0

F-1

R-1

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### Section 6 — Accidental Release Measures

---

Restrict unprotected personnel from area. Remove all ignition sources and water. Sweep up, place in sealed bag or container and dispose. Ventilate area and wash spill site after material pickup is complete. See Sections 8 and 13 for further information.

---

### Section 7 — Handling and Storage

---

Flinn Suggested Chemical Storage Pattern: Inorganic #1. Store with metals and metal hydrides.

Store in a Flinn Saf-Stor can.

---

### Section 8 — Exposure Controls, Personal Protection

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron.

Use exhaust ventilation to keep airborne concentrations low.

### Section 9 — Physical and Chemical Properties

Silvery-white, odorless, metal, granular, turnings or ribbon.  
Solubility: Insoluble in water. Soluble in acids.  
Formula: Mg  
Formula Weight: 24.31

Specific Gravity: 1.74  
Melting Point: 651 C

### Section 10 — Stability and Reactivity

Avoid contact with acids, acid chlorides, strong oxidizers, halogens, chlorinated solvents.  
Shelf life: Indefinite, if stored safely.

### Section 11 — Toxicological Information

Acute effects: Irritating dust.  
Chronic effects: N.A.  
Target organs: N.A.

ORL-RAT LD50: N.A.  
IHL-RAT LC50: N.A.  
SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

### Section 12 — Ecological Information

Data not yet available.

### Section 13 — Disposal Considerations

Please consult with state and local regulations.  
Flinn Suggested Disposal Method #26a is one option.

### Section 14 — Transport Information

Shipping Name: Magnesium  
Hazard Class: 4.1, Flammable solid  
UN Number: UN1869

N/A = Not applicable

### Section 15 — Regulatory Information

TSCA-listed, EINECS-listed (231-104-6), RCRA code D001.

### Section 16 — Other Information

Consult your copy of the Flinn Scientific Catalog/Reference Manual for additional information about laboratory chemicals. This Material Safety Data Sheet (MSDS) is for guidance and is based upon information and tests believed to be reliable. Flinn Scientific Inc. makes no guarantee of the accuracy or completeness of the data and shall not be liable for any damages relating thereto. The data is offered solely for your consideration, investigation, and verification. Flinn Scientific Inc. assumes no legal responsibility for use or reliance upon this data.

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(800) 452-1261 Fax (866) 452-1436

# FLINN SCIENTIFIC INC.

"Your Safer Source for Science Supplies"

## Material Safety Data Sheet (MSDS)

MSDS #: 482.00

Revision Date: November 25, 2002

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### Section 1 — Chemical Product and Company Identification

---

#### Malachite Green Oxalate

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### Section 2 — Composition, Information on Ingredients

---

Malachite Green Oxalate

Synonyms: basic green 4, C. I. 42000

CAS#: 2437-29-8

---

### Section 3 — Hazards Identification

---

Shiny, green crystals. Odorless.

Moderately toxic by ingestion. Severe eye irritant.

#### FLINN AT-A-GLANCE

Health-2

Flammability-0

Reactivity-0

Exposure-1

Storage-0

0 is low hazard, 3 is high hazard

---

### Section 4 — First Aid Measures

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash continuously with fresh water for 15 minutes.

Internal: Give large quantities of water. Call a physician or poison control at once.

---

### Section 5 — Fire Fighting Measures

---

Not combustible solid.

#### NFPA CODE

None Established

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### Section 6 — Accidental Release Measures

---

Restrict unprotected personnel from area. Sweep up, place in sealed bag or container and dispose. Ventilate area and wash spill site after material pickup is complete. See Sections 8 and 13 for further information.

---

### Section 7 — Handling and Storage

---

Flinn Suggested Chemical Storage Pattern: Organic #9. Store with dyes, indicators, and stains.

Store in a cool dry place. Use and dispense in a hood.

---

### Section 8 — Exposure Controls, Personal Protection

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron.

### Section 9 — Physical and Chemical Properties

Shiny, green crystals. Odorless.  
Solubility: Very soluble in water. Soluble in alcohol.  
Formula: C<sub>46</sub>H<sub>50</sub>N<sub>4</sub> 3C<sub>2</sub>H<sub>2</sub>O<sub>4</sub>  
Formula Weight: 364.90 C

Specific Gravity: Varies.  
Melting Point: 164 (dec.)

### Section 10 — Stability and Reactivity

Avoid contact with strong oxidizers.  
Shelf Life: Indefinite.

### Section 11 — Toxicological Information

Acute effects: Highly toxic, severe eye irritant  
Chronic effects: N.A.  
Target organs: N.A.

ORL-RAT LD50: 275 mg/kg  
IHL-RAT LC50: N.A.  
SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

### Section 12 — Ecological Information

Data not yet available.

### Section 13 — Disposal Considerations

Please consult with state and local regulations.  
Flinn Suggested Disposal Method #5 is one option.

### Section 14 — Transport Information

Shipping Name: Not regulated  
Hazard Class: N/A  
UN Number: N/A

N/A = Not applicable

### Section 15 — Regulatory Information

EINECS-listed (219-441-7).

### Section 16 — Other Information

Consult your copy of the Flinn Scientific Catalog/Reference Manual for additional information about laboratory chemicals. This Material Safety Data Sheet (MSDS) is for guidance and is based upon information and tests believed to be reliable. Flinn Scientific Inc. makes no guarantee of the accuracy or completeness of the data and shall not be liable for any damages relating thereto. The data is offered solely for your consideration, investigation, and verification. Flinn Scientific Inc. assumes no legal responsibility for use or reliance upon this data.

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# FLINN SCIENTIFIC INC.

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## Material Safety Data Sheet (MSDS)

MSDS #: 485.00

Revision Date: November 25, 2002

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### Section 1 — Chemical Product and Company Identification

---

#### Maleic Acid

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### Section 2 — Composition, Information on Ingredients

---

Maleic Acid

Synonyms: maleinic acid, butenedioic acid

CAS#: 110-16-7

---

### Section 3 — Hazards Identification

---

White crystal. Faint tea odor.

Moderately toxic by ingestion, inhalation, and skin absorption. Inhalation of dust may cause respiratory irritation. Corrosive to body tissues.

Combustible solid.

#### FLINN AT-A-GLANCE

Health-2

Flammability-1

Reactivity-1

Exposure-2

Storage-0

0 is low hazard, 3 is high hazard

---

### Section 4 — First Aid Measures

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash continuously with fresh water for 15 minutes.

Internal: Give large quantities of water. Call a physician or poison control at once.

---

### Section 5 — Fire Fighting Measures

---

Combustible solid.

When heated to decomposition, emits acrid smoke and irritating fumes.

**Fire Fighting Instructions:** Use triclass, dry chemical fire extinguisher. Firefighters should wear PPE and SCBA with full facepiece operated in positive pressure mode.

#### NFPA CODE

None Established

---

### Section 6 — Accidental Release Measures

---

Restrict unprotected personnel from area. Remove all ignition sources and water. Sweep up, place in sealed bag or container and dispose. Ventilate area and wash spill site after material pickup is complete. See Sections 8 and 13 for further information.

---

### Section 7 — Handling and Storage

---

Flinn Suggested Chemical Storage Pattern: Organic #1. Store with acids, anhydrides and peracids.

Store in a cool dry place. Use and dispense in a hood.

---

### Section 8 — Exposure Controls, Personal Protection

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron.

### Section 9 — Physical and Chemical Properties

White crystal. Faint tea odor.  
Solubility: Soluble in water, alcohol and acetone.  
Slightly soluble in benzene.  
Formula: HOOCCH:CHCOOH (cis Isomer)  
Formula Weight: 116.07

Specific Gravity: 1.59 (solid)  
Melting Point: 130-131 C

### Section 10 — Stability and Reactivity

Avoid contact with bases, oxidizers, reducers.  
Shelf Life: Indefinite.

### Section 11 — Toxicological Information

Acute effects: Corrosive, gastrointestinal disturbances  
Chronic effects: N.A.  
Target organs: N.A.

ORL-RAT LD50: 708 mg/kg  
IHL-RAT LC50: N.A.  
SKN-RBT LD50: 1560 mg/kg

N.A. = Not available, not all health aspects of this substance have been fully investigated.

### Section 12 — Ecological Information

Data not yet available.

### Section 13 — Disposal Considerations

Please consult with state and local regulations.  
Flinn Suggested Disposal Method #24a is one option.

### Section 14 — Transport Information

Shipping Name: Maleic acid  
Hazard Class: 8, Corrosive  
UN Number: NA2215

N/A = Not applicable

### Section 15 — Regulatory Information

TSCA-listed, EINECS-listed (203-742-5).

### Section 16 — Other Information

Consult your copy of the Flinn Scientific Catalog/Reference Manual for additional information about laboratory chemicals. This Material Safety Data Sheet (MSDS) is for guidance and is based upon information and tests believed to be reliable. Flinn Scientific Inc. makes no guarantee of the accuracy or completeness of the data and shall not be liable for any damages relating thereto. The data is offered solely for your consideration, investigation, and verification. Flinn Scientific Inc. assumes no legal responsibility for use or reliance upon this data.

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# FLINN SCIENTIFIC INC.

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## Material Safety Data Sheet (MSDS)

MSDS #: 486.00

Revision Date: November 25, 2002

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### Section 1 — Chemical Product and Company Identification

---

#### Malonic Acid

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### Section 2 — Composition, Information on Ingredients

---

Malonic acid

Synonym: propanedioic acid

CAS#: 141-82-2

---

### Section 3 — Hazards Identification

---

White crystal. Faint beef bouillon odor.

Slightly toxic. This substance is regulated (as a drug intermediate) in some states.

Severe eye irritant, mild body tissue irritant. Avoid all body tissue contact.

#### FLINN AT-A-GLANCE

Health-1

Flammability-1

Reactivity-1

Exposure-2

Storage-0

0 is low hazard, 3 is high hazard

---

### Section 4 — First Aid Measures

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash continuously with fresh water for 15 minutes.

Internal: Give large quantities of water. Call a physician or poison control at once.

---

### Section 5 — Fire Fighting Measures

---

Combustible solid.

**Fire Fighting Instructions:** Use triclass, dry chemical fire extinguisher. Firefighters should wear PPE and SCBA with full facepiece operated in positive pressure mode.

#### NFPA CODE

None Established

---

### Section 6 — Accidental Release Measures

---

Restrict unprotected personnel from area. Sweep up, place in sealed bag or container and dispose. Ventilate area and wash spill site after material pickup is complete. See Sections 8 and 13 for further information.

---

### Section 7 — Handling and Storage

---

Flinn Suggested Chemical Storage Pattern: Organic #1. Store with acids, anhydrides and peracids.

Store in a cool dry place. Use and dispense in a hood.

---

### Section 8 — Exposure Controls, Personal Protection

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron.

### Section 9 — Physical and Chemical Properties

White crystal. Faint beef bouillon odor.  
Solubility: Soluble: water, alcohol, ether.  
Formula: CH<sub>2</sub>(CO<sub>2</sub>H)<sub>2</sub>  
Formula Weight: 104.07

Specific Gravity: 1.63  
Melting Point: 132-134 C

### Section 10 — Stability and Reactivity

Avoid contact with bases, oxidizers, reducers.  
Shelf life: Indefinite.

### Section 11 — Toxicological Information

Acute effects: Severe irritant  
Chronic effects: N.A.  
Target organs: N.A.

ORL-RAT LD50: 1310 mg/kg  
IHL-RAT LC50: N.A.  
EYE-RBT LD50: 100 mg

N.A. = Not available, not all health aspects of this substance have been fully investigated.

### Section 12 — Ecological Information

Data not yet available.

### Section 13 — Disposal Considerations

Please consult with state and local regulations.  
Flinn Suggested Disposal Method #24a is one option.

### Section 14 — Transport Information

Shipping Name: Not regulated  
Hazard Class: N/A  
UN Number: N/A

N/A = Not applicable

### Section 15 — Regulatory Information

TSCA-listed, EINECS-listed (205-503-0).

### Section 16 — Other Information

Consult your copy of the Flinn Scientific Catalog/Reference Manual for additional information about laboratory chemicals. This Material Safety Data Sheet (MSDS) is for guidance and is based upon information and tests believed to be reliable. Flinn Scientific Inc. makes no guarantee of the accuracy or completeness of the data and shall not be liable for any damages relating thereto. The data is offered solely for your consideration, investigation, and verification. Flinn Scientific Inc. assumes no legal responsibility for use or reliance upon this data.

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# FLINN SCIENTIFIC INC.

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## Material Safety Data Sheet (MSDS)

MSDS #: 487.00

Revision Date: November 25, 2002

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### Section 1 — Chemical Product and Company Identification

---

#### Maltose

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### Section 2 — Composition, Information on Ingredients

---

Maltose

Synonyms: malt sugar, maltibiose

CAS#: 6363-53-7

---

### Section 3 — Hazards Identification

---

Colorless to light tan crystals or flakes. Odor of fresh cut hay.

Substance not considered hazardous. However, not all health aspects of this substance have been thoroughly investigated.

#### FLINN AT-A-GLANCE

Health-0

Flammability-0

Reactivity-0

Exposure-0

Storage-0

0 is low hazard, 3 is high hazard

---

### Section 4 — First Aid Measures

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash continuously with fresh water for 15 minutes.

Internal: Give large quantities of water. Call a physician or poison control at once.

---

### Section 5 — Fire Fighting Measures

---

Non flammable solid.

#### NFPA CODE

None Established

---

### Section 6 — Accidental Release Measures

---

Sweep up and place in school trash.

---

### Section 7 — Handling and Storage

---

Flinn Suggested Chemical Storage Pattern: Organic #2. Store with alcohols, glycols, amines and amides.

---

### Section 8 — Exposure Controls, Personal Protection

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron.

### Section 9 — Physical and Chemical Properties

Colorless to light tan crystals or flakes. Odor of fresh cut hay.  
Solubility: Completely soluble in water; slightly soluble in alcohol. Insoluble in ether.  
Formula: C<sub>12</sub>H<sub>22</sub>O<sub>11</sub> H<sub>2</sub>O  
Formula Weight: 360.32

Specific Gravity: 1.395  
Melting Point: 102-103 C

### Section 10 — Stability and Reactivity

Shelf life: Indefinite

### Section 11 — Toxicological Information

Acute effects: N.A.  
Chronic effects: N.A.  
Target organs: N.A.

ORL-RAT LD50: 34800 mg/kg  
IHL-RAT LC50: N.A.  
SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

### Section 12 — Ecological Information

Data not yet available.

### Section 13 — Disposal Considerations

Please consult with state and local regulations.  
Flinn Suggested Disposal Method #26a is one option.

### Section 14 — Transport Information

Shipping Name: Not regulated  
Hazard Class: N/A  
UN Number: N/A

N/A = Not applicable

### Section 15 — Regulatory Information

TSCA-listed, EINECS-listed (200-716-5).

### Section 16 — Other Information

Consult your copy of the Flinn Scientific Catalog/Reference Manual for additional information about laboratory chemicals. This Material Safety Data Sheet (MSDS) is for guidance and is based upon information and tests believed to be reliable. Flinn Scientific Inc. makes no guarantee of the accuracy or completeness of the data and shall not be liable for any damages relating thereto. The data is offered solely for your consideration, investigation, and verification. Flinn Scientific Inc. assumes no legal responsibility for use or reliance upon this data.

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# FLINN SCIENTIFIC INC.

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## Material Safety Data Sheet (MSDS)

MSDS #: 489.00

Revision Date: November 25, 2002

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### Section 1 — Chemical Product and Company Identification

---

## Manganese Dioxide

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### Section 2 — Composition, Information on Ingredients

---

Manganese Dioxide

CAS#: 1313-13-9

---

### Section 3 — Hazards Identification

---

Black or silver crystals or powder. Odorless.

Dust is irritant to eyes and respiratory tract. Avoid inhalation of dust.

Strong oxidizer; fire hazard.

Chronic exposure to manganese dust through inhalation can lead to respiratory problems and disorders of the central nervous system.

#### FLINN AT-A-GLANCE

Health-0

Flammability-0

Reactivity-2

Exposure-1

Storage-0

0 is low hazard, 3 is high hazard

---

### Section 4 — First Aid Measures

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash continuously with fresh water for 15 minutes.

Internal: Give no more than 1-2 cups of water for dilution. Do not induce vomiting. Call a physician or poison control at once.

---

### Section 5 — Fire Fighting Measures

---

Non flammable, non combustible solid.

Strong oxidizer, fire hazard when in contact with combustible materials.

**Fire Fighting Instructions:** Use triclass, dry chemical fire extinguisher. Firefighters should wear PPE and SCBA with full facepiece operated in positive pressure mode.

#### NFPA CODE

None Established

---

### Section 6 — Accidental Release Measures

---

Restrict unprotected personnel from area. Sweep up, place in sealed bag or container and dispose. Ventilate area and wash spill site after material pickup is complete. See Sections 8 and 13 for further information.

---

### Section 7 — Handling and Storage

---

Flinn Suggested Chemical Storage Pattern: Inorganic #4. Store with hydroxides, oxides, silicates and carbonates.

Store in a cool dry place. Use and dispense in a hood.

---

### Section 8 — Exposure Controls, Personal Protection

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron.

Use ventilation to keep airborne concentrations below exposure limits. Always wear a NIOSH-approved respirator with proper cartridges or a positive pressure, air-supplied respirator when handling this material in emergency situations (spill or fire).

Exposure guidelines: TWA 1 mg/m<sup>3</sup> (Mn), STEL 3 mg/m<sup>3</sup> (Mn) (NIOSH, NIOSH)

### Section 9 — Physical and Chemical Properties

Black or silver crystals or powder. Odorless.  
Solubility: Soluble in hydrochloric acid. Insoluble in water.  
Formula: MnO<sub>2</sub>  
Formula Weight: 86.94

Specific Gravity: 5.026  
Melting Point: 535 C (dec.)

### Section 10 — Stability and Reactivity

May ignite organic materials; strong oxidant; reacts violently with combustible and reducing agents. Avoid contact with other oxidizing agents.  
Shelf life: Indefinite.

### Section 11 — Toxicological Information

Acute effects: Irritating dust  
Chronic effects: N.A.  
Target organs: Nerves, lungs

ORL-RAT LD50: 9000 mg/kg as manganese dust  
IHL-RAT LC50: N.A.  
SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

### Section 12 — Ecological Information

Data not yet available.

### Section 13 — Disposal Considerations

Please consult with state and local regulations.  
Flinn Suggested Disposal Method #26a is one option.

### Section 14 — Transport Information

Shipping Name: Not regulated  
Hazard Class: N/A  
UN Number: N/A

N/A = Not applicable

### Section 15 — Regulatory Information

TSCA-listed, EINECS-listed (215-202-6), RCRA code D001.

### Section 16 — Other Information

Consult your copy of the Flinn Scientific Catalog/Reference Manual for additional information about laboratory chemicals. This Material Safety Data Sheet (MSDS) is for guidance and is based upon information and tests believed to be reliable. Flinn Scientific Inc. makes no guarantee of the accuracy or completeness of the data and shall not be liable for any damages relating thereto. The data is offered solely for your consideration, investigation, and verification. Flinn Scientific Inc. assumes no legal responsibility for use or reliance upon this data.

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MSDS Number: **M0793** \* \* \* \* \* *Effective Date: 05/26/09* \* \* \* \* \* *Supersedes: 08/17/06*

	<b>24 Hour Emergency Telephone: 908-859-2151</b> <b>CHEMTREC: 1-800-424-9300</b>
	<b>National Response in Canada</b> <b>CANUTEC: 613-996-6666</b>
<b>From: Mallinckrodt Baker, Inc.</b> <b>222 Red School Lane</b> <b>Phillipsburg, NJ 08865</b>	<b>Outside U.S. and Canada</b> <b>Chemtrec: 703-527-3887</b>
	<b>NOTE: CHEMTREC, CANUTEC and National Response Center emergency numbers to be used only in the event of chemical emergencies involving a spill, leak, fire, exposure or accident involving chemicals.</b>

All non-emergency questions should be directed to Customer Service (1-800-582-2537) for assistance.

# MANGANESE SULFATE

## 1. Product Identification

**Synonyms:** Manganous sulfate, monohydrate; sulfuric acid, manganese (2+) salt (1:1), monohydrate; Manganese (II) sulfate, monohydrate

**CAS No.:** 7785-87-7 (Anhydrous) 10034-96-5 (Monohydrate)

**Molecular Weight:** 169.02

**Chemical Formula:** MnSO<sub>4</sub> H<sub>2</sub>O

**Product Codes:**

J.T. Baker: 2550, 2552

Mallinckrodt: 2147, 6097, 6192, 6200, 7780

## 2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
Manganese (II) Sulfate (1:1)	7785-87-7	98 - 100%	Yes

## 3. Hazards Identification

### Emergency Overview

**WARNING! HARMFUL IF SWALLOWED OR INHALED. AFFECTS LUNGS, CENTRAL NERVOUS SYSTEM, BLOOD AND KIDNEYS. MAY CAUSE IRRITATION TO SKIN, EYES, AND RESPIRATORY TRACT.**

**SAF-T-DATA<sup>(tm)</sup> Ratings (Provided here for your convenience)**

Health Rating: 3 - Severe (Life)

Flammability Rating: 0 - None

Reactivity Rating: 1 - Slight

Contact Rating: 2 - Moderate

Lab Protective Equip: GOGGLES & SHIELD; LAB COAT & APRON; VENT HOOD; PROPER GLOVES  
Storage Color Code: Green (General Storage)

---

### Potential Health Effects

---

**Inhalation:**

Inhalation can cause a flu-like illness (metal fume fever). This 24- to 48-hour illness is characterized by chills, fever, aching muscles, dryness in the mouth and throat and headache. May irritate the respiratory tract. May increase the incidence of upper respiratory infections (pneumonia). Absorption of inorganic manganese salts through the lungs is poor but may occur in chronic poisoning.

**Ingestion:**

May cause abdominal pain and nausea. Although they are poorly absorbed through the intestines, inorganic manganese salts may produce hypoglycemia and decreased calcium blood levels should absorption occur.

**Skin Contact:**

May cause irritation with redness and pain.

**Eye Contact:**

May cause irritation, redness and pain.

**Chronic Exposure:**

Chronic manganese poisoning can result from excessive inhalation and ingestion exposure and involves impairment of the central nervous system. Early symptoms include sluggishness, sleepiness, and weakness in the legs. Advanced cases have shown fixed facial expression, emotional disturbances, spastic gait, and falling. Illness closely resembles Parkinson's Disease. Kidney effects, blood changes and manganese psychosis also may occur as a result of chronic exposure. Chronic inhalation exposure can cause lung damage.

**Aggravation of Pre-existing Conditions:**

Persons with impaired respiratory function, psychiatric or neurological disturbances, and nutritional deficiencies may be more susceptible to the effect of this substance.

---

## 4. First Aid Measures

**Inhalation:**

Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

**Ingestion:**

Induce vomiting immediately as directed by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention.

**Skin Contact:**

Immediately flush skin with plenty of water for at least 15 minutes. Remove contaminated clothing and shoes. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention if irritation develops.

**Eye Contact:**

Immediately flush eyes with plenty of water for at least 15 minutes, lifting upper and lower eyelids occasionally. Get medical attention if irritation persists.

---

## 5. Fire Fighting Measures

**Fire:**

Not considered to be a fire hazard.

**Explosion:**

Not considered to be an explosion hazard.

**Fire Extinguishing Media:**

Use any means suitable for extinguishing surrounding fire.

**Special Information:**

In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode.

---

## 6. Accidental Release Measures

Ventilate area of leak or spill. Keep unnecessary and unprotected people away from area of spill. Wear appropriate personal protective equipment as specified in Section 8. Spills: Pick up and place in a suitable container for reclamation or disposal, using a method that does not generate dust. US Regulations (CERCLA) require reporting spills and releases to soil, water and air in excess of reportable quantities. The toll free number for the US Coast Guard National Response Center is (800) 424-8802.

---

## 7. Handling and Storage

Keep in a tightly closed container, stored in a cool, dry, ventilated area. Protect against physical damage. Containers of this material may be hazardous when empty since they retain product residues (dust, solids); observe all warnings and precautions listed for the product.

---

## 8. Exposure Controls/Personal Protection

### **Airborne Exposure Limits:**

- OSHA Permissible Exposure Limit (PEL):  
5 mg/m<sup>3</sup> Ceiling for manganese compounds as Mn

- ACGIH Threshold Limit Value (TLV):

0.2 mg/m<sup>3</sup> (TWA) for manganese, elemental and inorganic compounds as Mn

### **Ventilation System:**

A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, *Industrial Ventilation, A Manual of Recommended Practices*, most recent edition, for details.

### **Personal Respirators (NIOSH Approved):**

If the exposure limit is exceeded and engineering controls are not feasible, a half facepiece particulate respirator (NIOSH type N95 or better filters) may be worn for up to ten times the exposure limit or the maximum use concentration specified by the appropriate regulatory agency or respirator supplier, whichever is lowest.. A full-face piece particulate respirator (NIOSH type N100 filters) may be worn up to 50 times the exposure limit, or the maximum use concentration specified by the appropriate regulatory agency, or respirator supplier, whichever is lowest. If oil particles (e.g. lubricants, cutting fluids, glycerine, etc.) are present, use a NIOSH type R or P filter. For emergencies or instances where the exposure levels are not known, use a full-facepiece positive-pressure, air-supplied respirator. **WARNING:** Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.

### **Skin Protection:**

Wear protective gloves and clean body-covering clothing.

### **Eye Protection:**

Safety glasses. Maintain eye wash fountain and quick-drench facilities in work area.

---

## 9. Physical and Chemical Properties

### **Appearance:**

Pale pink granular powder.

### **Odor:**

Odorless.

### **Solubility:**

Soluble in 1 part water.

**Density:**

2.95

**pH:**

No information found.

**% Volatiles by volume @ 21C (70F):**

0

**Boiling Point:**

850C (1562F) Decomposes.

**Melting Point:**

700C (1292F) Loses all water @ 400-500C

**Vapor Density (Air=1):**

No information found.

**Vapor Pressure (mm Hg):**

No information found.

**Evaporation Rate (BuAc=1):**

No information found.

## 10. Stability and Reactivity

**Stability:**

Stable under ordinary conditions of use and storage.

**Hazardous Decomposition Products:**

Oxides of sulfur and the contained metal.

**Hazardous Polymerization:**

Will not occur.

**Incompatibilities:**

Powdered metals, strong oxidizers.

**Conditions to Avoid:**

Incompatibles.

## 11. Toxicological Information

**Toxicological Data:**

Oral rat LD50: 2150 mg/kg. Investigated as a tumorigen, mutagen, reproductive effector.

**Reproductive Toxicity:**

For manganese metal:

May damage the reproductive system. Has shown teratogenic effects in laboratory animals.

-----\Cancer Lists\-----			
Ingredient	---NTP Carcinogen---		IARC Category
	Known	Anticipated	
Manganese(II) Sulfate (1:1) (7785-87-7)	No	No	None

## 12. Ecological Information

**Environmental Fate:**

No information found.

**Environmental Toxicity:**

No information found.

## 13. Disposal Considerations

Whatever cannot be saved for recovery or recycling should be managed in an appropriate and approved waste disposal facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

## 14. Transport Information

Not regulated.

## 15. Regulatory Information

```
-----\Chemical Inventory Status - Part 1\-----
Ingredient                                     TSCA  EC   Japan  Australia
-----
Manganese(II) Sulfate (1:1) (7785-87-7)       Yes  Yes  Yes    Yes
```

```
-----\Chemical Inventory Status - Part 2\-----
Ingredient                                     Korea  DSL   NDSL   Phil.
-----
Manganese(II) Sulfate (1:1) (7785-87-7)       Yes   Yes   No     Yes
```

```
-----\Federal, State & International Regulations - Part 1\-----
Ingredient                                     -SARA 302-  -SARA 313-
RQ   TPQ   List  Chemical Catg.
-----
Manganese(II) Sulfate (1:1) (7785-87-7)       No    No    No     Manganese co
```

```
-----\Federal, State & International Regulations - Part 2\-----
Ingredient                                     CERCLA  -RCRA-  -TSCA-
261.33  8(d)
-----
Manganese(II) Sulfate (1:1) (7785-87-7)       1       No      No
```

Chemical Weapons Convention: No      TSCA 12(b): No      CDTA: No  
 SARA 311/312: Acute: Yes      Chronic: Yes      Fire: No      Pressure: No  
 Reactivity: No      (Pure / Solid)

**Australian Hazchem Code:** None allocated.

**Poison Schedule:** None allocated.

### WHMIS:

This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

## 16. Other Information

**NFPA Ratings:** Health: **2** Flammability: **0** Reactivity: **0**

### Label Hazard Warning:

WARNING! HARMFUL IF SWALLOWED OR INHALED. AFFECTS LUNGS, CENTRAL NERVOUS SYSTEM, BLOOD AND KIDNEYS. MAY CAUSE IRRITATION TO SKIN, EYES, AND RESPIRATORY TRACT.

### Label Precautions:

Wash thoroughly after handling.  
 Avoid contact with eyes, skin and clothing.  
 Avoid breathing dust.  
 Keep container closed.

Use only with adequate ventilation.

**Label First Aid:**

If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. If swallowed, induce vomiting immediately as directed by medical personnel. Never give anything by mouth to an unconscious person. In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes. In all cases, get medical attention.

**Product Use:**

Laboratory Reagent.

**Revision Information:**

No Changes.

**Disclaimer:**

\*\*\*\*\*

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\*\*\*\*\*

**Prepared by:** Environmental Health & Safety

Phone Number: (314) 654-1600 (U.S.A.)

# FLINN SCIENTIFIC INC.

"Your Safer Source for Science Supplies"

## Material Safety Data Sheet (MSDS)

MSDS #: 493.00

Revision Date: November 25, 2002

---

### Section 1 — Chemical Product and Company Identification

---

#### Mannitol

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### Section 2 — Composition, Information on Ingredients

---

Mannitol

Synonym: manna sugar

CAS#: 69-65-8

---

### Section 3 — Hazards Identification

---

White crystalline powder or granules; faint sweet taste.

Mildly toxic by ingestion. Doses of 40 grams in humans produce only a laxative effect.

Combustible solid.

#### FLINN AT-A-GLANCE

Health-1

Flammability-1

Reactivity-0

Exposure-0

Storage-0

0 is low hazard, 3 is high hazard

---

### Section 4 — First Aid Measures

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash continuously with fresh water for 15 minutes.

Internal: Give large quantities of water. Call a physician or poison control at once.

---

### Section 5 — Fire Fighting Measures

---

Combustible solid.

Autoignition Temperature: 600 F

**Fire Fighting Instructions:** Use triclass, dry chemical fire extinguisher. Firefighters should wear PPE and SCBA with full facepiece operated in positive pressure mode.

#### NFPA CODE

None Established

---

### Section 6 — Accidental Release Measures

---

Sweep up and place in school trash.

---

### Section 7 — Handling and Storage

---

Flinn Suggested Chemical Storage Pattern: Organic #2. Store with alcohols, glycols, amines and amides.

Store in a cool dry place.

---

### Section 8 — Exposure Controls, Personal Protection

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron.

### Section 9 — Physical and Chemical Properties

White crystalline powder or granules; faint sweet taste.  
Solubility: Soluble in water; Slightly soluble in lower alcohols and amines.

Formula: C<sub>6</sub>H<sub>14</sub>O<sub>6</sub>

Formula Weight: 182.18

Specific Gravity: 1.52

Melting Point: 166-168 C

### Section 10 — Stability and Reactivity

Avoid contact with strong oxidizers and heat.

### Section 11 — Toxicological Information

Acute effects: Possible skin irritant, laxative

Chronic effects: N.A.

Target organs: N.A.

ORL-RAT LD50: 13500 mg/kg

IHL-RAT LC50: N.A.

SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

### Section 12 — Ecological Information

Data not yet available.

### Section 13 — Disposal Considerations

Please consult with state and local regulations.

Flinn Suggested Disposal Method #26a is one option.

### Section 14 — Transport Information

Shipping Name: Not regulated

Hazard Class: N/A

UN Number: N/A

N/A = Not applicable

### Section 15 — Regulatory Information

TSCA-listed, EINECS-listed (200-711-8).

### Section 16 — Other Information

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# FLINN SCIENTIFIC INC.

"Your Safer Source for Science Supplies"

## Material Safety Data Sheet (MSDS)

MSDS #: 494.00

Revision Date: March 15, 2001

---

### Section 1 — Chemical Product and Company Identification

---

#### Marble Chips

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### Section 2 — Composition, Information on Ingredients

---

Marble Chips

Synonym: calcium carbonate

CAS#: 471-34-1

---

### Section 3 — Hazards Identification

---

White marble-looking chips. Odorless.

Dust may be irritating. Substance not considered hazardous. However, not all health aspects of this substance have been thoroughly investigated.

#### FLINN AT-A-GLANCE

Health-0

Flammability-0

Reactivity-0

Exposure-0

Storage-0

0 is low hazard, 3 is high hazard

---

### Section 4 — First Aid Measures

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash continuously with fresh water for 15 minutes.

Internal: Give large quantities of water. Call a physician or poison control at once.

---

### Section 5 — Fire Fighting Measures

---

Non combustible solid.

#### NFPA CODE

None established

---

### Section 6 — Accidental Release Measures

---

Sweep up and place in school trash.

---

### Section 7 — Handling and Storage

---

Flinn Suggested Chemical Storage Pattern: Inorganic #4. Store with hydroxides, oxides, silicates and carbonates.

Store in a cool dry place.

---

### Section 8 — Exposure Controls, Personal Protection

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron.

### Section 9 — Physical and Chemical Properties

White marble-looking chips. Odorless.  
Solubility: Slightly soluble in water. Soluble in acids with evolution of carbon dioxide. Decomposes at 825 C.  
Formula: CaCO<sub>3</sub>  
Formula Weight: 100.09

Specific Gravity: 2.7-2.95

### Section 10 — Stability and Reactivity

Avoid contact with strong oxidizers, acids, magnesium aluminum.  
Shelf life: Indefinite.

### Section 11 — Toxicological Information

Acute effects: Irritant  
Chronic effects: N.A.  
Target organs: N.A.

ORL-RAT LD50: 6450 mg/kg  
IHL-RAT LC50: N.A.  
SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

### Section 12 — Ecological Information

Data not yet available.

### Section 13 — Disposal Considerations

Please consult with state and local regulations.  
Flinn Suggested Disposal Method #26a is one option.

### Section 14 — Transport Information

Shipping Name: Not regulated  
Hazard Class: N/A  
UN Number: N/A

N/A = Not applicable

### Section 15 — Regulatory Information

TSCA-listed, EINECS-listed (207-439-9).

### Section 16 — Other Information

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# FLINN SCIENTIFIC INC.

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## Material Safety Data Sheet (MSDS)

MSDS #: 509.00

Revision Date: March 14, 2001

---

### Section 1 — Chemical Product and Company Identification

---

#### Methyl Alcohol

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### Section 2 — Composition, Information on Ingredients

---

Methyl Alcohol

Synonyms: methanol, wood alcohol

CAS#: 67-56-1

---

### Section 3 — Hazards Identification

---

Clear, colorless liquid. Alcohol odor.

Toxic by ingestion (may cause blindness), inhalation or absorption. Irritating to body tissues.

Avoid body tissue contact.

Flammable liquid.

#### FLINN AT-A-GLANCE

Health-3

Flammability-3

Reactivity-1

Exposure-1

Storage-3

0 is low hazard, 3 is high hazard

---

### Section 4 — First Aid Measures

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash continuously with fresh water for 15 minutes.

Internal: Induce vomiting. Call a physician or poison control at once.

---

### Section 5 — Fire Fighting Measures

---

Flammable liquid.

Flash Point: 54 F Upper 36% Lower: 6% Autoignition Temperature: 725 F

Dangerous fire risk. When heated to decomposition, emits acrid smoke and irritating fumes.

**Fire Fighting Instructions:** Use triclass, dry chemical fire extinguisher. Firefighters should wear PPE and SCBA with full facepiece operated in positive pressure mode.

#### NFPA CODE

H-1

F-3

R-0

---

### Section 6 — Accidental Release Measures

---

Restrict unprotected personnel from area. Remove all ignition sources and ventilate area. Contain spill with sand and absorbent material; deposit in sealed bag or container. See Sections 8 and 13 for further information.

---

### Section 7 — Handling and Storage

---

Flinn Suggested Chemical Storage Pattern: Organic #2. Store with alcohols, glycols, amines and amides.

Store in a dedicated flammables cabinet. If a flammables cabinet is not available, store in Flinn Saf-Stor can.

---

### Section 8 — Exposure Controls, Personal Protection

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron.

Use ventilation to keep airborne concentrations below exposure limits. Always wear a NIOSH-approved respirator with proper cartridges or a positive pressure, air-supplied respirator when handling this material in emergency situations (spill or fire).

Exposure guidelines: TWA 200 ppm, STEL 250 ppm (OSHA, NIOSH)

### Section 9 — Physical and Chemical Properties

Clear, colorless, mobile, highly polar liquid. Alcohol odor.  
Specific Gravity: 0.7924  
Miscible with water, alcohol and ether.  
Formula: CH<sub>3</sub>OH  
Formula Weight: 32.05

Melting Point: -98 C  
Boiling Point: 64.6 C  
Vapor Pressure: 410 mm (50 C)  
Vapor Density: 1.1

### Section 10 — Stability and Reactivity

Avoid contact with acids, acid chlorides, acid anhydrides, oxidizers, reducers, alkali metals.  
Shelf life: Indefinite.

### Section 11 — Toxicological Information

Acute effects: Poison, irritant, GI disturbances  
Chronic effects: N.A.  
Target organs: Eyes, kidneys

ORL-RAT LD50: 5628 mg/kg  
IHL-RAT LC50: 64000 ppm/4H  
SKN-RBT LD50: 15800 mg/kg

N.A. = Not available, not all health aspects of this substance have been fully investigated.

### Section 12 — Ecological Information

Data not yet available.

### Section 13 — Disposal Considerations

Please consult with state and local regulations.  
Flinn Suggested Disposal Method 18a is one option.

### Section 14 — Transport Information

Shipping Name: Methyl Alcohol  
Hazard Class: 3, Flammable liquid  
UN Number: UN1230

N/A = Not applicable

### Section 15 — Regulatory Information

TSCA-listed, EINECS-listed (200-659-6), RCRA code U154.

### Section 16 — Other Information

Consult your copy of the Flinn Scientific Catalog/Reference Manual for additional information about laboratory chemicals. This Material Safety Data Sheet (MSDS) is for guidance and is based upon information and tests believed to be reliable. Flinn Scientific Inc. makes no guarantee of the accuracy or completeness of the data and shall not be liable for any damages relating thereto. The data is offered solely for your consideration, investigation, and verification. Flinn Scientific Inc. assumes no legal responsibility for use or reliance upon this data.

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# FLINN SCIENTIFIC INC.

"Your Safer Source for Science Supplies"

## Material Safety Data Sheet (MSDS)

MSDS #: 516.00

Revision Date: November 25, 2002

---

### Section 1 — Chemical Product and Company Identification

---

## Methyl Orange

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### Section 2 — Composition, Information on Ingredients

---

Methyl Orange

Synonym: C.I. 13025

CAS#: 547-58-0

---

### Section 3 — Hazards Identification

---

Orange powder. Burnt rubber-like odor.  
Highly toxic by ingestion.

#### FLINN AT-A-GLANCE

Health-3  
Flammability-0  
Reactivity-0  
Exposure-0  
Storage-0

0 is low hazard, 3 is high hazard

---

### Section 4 — First Aid Measures

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash continuously with fresh water for 15 minutes.

Internal: Give large quantities of water. Call a physician or poison control at once.

---

### Section 5 — Fire Fighting Measures

---

Non combustible solid.

Release toxic fumes upon decomposition.

**Fire Fighting Instructions:** Use triclass, dry chemical fire extinguisher. Firefighters should wear PPE and SCBA with full facepiece operated in positive pressure mode.

#### NFPA CODE

None Established

---

### Section 6 — Accidental Release Measures

---

Restrict unprotected personnel from area. Sweep up, place in sealed bag or container and dispose. Ventilate area and wash spill site after material pickup is complete. See Sections 8 and 13 for further information.

---

### Section 7 — Handling and Storage

---

Flinn Suggested Chemical Storage Pattern: Organic #9. Store with dyes, indicators, and stains.

Store in a cool dry place. Use and dispense in a hood.

---

### Section 8 — Exposure Controls, Personal Protection

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron. Use exhaust ventilation to keep airborne concentrations low.

### Section 9 — Physical and Chemical Properties

Orange powder. Burnt rubber-like odor.  
Acid/Base indicator: pH 3.0 red to 4.4 yellow.  
Solubility: Soluble in hot water. Insoluble in alcohol.  
Formula: C<sub>14</sub>H<sub>15</sub>N<sub>3</sub>O<sub>3</sub>S.Na  
Formula Weight: 328.33

### Section 10 — Stability and Reactivity

Avoid contact with strong oxidizers.  
Shelf life: Indefinite.

### Section 11 — Toxicological Information

Acute effects: Highly toxic	ORL-RAT LD50: 60 mg/kg
Chronic effects: N.A.	IHL-RAT LC50: N.A.
Target organs: N.A.	SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

### Section 12 — Ecological Information

Data not yet available.

### Section 13 — Disposal Considerations

Please consult with state and local regulations.  
Flinn Suggested Disposal Method #26a is one option.

### Section 14 — Transport Information

Shipping Name: Toxic solids, organic, n.o.s.  
Hazard Class: 6.1, Keep away from food  
UN Number: UN2811

N/A = Not applicable

### Section 15 — Regulatory Information

TSCA-listed, EINECS-listed (208-925-3).

### Section 16 — Other Information

Consult your copy of the Flinn Scientific Catalog/Reference Manual for additional information about laboratory chemicals. This Material Safety Data Sheet (MSDS) is for guidance and is based upon information and tests believed to be reliable. Flinn Scientific Inc. makes no guarantee of the accuracy or completeness of the data and shall not be liable for any damages relating thereto. The data is offered solely for your consideration, investigation, and verification. Flinn Scientific Inc. assumes no legal responsibility for use or reliance upon this data.

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# FLINN SCIENTIFIC INC.

"Your Safer Source for Science Supplies"

## Material Safety Data Sheet (MSDS)

MSDS #: 518.00

Revision Date: November 25, 2002

---

### Section 1 — Chemical Product and Company Identification

---

#### Methyl Red

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### Section 2 — Composition, Information on Ingredients

---

Methyl Red

Synonyms: sodium salt, C.I. 13020

CAS#: 845-10-3

---

### Section 3 — Hazards Identification

---

Orange or gold crystals or powder. Odorless.

Possible irritant. Avoid body tissue contact.

#### FLINN AT-A-GLANCE

Health-0

Flammability-0

Reactivity-0

Exposure-1

Storage-0

0 is low hazard, 3 is high hazard

---

### Section 4 — First Aid Measures

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash continuously with fresh water for 15 minutes.

Internal: Give large quantities of water. Call a physician or poison control at once.

---

### Section 5 — Fire Fighting Measures

---

Not combustible solid.

When heated to decomposition, emits toxic fumes of NO<sub>x</sub>.

**Fire Fighting Instructions:** Use triclass, dry chemical fire extinguisher. Firefighters should wear PPE and SCBA with full facepiece operated in positive pressure mode.

#### NFPA CODE

None Established

---

### Section 6 — Accidental Release Measures

---

Restrict unprotected personnel from area. Sweep up, place in sealed bag or container and dispose. Ventilate area and wash spill site after material pickup is complete. See Sections 8 and 13 for further information.

---

### Section 7 — Handling and Storage

---

Flinn Suggested Chemical Storage Pattern: Organic #9. Store with dyes, indicators, and stains.

Store in a cool dry place. Use and dispense in a hood.

---

### Section 8 — Exposure Controls, Personal Protection

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron.

### Section 9 — Physical and Chemical Properties

Orange or gold crystals or powder. Odorless.  
Solubility: Insoluble in water. Soluble in alcohol, ether and acetic acid.

Formula: C<sub>15</sub>H<sub>14</sub>N<sub>3</sub>O<sub>2</sub>Na

Formula Weight: 291.28

Melting Point: 181-182 C

Acid/Base indicator: pH 4.4 red to 6.2 yellow.

### Section 10 — Stability and Reactivity

Avoid contact with strong oxidizers.

Shelf life: Indefinite.

### Section 11 — Toxicological Information

Acute effects: Possible irritant

Chronic effects: Possible mutagen

Target organs: N.A.

ORL-RAT LD50: N.A.

IHL-RAT LC50: N.A.

SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

### Section 12 — Ecological Information

Data not yet available.

### Section 13 — Disposal Considerations

Please consult with state and local regulations.

Flinn Suggested Disposal Method #26a is one option.

### Section 14 — Transport Information

Shipping Name: Not regulated

Hazard Class: N/A

UN Number: N/A

N/A = Not applicable

### Section 15 — Regulatory Information

TSCA-listed, EINECS-listed (212-682-9).

### Section 16 — Other Information

Consult your copy of the Flinn Scientific Catalog/Reference Manual for additional information about laboratory chemicals. This Material Safety Data Sheet (MSDS) is for guidance and is based upon information and tests believed to be reliable. Flinn Scientific Inc. makes no guarantee of the accuracy or completeness of the data and shall not be liable for any damages relating thereto. The data is offered solely for your consideration, investigation, and verification. Flinn Scientific Inc. assumes no legal responsibility for use or reliance upon this data.

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(800) 452-1261 Fax (866) 452-1436



# FLINN SCIENTIFIC INC.

"Your Safer Source for Science Supplies"

## Material Safety Data Sheet (MSDS)

MSDS #: 520.00

Revision Date: March 15, 2001

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### Section 1 — Chemical Product and Company Identification

---

## Methyl Salicylate

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### Section 2 — Composition, Information on Ingredients

---

Methyl Salicylate

Synonym: wintergreen oil

CAS#: 119-36-8

---

### Section 3 — Hazards Identification

---

Clear liquid; odor of wintergreen.

Moderately toxic by ingestion. Avoid all body tissue. Severe skin and eye irritant.

#### FLINN AT-A-GLANCE

Health-2

Flammability-1

Reactivity-1

Exposure-1

Storage-1

0 is low hazard, 3 is high hazard

---

### Section 4 — First Aid Measures

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash continuously with fresh water for 15 minutes.

Internal: Give large quantities of water. Call a physician or poison control at once.

---

### Section 5 — Fire Fighting Measures

---

Combustible liquid.

Flash Point: 230 F Autoignition Temperature: 847 F

When heated to decomposition, emits acrid smoke and irritating fumes.

**Fire Fighting Instructions:** Use triclass, dry chemical fire extinguisher. Firefighters should wear PPE and SCBA with full facepiece operated in positive pressure mode.

#### NFPA CODE

H-1

F-1

R-0

---

### Section 6 — Accidental Release Measures

---

Restrict unprotected personnel from area. Remove all ignition sources and ventilate area. Contain spill with sand and absorbent material; deposit in sealed bag or container. See Sections 8 and 13 for further information.

---

### Section 7 — Handling and Storage

---

Flinn Suggested Chemical Storage Pattern: Organic #3. Store with hydrocarbons, esters and aldehydes.

Store in a cool dry place. Store in a Flinn Chem-Saf bag. Use and dispense in a hood.

---

### Section 8 — Exposure Controls, Personal Protection

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron. Use exhaust ventilation to keep airborne concentrations low.

### Section 9 — Physical and Chemical Properties

Clear liquid; odor of wintergreen.  
Solubility: Soluble in alcohol; slightly soluble in water, ether and acetic acid.  
Formula: C<sub>8</sub>H<sub>8</sub>O<sub>3</sub>  
Formula Weight: 152.16

Specific Gravity: 1.180-1.185  
Melting Point: -8.6 C  
Boiling Point: 222 C  
Vapor Pressure: 1 mm (54 C)  
Vapor Density: 5.26

### Section 10 — Stability and Reactivity

Avoid high temperatures, strong oxidizing agents and strong bases.  
Shelf life: Indefinite, if stored safely.

### Section 11 — Toxicological Information

Acute effects: Toxic, irritant  
Chronic effects: N.A.  
Target organs: N.A.

ORL-RAT LD50: 887 mg/kg  
IHL-RAT LC50: N.A.  
SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

### Section 12 — Ecological Information

Data not yet available.

### Section 13 — Disposal Considerations

Please consult with state and local regulations.  
Flinn Suggested Disposal Method 18b is one option.

### Section 14 — Transport Information

Shipping Name: Not regulated  
Hazard Class: N/A  
UN Number: N/A

N/A = Not applicable

### Section 15 — Regulatory Information

TSCA-listed, EINECS-listed (204-317-7).

### Section 16 — Other Information

Consult your copy of the Flinn Scientific Catalog/Reference Manual for additional information about laboratory chemicals. This Material Safety Data Sheet (MSDS) is for guidance and is based upon information and tests believed to be reliable. Flinn Scientific Inc. makes no guarantee of the accuracy or completeness of the data and shall not be liable for any damages relating thereto. The data is offered solely for your consideration, investigation, and verification. Flinn Scientific Inc. assumes no legal responsibility for use or reliance upon this data.

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# FLINN SCIENTIFIC INC.

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## Material Safety Data Sheet (MSDS)

MSDS #: 521.00

Revision Date: November 25, 2002

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### Section 1 — Chemical Product and Company Identification

---

#### Methyl Violet 2B

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### Section 2 — Composition, Information on Ingredients

---

Methyl Violet 2B

Synonyms: basic violet 1, C.I. 42535

CAS#: 8004-87-3

---

### Section 3 — Hazards Identification

---

Greenish, odorless powder.

Moderately toxic by ingestion.

Severe eye irritant and possible skin irritant. Avoid body tissue contact.

#### FLINN AT-A-GLANCE

Health-2

Flammability-0

Reactivity-1

Exposure-1

Storage-0

0 is low hazard, 3 is high hazard

---

### Section 4 — First Aid Measures

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash continuously with fresh water for 15 minutes.

Internal: Give large quantities of water. Call a physician or poison control at once.

---

### Section 5 — Fire Fighting Measures

---

Not combustible solid.

Decomposition releases toxic nitrogen oxide and hydrogen chloride gases.

**Fire Fighting Instructions:** Use triclass, dry chemical fire extinguisher. Firefighters should wear PPE and SCBA with full facepiece operated in positive pressure mode.

#### NFPA CODE

None Established

---

### Section 6 — Accidental Release Measures

---

Restrict unprotected personnel from area. Sweep up, place in sealed bag or container and dispose. Ventilate area and wash spill site after material pickup is complete. See Sections 8 and 13 for further information.

---

### Section 7 — Handling and Storage

---

Flinn Suggested Chemical Storage Pattern: Organic #9. Store with dyes, indicators, and stains.

Store in a cool dry place. Keep container tightly closed. Use and dispense in a hood.

---

### Section 8 — Exposure Controls, Personal Protection

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron.

Use exhaust ventilation to keep airborne concentrations low.

### Section 9 — Physical and Chemical Properties

Greenish, odorless powder.

Solubility: Soluble in water and chloroform; partially in alcohol and glycerol.

Formula: C<sub>24</sub>H<sub>28</sub>N<sub>3</sub>Cl

Formula Weight: 393.96

Specific Gravity: 1.18

Melting Point: 137 C (dec.)

### Section 10 — Stability and Reactivity

Avoid contact with strong oxidizers.

Shelf life: Indefinite.

### Section 11 — Toxicological Information

Acute effects: Toxic, severe eye irritant

Chronic effects: N.A.

Target organs: N.A.

ORL-RAT LD50: 413 mg/kg

IHL-RAT LC50: N.A.

SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

### Section 12 — Ecological Information

Data not yet available.

### Section 13 — Disposal Considerations

Please consult with state and local regulations.

Flinn Suggested Disposal Method #26a is one option.

### Section 14 — Transport Information

Shipping Name: Not regulated

Hazard Class: N/A

UN Number: N/A

N/A = Not applicable

### Section 15 — Regulatory Information

TSCA-listed.

### Section 16 — Other Information

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# FLINN SCIENTIFIC, INC.

## Material Safety Data Sheet (MSDS)

MSDS #: 524.00

Revision Date: April 14, 2008

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### SECTION 1 — CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

---

#### Methylene Blue

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### SECTION 2 — COMPOSITION, INFORMATION ON INGREDIENTS

---

Methylene Blue

Synonyms: biological stain, C.I. 52015

CAS#: 7220-79-3

---

### SECTION 3 — HAZARDS IDENTIFICATION

---

Dark green with bronze-like luster; slight odor. Crystals or powder.  
Slightly toxic by ingestion. Severe eye irritant. Irritating to body tissues.  
Avoid ingestion, inhalation and skin absorption.

#### FLINN AT-A-GLANCE

Health-1  
Flammability-0  
Reactivity-0  
Exposure-1  
Storage-0

0 is low hazard, 3 is high hazard

---

### SECTION 4 — FIRST AID MEASURES

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash continuously with fresh water for 15 minutes.

Internal: Give large quantities of water. Call a physician or poison control at once.

---

### SECTION 5 — FIRE FIGHTING MEASURES

---

Non flammable solid.

When heated to decomposition, emits toxic fumes of NO<sub>x</sub>, SO<sub>x</sub> and Cl<sub>2</sub>.

**Fire Fighting Instructions:** Use triclass, dry chemical fire extinguisher. Firefighters should wear PPE and SCBA with full facepiece operated in positive pressure mode.

#### NFPA CODE

None  
Established

---

### SECTION 6 — ACCIDENTAL RELEASE MEASURES

---

Restrict unprotected personnel from area. Sweep up, place in sealed bag or container and dispose. Ventilate area and wash spill site after material pickup is complete. See Sections 8 and 13 for further information.

---

### SECTION 7 — HANDLING AND STORAGE

---

Flinn Suggested Chemical Storage Pattern: Organic #9. Store with dyes, indicators, and stains.

Store in a cool dry place. Protect from heat and moisture. Use and dispense in a hood.

---

### SECTION 8 — EXPOSURE CONTROLS, PERSONAL PROTECTION

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron. Use exhaust ventilation to keep airborne concentrations low.

---

**SECTION 9 — PHYSICAL AND CHEMICAL PROPERTIES**

---

Dark green with bronze-like luster, slight odor. Crystals or powder. Specific Gravity: 1.335  
Solubility: Soluble in water, alcohol and chloroform. Melting Point: 190 C (dec.)  
Formula: C<sub>16</sub>H<sub>18</sub>ClN<sub>3</sub>S<sub>3</sub>H<sub>2</sub>O  
Formula Weight: 373.90

---

**SECTION 10 — STABILITY AND REACTIVITY**

---

Avoid contact with strong oxidizers, reducers, and strong bases.  
Shelf life: Indefinite.

---

**SECTION 11 — TOXICOLOGICAL INFORMATION**

---

Acute effects: Severe eye irritant, stomach pains, vomiting, diarrhea, nausea, dizziness, headache. ORL-RAT LD50: 1180 mg/kg  
Chronic effects: Possible mutagen. IHL-RAT LC50: N.A.  
Target organs: Blood. SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

---

**SECTION 12 — ECOLOGICAL INFORMATION**

---

Data not yet available.

---

**SECTION 13 — DISPOSAL CONSIDERATIONS**

---

Please consult with state and local regulations.  
Flinn Suggested Disposal Method #26a is one option.

---

**SECTION 14 — TRANSPORT INFORMATION**

---

Shipping Name: Not regulated  
Hazard Class: N/A  
UN Number: N/A  
N/A = Not applicable

---

**SECTION 15 — REGULATORY INFORMATION**

---

TSCA-listed.

---

**SECTION 16 — OTHER INFORMATION**

---

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**Consult your copy of the Flinn Chemical Catalog/Reference Manual  
for additional information about laboratory chemicals**

---

## Material Safety Data Sheet (MSDS)

---

### Section 1 — Chemical Product and Company Identification

---

#### Mineral Oil

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### Section 2 — Composition, Information on Ingredients

---

Mineral Oil

CAS#: 8020-83-5

---

### Section 3 — Hazards Identification

---

White, odorless, transparent fluid.

Substance not considered hazardous. However, not all health aspects of this substance have been thoroughly investigated.

Combustible liquid.

#### FLINN AT-A-GLANCE

Health-0

Flammability-1

Reactivity-0

Exposure-0

Storage-0

0 is low hazard, 3 is high hazard

---

### Section 4 — First Aid Measures

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash continuously with fresh water for 15 minutes.

Internal: Give large quantities of water. Call a physician or poison control at once.

---

### Section 5 — Fire Fighting Measures

---

Combustible liquid.

**Fire Fighting Instructions:** Use triclass, dry chemical fire extinguisher. Firefighters should wear PPE and SCBA with full facepiece operated in positive pressure mode.

#### NFPA CODE

H-0

F-1

R-0

---

### Section 6 — Accidental Release Measures

---

Restrict unprotected personnel from area and ventilate area. Contain spill with sand or absorbent material; deposit in sealed bag or container. See Sections 8 and 13 for further information.

---

### Section 7 — Handling and Storage

---

Flinn Suggested Chemical Storage Pattern: Organic #3. Store with hydrocarbons, esters, aldehydes, and oils.

---

### Section 8 — Exposure Controls, Personal Protection

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron.

# FLINN SCIENTIFIC INC.

"Your Safer Source for Science Supplies"

## Material Safety Data Sheet (MSDS)

Mineral Oil

MSDS #: 529.00

Revision Date: January 16, 2005

### Section 9 — Physical and Chemical Properties

White, odorless, transparent fluid.  
Solubility: Only slightly soluble in water. Insoluble in acids.  
Soluble in many common organic solvents.

Specific Gravity: 0.845-0.860

### Section 10 — Stability and Reactivity

Shelf life: Indefinite

### Section 11 — Toxicological Information

Acute effects: N.A.  
Chronic effects: N.A.  
Target organs: N.A.

ORL-RAT LD50: N.A.  
IHL-RAT LC50: N.A.  
SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

### Section 12 — Ecological Information

Data not yet available.

### Section 13 — Disposal Considerations

Please consult with state and local regulations.  
Flinn Suggested Disposal Method 18b is one option.

### Section 14 — Transport Information

Shipping Name: Not regulated  
Hazard Class: N/A  
UN Number: N/A

N/A = Not applicable

### Section 15 — Regulatory Information

Not listed.

### Section 16 — Other Information

Consult your copy of the Flinn Scientific Catalog/Reference Manual for additional information about laboratory chemicals. This Material Safety Data Sheet (MSDS) is for guidance and is based upon information and tests believed to be reliable. Flinn Scientific Inc. makes no guarantee of the accuracy or completeness of the data and shall not be liable for any damages relating thereto. The data is offered solely for your consideration, investigation, and verification. Flinn Scientific Inc. assumes no legal responsibility for use or reliance upon this data.

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## Material Safety Data Sheet (MSDS)

MSDS #: 530.07

Revision Date: November 25, 2002

---

### Section 1 — Chemical Product and Company Identification

---

## Molisch Reagent

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### Section 2 — Composition, Information on Ingredients

---

1-Naphthol (90-15-3) 5%, Ethyl Alcohol (64-17-5) 95%

CAS#: None Established

---

### Section 3 — Hazards Identification

---

Colorless to brown liquid with an ethyl alcohol-like odor.  
Contains ethyl alcohol. Toxic by ingestion and inhalation. Body tissue irritant.

#### FLINN AT-A-GLANCE

Health-3  
Flammability-3  
Reactivity-1  
Exposure-1  
Storage-3

0 is low hazard, 3 is high hazard

---

### Section 4 — First Aid Measures

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.  
Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.  
Eye: Immediately flush with fresh water for 15 minutes.  
External: Wash continuously with fresh water for 15 minutes.  
Internal: Rinse out mouth, give 1 to 2 cups of water or milk, induce vomiting. Call a physician or poison control at once.

---

### Section 5 — Fire Fighting Measures

---

Flammable liquid.  
Contains ethyl alcohol, severe fire risk.  
**Fire Fighting Instructions:** Use triclass, dry chemical fire extinguisher. Firefighters should wear PPE and SCBA with full facepiece operated in positive pressure mode.

#### NFPA CODE

None Established

---

### Section 6 — Accidental Release Measures

---

Restrict unprotected personnel from area. Remove all ignition sources and ventilate area. Contain spill with sand and absorbent material; deposit in sealed bag or container. See Sections 8 and 13 for further information.

---

### Section 7 — Handling and Storage

---

Flinn Suggested Chemical Storage Pattern: Organic #2. Store with alcohols, glycols, amines and amides.  
Store in a dedicated flammables cabinet. If a flammables cabinet is not available, store in Flinn Saf-Stor can.  
Use and dispense in a hood.

---

### Section 8 — Exposure Controls, Personal Protection

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron.  
Use ventilation to keep airborne concentrations below exposure limits. Always wear a NIOSH-approved respirator with proper cartridges or a positive pressure, air-supplied respirator when handling this material in emergency situations (spill or fire).  
Exposure guidelines: TWA 1000 ppm, as ethyl alcohol. (OSHA)

---

### Section 9 — Physical and Chemical Properties

---

Colorless to brown liquid with an ethyl alcohol-like odor.

---

### Section 10 — Stability and Reactivity

---

Avoid heat.

Shelf life: Fair. Naphthol darkens on exposure to light.

---

### Section 11 — Toxicological Information

---

Acute effects: Toxic, irritant

Chronic effects: N.A.

Target organs: N.A.

ORL-RAT LD50: 7060 mg/kg as ethyl alcohol

IHL-RAT LC50: N.A.

SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

---

### Section 12 — Ecological Information

---

Data not yet available.

---

### Section 13 — Disposal Considerations

---

Please consult with state and local regulations.

Flinn Suggested Disposal Method #18b is one option.

---

### Section 14 — Transport Information

---

Shipping Name: Not regulated

Hazard Class: N/A

UN Number: N/A

N/A = Not applicable

---

### Section 15 — Regulatory Information

---

Not listed.

---

### Section 16 — Other Information

---

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MSDS Number: N2730 \* \* \* \* Effective Date: 02/26/07 \* \* \* \* Supercedes: 11/10/05



From: Mallinckrodt Baker, Inc.  
222 Red School Lane  
Phillipsburg, NJ 08865



24 Hour Emergency Telephone: 908-859-2151  
CHEMTREC: 1-800-424-9300

National Response in Canada  
CANUTEC: 613-996-6666

Outside U.S. And Canada  
Chemtrec: 703-527-3887

NOTE: CHEMTREC, CANUTEC and National Response Center emergency numbers to be used only in the event of chemical emergencies involving a spill, leak, fire, exposure or accident involving chemicals.

All non-emergency questions should be directed to Customer Service (1-800-582-2537) for assistance.

# NIACIN

## 1. Product Identification

**Synonyms:** Nicotinic acid; 3-carboxypyridine; 3-pyridinecarboxylic acid

**CAS No.:** 59-67-6

**Molecular Weight:** 123.11

**Chemical Formula:** C<sub>6</sub>H<sub>5</sub>NO<sub>2</sub>

**Product Codes:** 2745

## 2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
Niacin	59-67-6	99 - 100%	No

## 3. Hazards Identification

### Emergency Overview

As part of good industrial and personal hygiene and safety procedure, avoid all unnecessary exposure to the chemical substance and ensure prompt removal from skin, eyes and clothing.

SAF-T-DATA<sup>(tm)</sup> Ratings (Provided here for your convenience)

Health Rating: 1 - Slight (Life)

Flammability Rating: 1 - Slight

Reactivity Rating: 1 - Slight

Contact Rating: 1 - Slight

Lab Protective Equip: GOGGLES; LAB COAT; PROPER GLOVES

Storage Color Code: Green (General Storage)

### Potential Health Effects

---

**Inhalation:**

No adverse health effects expected from inhalation. May cause mild irritation to the respiratory tract.

**Ingestion:**

Not expected to be a health hazard via ingestion. Extremely large oral dosages may produce gastrointestinal disturbances. May cause a transient flushing, itching and burning of the skin of the upper trunk, usually brief without other complications.

**Skin Contact:**

No adverse effects expected.

**Eye Contact:**

No adverse effects expected but dust may cause mechanical irritation.

**Chronic Exposure:**

May cause depressed liver function and activation of peptic ulcer. Tumorigenic effects noted in animals.

**Aggravation of Pre-existing Conditions:**

Persons with impaired kidney function may be more susceptible to the effects of the substance.

---

## 4. First Aid Measures

**Inhalation:**

Remove to fresh air. Get medical attention for any breathing difficulty.

**Ingestion:**

If large amounts were swallowed, give water to drink and get medical advice.

**Skin Contact:**

Wash exposed area with soap and water. Get medical advice if irritation develops.

**Eye Contact:**

Wash thoroughly with running water. Get medical advice if irritation develops.

---

## 5. Fire Fighting Measures

**Fire:**

As with most organic solids, fire is possible at elevated temperatures or by contact with an ignition source.

**Explosion:**

Not considered to be an explosion hazard.

**Fire Extinguishing Media:**

Water spray, dry chemical, alcohol foam, or carbon dioxide.

**Special Information:**

In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode.

---

## 6. Accidental Release Measures

Ventilate area of leak or spill. Wear appropriate personal protective equipment as specified in Section 8. Spills: Sweep up and containerize for reclamation or disposal. Vacuuming or wet sweeping may be used to avoid dust dispersal.

---

## 7. Handling and Storage

Keep in a tightly closed container. Protect from physical damage. Store in a cool, dry, ventilated area away from sources of heat, moisture and incompatibilities. Containers of this material may be hazardous when empty since

they retain product residues (dust, solids); observe all warnings and precautions listed for the product.

---

## 8. Exposure Controls/Personal Protection

### **Airborne Exposure Limits:**

None established.

### **Ventilation System:**

A system of local and/or general exhaust is recommended to keep employee exposures as low as possible. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, *Industrial Ventilation, A Manual of Recommended Practices*, most recent edition, for details.

### **Personal Respirators (NIOSH Approved):**

For conditions of use where exposure to dust or mist is apparent and engineering controls are not feasible, a particulate respirator (NIOSH type N95 or better filters) may be worn. If oil particles (e.g. lubricants, cutting fluids, glycerine, etc.) are present, use a NIOSH type R or P filter. For emergencies or instances where the exposure levels are not known, use a full-face positive-pressure, air-supplied respirator. **WARNING:** Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.

### **Skin Protection:**

Wear protective gloves and clean body-covering clothing.

### **Eye Protection:**

Use chemical safety goggles. Maintain eye wash fountain and quick-drench facilities in work area.

---

## 9. Physical and Chemical Properties

### **Appearance:**

White crystals or crystalline powder.

### **Odor:**

Slightly amine to odorless.

### **Solubility:**

Slightly soluble in water.

### **Specific Gravity:**

1.473

### **pH:**

2.7 (saturated aqueous solution).

### **% Volatiles by volume @ 21C (70F):**

0

### **Boiling Point:**

Sublimes.

### **Melting Point:**

237C (459F)

### **Vapor Density (Air=1):**

4.25

### **Vapor Pressure (mm Hg):**

No information found.

### **Evaporation Rate (BuAc=1):**

No information found.

---

## 10. Stability and Reactivity

### **Stability:**

Stable under ordinary conditions of use and storage.

### **Hazardous Decomposition Products:**

Burning may produce carbon monoxide, carbon dioxide, nitrogen oxides.

### **Hazardous Polymerization:**

Will not occur.

**Incompatibilities:**

Strong oxidizers.

**Conditions to Avoid:**

Heat, flame, sources of ignition, light and incompatibles.

## 11. Toxicological Information

Oral rat LD50: 7,000 mg/kg. Investigated as a tumorigen.

-----\Cancer Lists\-----			
Ingredient	---NTP Carcinogen---		IARC Category
	Known	Anticipated	
Niacin (59-67-6)	No	No	None

## 12. Ecological Information

**Environmental Fate:**

When released into the soil, this material is expected to readily biodegrade. When released into water, this material is expected to readily biodegrade. When released into the air, this material may be moderately degraded by reaction with photochemically produced hydroxyl radicals. When released into the air, this material may be removed from the atmosphere to a moderate extent by wet deposition.

**Environmental Toxicity:**

No information found.

## 13. Disposal Considerations

Whatever cannot be saved for recovery or recycling should be managed in an appropriate and approved waste disposal facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

## 14. Transport Information

Not regulated.

## 15. Regulatory Information

-----\Chemical Inventory Status - Part 1\-----				
Ingredient	TSCA	EC	Japan	Australia
Niacin (59-67-6)	Yes	Yes	Yes	Yes

-----\Chemical Inventory Status - Part 2\-----				
Ingredient	Korea	--Canada--		Phil.
		DSL	NDSL	
Niacin (59-67-6)	Yes	Yes	No	Yes

-----\Federal, State & International Regulations - Part 1\-----				
Ingredient	-SARA 302-		-----SARA 313-----	
	RQ	TPQ	List	Chemical Catg.
Niacin (59-67-6)				

Niacin (59-67-6)	No	No	No	Nicotine sal
-----\Federal, State & International Regulations - Part 2\-----				
Ingredient	CERCLA	-RCRA-	-TSCA-	
		261.33	8 (d)	
-----				
Niacin (59-67-6)	No	No	No	

Chemical Weapons Convention: No      TSCA 12 (b): No      CDTA: No  
 SARA 311/312: Acute: No      Chronic: No      Fire: No      Pressure: No  
 Reactivity: No      (Pure / Solid)

**Australian Hazchem Code:** None allocated.  
**Poison Schedule:** None allocated.

**WHMIS:**

This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

## 16. Other Information

**NFPA Ratings:** Health: 1 Flammability: 1 Reactivity: 0

**Label Hazard Warning:**

As part of good industrial and personal hygiene and safety procedure, avoid all unnecessary exposure to the chemical substance and ensure prompt removal from skin, eyes and clothing.

**Label Precautions:**

None.

**Label First Aid:**

Not applicable.

**Product Use:**

Laboratory Reagent.

**Revision Information:**

MSDS Section(s) changed since last revision of document include: 3.

**Disclaimer:**

\*\*\*\*\*

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\*\*\*\*\*

**Prepared by:** Environmental Health & Safety  
 Phone Number: (314) 654-1600 (U.S.A.)

# FLINN SCIENTIFIC INC.

"Your Safer Source for Science Supplies"

## Material Safety Data Sheet (MSDS)

MSDS #: 550.00

Revision Date: November 25, 2002

---

### Section 1 — Chemical Product and Company Identification

---

#### Ninhydrin

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### Section 2 — Composition, Information on Ingredients

---

Ninhydrin

Synonyms: 1,2,3,-indantrione, monohydrate

CAS#: 485-47-2

---

### Section 3 — Hazards Identification

---

White to yellowish crystals or powder; characteristic odor of fresh paint. Turns red when heated above 100C.

Irritant to skin and mucous membranes. May cause reddening and inflammation to the skin.

Avoid all body tissue contact. Slightly toxic by ingestion.

#### FLINN AT-A-GLANCE

Health-1

Flammability-0

Reactivity-1

Exposure-1

Storage-1

0 is low hazard, 3 is high hazard

---

### Section 4 — First Aid Measures

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash continuously with fresh water for 15 minutes.

Internal: Give large quantities of water. Call a physician or poison control at once.

---

### Section 5 — Fire Fighting Measures

---

Non combustible solid.

#### NFPA CODE

None Established

---

### Section 6 — Accidental Release Measures

---

Restrict unprotected personnel from area. Sweep up, place in sealed bag or container and dispose. Ventilate area and wash spill site after material pickup is complete. See Sections 8 and 13 for further information.

---

### Section 7 — Handling and Storage

---

Flinn Suggested Chemical Storage Pattern: Organic #2. Store with alcohols, glycols, amines and amides.

Store in a cool dry place. Light sensitive, store in Flinn Chem-Saf bag. Use and dispense in a hood.

---

### Section 8 — Exposure Controls, Personal Protection

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron.

Use exhaust ventilation to keep airborne concentrations low.



### Section 9 — Physical and Chemical Properties

White to yellowish crystals or powder; characteristic odor of fresh paint. Turns red when heated above 100 C.

Solubility: Soluble in both water and alcohol.

Formula:  $C_6H_4-1,2-(CO)_2CO \cdot H_2O$

Formula Weight: 195.15

Melting Point: 240-245 C

### Section 10 — Stability and Reactivity

Avoid strong bases and amines.

Shelf life: Indefinite, but light sensitive.

### Section 11 — Toxicological Information

Acute effects: Irritant, reddening and inflammation of skin.

Chronic effects: N.A.

Target organs: N.A.

ORL-RAT LD50: N.A.

IHL-RAT LC50: N.A.

SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

### Section 12 — Ecological Information

Data not yet available.

### Section 13 — Disposal Considerations

Please consult with state and local regulations.

Flinn Suggested Disposal Method 18b is one option.

### Section 14 — Transport Information

Shipping Name: Not regulated

Hazard Class: N/A

UN Number: N/A

N/A = Not applicable

### Section 15 — Regulatory Information

TSCA-listed, EINECS-listed (207-618-1).

### Section 16 — Other Information

Consult your copy of the Flinn Scientific Catalog/Reference Manual for additional information about laboratory chemicals. This Material Safety Data Sheet (MSDS) is for guidance and is based upon information and tests believed to be reliable. Flinn Scientific Inc. makes no guarantee of the accuracy or completeness of the data and shall not be liable for any damages relating thereto. The data is offered solely for your consideration, investigation, and verification. Flinn Scientific Inc. assumes no legal responsibility for use or reliance upon this data.

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# FLINN SCIENTIFIC INC.

"Your Safer Source for Science Supplies"

## Material Safety Data Sheet (MSDS)

MSDS #: 552.00

Revision Date: March 14, 2001

---

### Section 1 — Chemical Product and Company Identification

---

#### Nitric Acid

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### Section 2 — Composition, Information on Ingredients

---

Nitric Acid

Synonym: 15.8 thru 8 Molar

CAS#: 7697-37-2

---

### Section 3 — Hazards Identification

---

Clear, colorless or yellowish, fuming, suffocating liquid. Yellow color (if present) results from exposure to light and release of nitrogen dioxide.

Severely corrosive; will cause severe damage to eyes, skin and mucous membranes. Toxic by ingestion and inhalation. Strong oxidizer. Avoid contact with acetic acid and readily oxidized substances.

#### FLINN AT-A-GLANCE

Health-3  
Flammability-0  
Reactivity-3  
Exposure-3  
Storage-3

0 is low hazard, 3 is high hazard

---

### Section 4 — First Aid Measures

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash continuously with fresh water for 15 minutes.

Internal: Give large quantities of water. May also give gastric antacids such as Milk of Magnesia. Call a physician or poison control at once.

---

### Section 5 — Fire Fighting Measures

---

Non flammable liquid.

Strong oxidizer. Dangerous fire risk in contact with acetic acid, combustible or organic materials.

When heated to decomposition, emits toxic fumes of NO<sub>x</sub> and hydrogen nitrate.

Fire Fighting Instructions: Use triclass, dry chemical fire extinguisher. Firefighters should wear PPE and SCBA with full facepiece operated in positive pressure mode.

#### NFPA CODE

H-4  
F-0  
R-0  
OX

---

### Section 6 — Accidental Release Measures

---

Restrict unprotected personnel from area. Remove all ignition sources and ventilate area. Contain spill with sand and absorbent material, neutralize with sodium bicarbonate or calcium hydroxide and deposit in sealed bag or container. See Sections 8 and 13 for further information.

---

### Section 7 — Handling and Storage

---

Flinn Suggested Chemical Storage Pattern: Inorganic #3. Store with amides, nitrates and nitrites.

Store in a dedicated acid cabinet and away from any source of water; if an acid cabinet is not available, store in Flinn Saf-Cube.

Never store with acetic acid. Use and dispense in a hood.

---

### Section 8 — Exposure Controls, Personal Protection

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron.

Use ventilation to keep airborne concentrations below exposure limits. Always wear a NIOSH-approved respirator with proper cartridges or a positive pressure, air-supplied respirator when handling this material in emergency situations (spill or fire).

Exposure guidelines: TWA 2 ppm, STEL 4 ppm (OSHA, NIOSH)

### Section 9 — Physical and Chemical Properties

Transparent, colorless or yellowish, fuming, suffocating, corrosive liquid.

Solubility: Miscible with water. Hygroscopic.

Formula: HNO<sub>3</sub>

Formula Weight: 63.01

Specific Gravity: 1.504

Nitric Acid, 69%, 15.8m

### Section 10 — Stability and Reactivity

Avoid contact with bases, reducers, alcohols, alkali metals, brass, copper, copper alloys, galvanized iron, aluminum, corrodes steel, organic materials, amines, acetic acid, and readily oxidized substances.

Shelf life: Fair, product may turn yellow due to exposure to light.

### Section 11 — Toxicological Information

Acute effects: Poison, corrosive

Chronic effects: N.A.

Target organs: N.A.

ORL-RAT LD50: N.A.

IHL-RAT LC50: 2500 ppm/1hr.

SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

### Section 12 — Ecological Information

Data not yet available.

### Section 13 — Disposal Considerations

Please consult with state and local regulations.

Flinn Suggested Disposal Method #24b is one option.

### Section 14 — Transport Information

Shipping Name: Nitric acid

Hazard Class: 8, Corrosive

UN Number: UN2031

N/A = Not applicable

### Section 15 — Regulatory Information

TSCA-listed, EINECS-listed (231-714-2), RCRA code D001, D002, D003.

### Section 16 — Other Information

Consult your copy of the Flinn Scientific Catalog/Reference Manual for additional information about laboratory chemicals. This Material Safety Data Sheet (MSDS) is for guidance and is based upon information and tests believed to be reliable. Flinn Scientific Inc. makes no guarantee of the accuracy or completeness of the data and shall not be liable for any damages relating thereto. The data is offered solely for your consideration, investigation, and verification. Flinn Scientific Inc. assumes no legal responsibility for use or reliance upon this data.

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# FLINN SCIENTIFIC INC.

"Your Safer Source for Science Supplies"

## Material Safety Data Sheet (MSDS)

MSDS #: 562.00

Revision Date: March 15, 2001

---

### Section 1 — Chemical Product and Company Identification

---

#### Oleic Acid

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### Section 2 — Composition, Information on Ingredients

---

Oleic Acid

Synonym: red oil, cis-9-octadenoic acid

CAS#: 112-80-1

---

### Section 3 — Hazards Identification

---

Clear, oily liquid. Darkens on exposure to air. Wax-like odor.  
Irritating to skin and mucous membranes. Avoid all body tissue contact.  
Combustible liquid.

#### FLINN AT-A-GLANCE

Health-0  
Flammability-1  
Reactivity-0  
Exposure-1  
Storage-1

0 is low hazard, 3 is high hazard

---

### Section 4 — First Aid Measures

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash continuously with fresh water for 15 minutes.

Internal: Give large quantities of water. Call a physician or poison control at once.

---

### Section 5 — Fire Fighting Measures

---

Class IIIB Combustible liquid.

Flash Point: 230 F

**Fire Fighting Instructions:** Use triclass, dry chemical fire extinguisher. Firefighters should wear PPE and SCBA with full facepiece operated in positive pressure mode.

#### NFPA CODE

H-0  
F-1  
R-0

---

### Section 6 — Accidental Release Measures

---

Restrict unprotected personnel from area and ventilate area. Contain spill with sand or absorbent material; deposit in sealed bag or container. See Sections 8 and 13 for further information.

---

### Section 7 — Handling and Storage

---

Flinn Suggested Chemical Storage Pattern: Organic #1. Store with acids, anhydrides and peracids.

Keep container tightly closed; darkens on exposure to air. Store in a Flinn Chem-Saf bag. Refrigerate.

---

### Section 8 — Exposure Controls, Personal Protection

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron.

### Section 9 — Physical and Chemical Properties

Clear, oily liquid. Darkens on exposure to air. Wax like odor.  
Solubility: Soluble in most organic solvents and alcohol.  
Insoluble in water.  
Formula: C<sub>18</sub>H<sub>34</sub>O<sub>2</sub>  
Formula Weight: 282.52

Specific Gravity: 0.895  
Melting Point: 14 C  
Boiling Point: 194-195 @ 1.2mm

### Section 10 — Stability and Reactivity

Shelf life: Fair.

### Section 11 — Toxicological Information

Acute effects: Irritant  
Chronic effects: N.A.  
Target organs: N.A.

ORL-RAT LD50: 74 gm/kg  
IHL-RAT LC50: N.A.  
SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

### Section 12 — Ecological Information

Data not yet available.

### Section 13 — Disposal Considerations

Please consult with state and local regulations.  
Flinn Suggested Disposal Method #24a is one option.

### Section 14 — Transport Information

Shipping Name: Not regulated  
Hazard Class: N/A  
UN Number: N/A

N/A = Not applicable

### Section 15 — Regulatory Information

TSCA-listed, EINECS-listed (204-007-1).

### Section 16 — Other Information

Consult your copy of the Flinn Scientific Catalog/Reference Manual for additional information about laboratory chemicals. This Material Safety Data Sheet (MSDS) is for guidance and is based upon information and tests believed to be reliable. Flinn Scientific Inc. makes no guarantee of the accuracy or completeness of the data and shall not be liable for any damages relating thereto. The data is offered solely for your consideration, investigation, and verification. Flinn Scientific Inc. assumes no legal responsibility for use or reliance upon this data.

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# FLINN SCIENTIFIC INC.

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## Material Safety Data Sheet (MSDS)

MSDS #: 571.00

Revision Date: March 14, 2001

---

### Section 1 — Chemical Product and Company Identification

---

#### Oxalic Acid

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### Section 2 — Composition, Information on Ingredients

---

Oxalic Acid, dihydrate

Synonym: ethandionic acid

CAS#: 6153-56-6

---

### Section 3 — Hazards Identification

---

White, odorless crystalline solid.

Moderately toxic by ingestion and inhalation. Corrosive to body tissues. Will cause burns.

Avoid all body contact.

#### FLINN AT-A-GLANCE

Health-2

Flammability-1

Reactivity-1

Exposure-2

Storage-0

0 is low hazard, 3 is high hazard

---

### Section 4 — First Aid Measures

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash continuously with fresh water for 15 minutes.

Internal: Give 1 to 2 cups of water or milk, followed by a gastric antacid, such as milk of magnesia. Do not induce vomiting. Call a physician or poison control at once.

---

### Section 5 — Fire Fighting Measures

---

Combustible solid.

**Fire Fighting Instructions:** Use triclass, dry chemical fire extinguisher. Firefighters should wear PPE and SCBA with full facepiece operated in positive pressure mode.

#### NFPA CODE

H-3

F-1

R-0

---

### Section 6 — Accidental Release Measures

---

Restrict unprotected personnel from area. Sweep up, place in sealed bag or container and dispose. Ventilate area and wash spill site after material pickup is complete. See Sections 8 and 13 for further information.

---

### Section 7 — Handling and Storage

---

Flinn Suggested Chemical Storage Pattern: Organic 1. Store with acids, anhydrides and peracids.

Store in a cool dry place. Use and dispense in a hood.

---

### Section 8 — Exposure Controls, Personal Protection

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron.

Use ventilation to keep airborne concentrations below exposure limits. Always wear a NIOSH-approved respirator with proper cartridges or a positive pressure, air-supplied respirator when handling this material in emergency situations (spill or fire).

Exposure guidelines: TWA 1 mg/m<sup>3</sup>, STEL 2mg/m<sup>3</sup> (OSHA, ACGIH)

### Section 9 — Physical and Chemical Properties

White, odorless crystalline solid.

Solubility: Partially soluble in water or alcohol.

Formula: H<sub>2</sub>C<sub>2</sub>O<sub>4</sub> 2H<sub>2</sub>O

Formula Weight: 126.07

Specific Gravity: 1.653

Melting Point: 101.5 C (dihydrate)

### Section 10 — Stability and Reactivity

Avoid contact with bases, acid chlorides, alkali metals, corrodes steel.

Shelf life: Indefinite.

### Section 11 — Toxicological Information

Acute effects: Toxic, corrosive, dermatitis, abdominal pain

Chronic effects: N.A.

Target organs: Kidneys, nerves

ORL-RAT LD50: 375 mg/kg

IHL-RAT LC50: N.A.

SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

### Section 12 — Ecological Information

Data not yet available.

### Section 13 — Disposal Considerations

Please consult with state and local regulations.

Flinn Suggested Disposal Method #24a is one option.

### Section 14 — Transport Information

Shipping Name: Not regulated

Hazard Class: N/A

UN Number: N/A

N/A = Not applicable

### Section 15 — Regulatory Information

TSCA-listed, EINECS-listed (205-6343-3), RCRA code D002.

### Section 16 — Other Information

Consult your copy of the Flinn Scientific Catalog/Reference Manual for additional information about laboratory chemicals. This Material Safety Data Sheet (MSDS) is for guidance and is based upon information and tests believed to be reliable. Flinn Scientific Inc. makes no guarantee of the accuracy or completeness of the data and shall not be liable for any damages relating thereto. The data is offered solely for your consideration, investigation, and verification. Flinn Scientific Inc. assumes no legal responsibility for use or reliance upon this data.

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# FLINN SCIENTIFIC INC.

"Your Safer Source for Science Supplies"

## Material Safety Data Sheet (MSDS)

MSDS #: 574.00

Revision Date: November 25, 2002

---

### Section 1 — Chemical Product and Company Identification

---

#### Pancreatin and Solutions

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### Section 2 — Composition, Information on Ingredients

---

Pancreatin And Pancreatin Solutions: Pancreatin (8049-47-6) 0.5% and Water (7732-18-5) 99.5%.

CAS#: 8049-47-6

---

### Section 3 — Hazards Identification

---

Yellowish, amorphous powder. Cloudy liquid as solution. Sour malt odor.

Substance not considered hazardous. However, not all health aspects of this substance have been thoroughly investigated.

#### FLINN AT-A-GLANCE

Health-0  
Flammability-0  
Reactivity-0  
Exposure-0  
Storage-0

0 is low hazard, 3 is high hazard

---

### Section 4 — First Aid Measures

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash continuously with fresh water for 15 minutes.

Internal: Give large quantities of water. Call a physician or poison control at once.

---

### Section 5 — Fire Fighting Measures

---

Non flammable solid.

#### NFPA CODE

None Established

---

### Section 6 — Accidental Release Measures

---

Solid: Restrict unprotected personnel from area. Sweep up, place in sealed bag or container and dispose. Ventilate area and wash spill site after material pickup is complete. See Sections 8 and 13 for further information.

Liquid: Restrict unprotected personnel from area and ventilate area. Contain spill with sand or absorbent material; deposit in sealed bag or container. See Sections 8 and 13 for further information.

---

### Section 7 — Handling and Storage

---

Flinn Suggested Chemical Storage Pattern: Organic #2. Store with alcohols, glycols, amines and amides.

Keep refrigerated.

---

### Section 8 — Exposure Controls, Personal Protection

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron.



---

### Section 9 — Physical and Chemical Properties

---

Yellowish, amorphous powder. Sour malt odor.  
Solubility: Soluble in water. Insoluble in alcohol.

---

### Section 10 — Stability and Reactivity

---

Shelf life: Good, only if kept refrigerated.

---

### Section 11 — Toxicological Information

---

Acute effects: N.A.	ORL-RAT LD50: N.A.
Chronic effects: N.A.	IHL-RAT LC50: N.A.
Target organs: N.A.	SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

---

### Section 12 — Ecological Information

---

Data not yet available.

---

### Section 13 — Disposal Considerations

---

Please consult with state and local regulations.  
Flinn Suggested Disposal Method #26a is one option.

---

### Section 14 — Transport Information

---

Shipping Name: Not regulated  
Hazard Class: N/A  
UN Number: N/A

N/A = Not applicable

---

### Section 15 — Regulatory Information

---

Not listed.

---

### Section 16 — Other Information

---

Consult your copy of the Flinn Scientific Catalog/Reference Manual for additional information about laboratory chemicals. This Material Safety Data Sheet (MSDS) is for guidance and is based upon information and tests believed to be reliable. Flinn Scientific Inc. makes no guarantee of the accuracy or completeness of the data and shall not be liable for any damages relating thereto. The data is offered solely for your consideration, investigation, and verification. Flinn Scientific Inc. assumes no legal responsibility for use or reliance upon this data.

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# FLINN SCIENTIFIC INC.

"Your Safer Source for Science Supplies"

## Material Safety Data Sheet (MSDS)

MSDS #: 575.00

Revision Date: March 14, 2001

---

### Section 1 — Chemical Product and Company Identification

---

#### Paraffin Wax

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### Section 2 — Composition, Information on Ingredients

---

Paraffin Wax

CAS#: 8002-74-2

---

### Section 3 — Hazards Identification

---

White, odorless, translucent solid.

Substance not considered hazardous. However, not all health aspects of this substance have been thoroughly investigated.

#### FLINN AT-A-GLANCE

Health-0  
Flammability-1  
Reactivity-0  
Exposure-0  
Storage-0

0 is low hazard, 3 is high hazard

---

### Section 4 — First Aid Measures

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash with mild soap and water.

---

### Section 5 — Fire Fighting Measures

---

Combustible solid.

**Fire Fighting Instructions:** Use triclass, dry chemical fire extinguisher. Firefighters should wear PPE and SCBA with full facepiece operated in positive pressure mode.

#### NFPA CODE

None established

---

### Section 6 — Accidental Release Measures

---

Restrict unprotected personnel from area. Sweep up, place in sealed bag or container and dispose. Ventilate area and wash spill site after material pickup is complete. See Sections 8 and 13 for further information.

---

### Section 7 — Handling and Storage

---

Flinn Suggested Chemical Storage Pattern: Organic #3. Store with hydrocarbons, esters, aldehydes and oils.

---

### Section 8 — Exposure Controls, Personal Protection

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron. Use ventilation to keep airborne concentrations below exposure limits. Always wear a NIOSH-approved respirator with proper cartridges or a positive pressure, air-supplied respirator when handling this material in emergency situations (spill or fire).

Exposure guidelines: TWA 2mg/m<sup>3</sup>, (NIOSH)

### Section 9 — Physical and Chemical Properties

White, odorless, translucent solid.  
Solubility: Insoluble in water.  
Mixture of solid hydrocarbons of high molecular weight.

Specific Gravity: 0.880-0.915  
Melting Point: 50-57 C

### Section 10 — Stability and Reactivity

Shelf Life: Indefinite.

### Section 11 — Toxicological Information

Acute effects: N.A.  
Chronic effects: N.A.  
Target organs: N.A.

ORL-RAT LD50: N.A.  
IHL-RAT LC50: N.A.  
SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

### Section 12 — Ecological Information

Data not yet available.

### Section 13 — Disposal Considerations

Please consult with state and local regulations.  
Flinn Suggested Disposal Method #26a is one option.

### Section 14 — Transport Information

Shipping Name: Not regulated  
Hazard Class: N/A  
UN Number: N/A

N/A = Not applicable

### Section 15 — Regulatory Information

Not listed.

### Section 16 — Other Information

Consult your copy of the Flinn Scientific Catalog/Reference Manual for additional information about laboratory chemicals. This Material Safety Data Sheet (MSDS) is for guidance and is based upon information and tests believed to be reliable. Flinn Scientific Inc. makes no guarantee of the accuracy or completeness of the data and shall not be liable for any damages relating thereto. The data is offered solely for your consideration, investigation, and verification. Flinn Scientific Inc. assumes no legal responsibility for use or reliance upon this data.

**FLINN SCIENTIFIC INC.**

"Your Safer Source for Science Supplies"

*Reduce Science Accidents--  
Use Flinn Chemicals*

flinn@flinnsci.com www.flinnsci.com  
P.O. Box 219 Batavia IL 60510  
(800) 452-1261 Fax (866) 452-1436

# FLINN SCIENTIFIC INC.

"Your Safer Source for Science Supplies"

## Material Safety Data Sheet (MSDS)

MSDS #: 580.00

Revision Date: November 25, 2002

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### Section 1 — Chemical Product and Company Identification

---

#### Pepsin

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### Section 2 — Composition, Information on Ingredients

---

Pepsin

CAS#: 9001-75-6

---

### Section 3 — Hazards Identification

---

White or yellowish-white; odor of sour malt.  
May be a slight irritant and sensitizer.

#### FLINN AT-A-GLANCE

Health-0  
Flammability-0  
Reactivity-0  
Exposure-1  
Storage-0

0 is low hazard, 3 is high hazard

---

### Section 4 — First Aid Measures

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash continuously with fresh water for 15 minutes.

Internal: Give large quantities of water. Call a physician or poison control at once.

---

### Section 5 — Fire Fighting Measures

---

Non flammable solid.

Fine powder when mixed with air may be explosive.

**Fire Fighting Instructions:** Use triclass, dry chemical fire extinguisher. Firefighters should wear PPE and SCBA with full facepiece operated in positive pressure mode.

#### NFPA CODE

None Established

---

### Section 6 — Accidental Release Measures

---

Restrict unprotected personnel from area. Sweep up, place in sealed bag or container and dispose. Ventilate area and wash spill site after material pickup is complete. See Sections 8 and 13 for further information.

---

### Section 7 — Handling and Storage

---

Flinn Suggested Chemical Storage Pattern: Organic #2. Store with alcohols, glycols, amines and amides.

Store in a cool dry place. Keep container tightly closed.

---

### Section 8 — Exposure Controls, Personal Protection

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron.

---

### Section 9 — Physical and Chemical Properties

---

White or yellowish-white; odor of sour malt.  
Soluble in water. Insoluble in alcohol.

---

### Section 10 — Stability and Reactivity

---

Avoid contact with alcohol, alkalis, tannins and salts of heavy metals.  
Shelf life: Indefinite.

---

### Section 11 — Toxicological Information

---

Acute effects: Irritant, sensitizer	ORL-RAT LD50: N.A.
Chronic effects: Possible hypersensitization, dermatitis	IHL-RAT LC50: N.A.
Target organs: N.A.	SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

---

### Section 12 — Ecological Information

---

Data not yet available.

---

### Section 13 — Disposal Considerations

---

Please consult with state and local regulations.  
Flinn Suggested Disposal Method #26a is one option.

---

### Section 14 — Transport Information

---

Shipping Name: Not regulated  
Hazard Class: N/A  
UN Number: N/A

N/A = Not applicable

---

### Section 15 — Regulatory Information

---

TSCA-listed.

---

### Section 16 — Other Information

---

Consult your copy of the Flinn Scientific Catalog/Reference Manual for additional information about laboratory chemicals. This Material Safety Data Sheet (MSDS) is for guidance and is based upon information and tests believed to be reliable. Flinn Scientific Inc. makes no guarantee of the accuracy or completeness of the data and shall not be liable for any damages relating thereto. The data is offered solely for your consideration, investigation, and verification. Flinn Scientific Inc. assumes no legal responsibility for use or reliance upon this data.

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flinn@flinnsci.com www.flinnsci.com  
P.O. Box 219 Batavia IL 60510  
(800) 452-1261 Fax (866) 452-1436

# FLINN SCIENTIFIC INC.

"Your Safer Source for Science Supplies"

## Material Safety Data Sheet (MSDS)

MSDS #: 581.00

Revision Date: November 25, 2002

---

### Section 1 — Chemical Product and Company Identification

---

#### Peptone

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### Section 2 — Composition, Information on Ingredients

---

Peptone

CAS#: None Established

---

### Section 3 — Hazards Identification

---

Light brown, amorphous powder. Odor of sour malt.

Substance not considered hazardous. However, not all health aspects of this substance have been thoroughly investigated.

#### FLINN AT-A-GLANCE

Health-0  
Flammability-0  
Reactivity-0  
Exposure-0  
Storage-1

0 is low hazard, 3 is high hazard

---

### Section 4 — First Aid Measures

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash with soap and water.

Internal: Give large quantities of water. Call a physician or poison control at once.

---

### Section 5 — Fire Fighting Measures

---

Non flammable solid.

#### NFPA CODE

None Established

---

### Section 6 — Accidental Release Measures

---

Restrict unprotected personnel from area. Sweep up, place in sealed bag or container and dispose. Ventilate area and wash spill site after material pickup is complete. See Sections 8 and 13 for further information.

---

### Section 7 — Handling and Storage

---

Flinn Suggested Chemical Storage Pattern: Miscellaneous non-hazardous organic materials.

Store in a cool dry place. Store in a Flinn Chem-Saf bag.

---

### Section 8 — Exposure Controls, Personal Protection

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron.

---

### Section 9 — Physical and Chemical Properties

---

Light brown, amorphous powder. Odor of sour malt.  
Solubility: Soluble in water. Insoluble in alcohol.

---

### Section 10 — Stability and Reactivity

---

Shelf life: Indefinite, if kept dry.

---

### Section 11 — Toxicological Information

---

Acute effects: N.A.	ORL-RAT LD50: N.A.
Chronic effects: N.A.	IHL-RAT LC50: N.A.
Target organs: N.A.	SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

---

### Section 12 — Ecological Information

---

Data not yet available.

---

### Section 13 — Disposal Considerations

---

Please consult with state and local regulations.  
Flinn Suggested Disposal Method #26a is one option.

---

### Section 14 — Transport Information

---

Shipping Name: Not regulated  
Hazard Class: N/A  
UN Number: N/A

N/A = Not applicable

---

### Section 15 — Regulatory Information

---

Not listed.

---

### Section 16 — Other Information

---

Consult your copy of the Flinn Scientific Catalog/Reference Manual for additional information about laboratory chemicals. This Material Safety Data Sheet (MSDS) is for guidance and is based upon information and tests believed to be reliable. Flinn Scientific Inc. makes no guarantee of the accuracy or completeness of the data and shall not be liable for any damages relating thereto. The data is offered solely for your consideration, investigation, and verification. Flinn Scientific Inc. assumes no legal responsibility for use or reliance upon this data.

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(800) 452-1261 Fax (866) 452-1436

MSDS Number: **B5635** \* \* \* \* \* *Effective Date: 06/13/07* \* \* \* \* \* *Supercedes: 05/07/07*

<b>MSDS</b> <b>Material Safety Data Sheet</b>  From: Mallinckrodt Baker, Inc. 222 Red School Lane Phillipsburg, NJ 08865	 	24 Hour Emergency Telephone: 908-859-2151 CHEMTREC: 1-800-424-9300
		National Response in Canada CANUTEC: 613-996-6666
All non-emergency questions should be directed to Customer Service (1-800-582-2537) for assistance.		Outside U.S. and Canada Chemtrec: 703-527-3887
<b>NOTE:</b> CHEMTREC, CANUTEC and National Response Center emergency numbers to be used only in the event of chemical emergencies involving a spill, leak, fire, exposure or accident involving chemicals.		

## Buffer Solution (Borate), pH 10

### 1. Product Identification

**Synonyms:** None

**CAS No.:** Not applicable to mixtures.

**Molecular Weight:** Not applicable to mixtures.

**Chemical Formula:** Not applicable to mixtures.

**Product Codes:**

J.T. Baker: 5609

Mallinckrodt: 0032

### 2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
Boric Acid	10043-35-3	< 1%	No
Potassium Hydroxide	1310-58-3	< 1%	Yes
Water	7732-18-5	> 99%	No

### 3. Hazards Identification

#### Emergency Overview

**DANGER! CORROSIVE. HARMFUL IF SWALLOWED OR INHALED. CAUSES BURNS TO ANY AREA OF CONTACT.**

**SAF-T-DATA<sup>(tm)</sup>** Ratings (Provided here for your convenience)

Health Rating: 3 - Severe

Flammability Rating: 0 - None

Reactivity Rating: 1 - Slight

Contact Rating: 3 - Severe (Corrosive)

Lab Protective Equip: GOGGLES & SHIELD; LAB COAT & APRON; VENT HOOD; PROPER GLOVES



Storage Color Code: White (Corrosive)

---

### Potential Health Effects

---

The health effects from exposure to diluted forms of this chemical are not well documented. They are expected to be less severe than those for concentrated forms which are referenced in the descriptions below.

**Inhalation:**

Respiratory tract irritant, may cause serious burns on acute contact. Severe injury is usually avoided by the self-limiting coughing and sneezing symptoms.

**Ingestion:**

Toxic! Corrosive to mucous membranes and may cause perforation of the esophagus and stomach. Abdominal pain, nausea, vomiting, general gastro-intestinal upset can be expected.

**Skin Contact:**

Irritant, possibly corrosive if contact is prolonged. Soreness, redness, destruction of skin may result.

**Eye Contact:**

Irritant, possibly corrosive to eye tissues. Tearing, redness, pain, impaired vision are symptoms.

**Chronic Exposure:**

Development of a defatting dermatitis on prolonged contact with potassium hydroxide has been reported. Continued irritation may lead to increased susceptibility to respiratory illness.

**Aggravation of Pre-existing Conditions:**

Persons with pre-existing skin disorders or eye problems, or impaired kidney or respiratory function may be more susceptible to the effects of the substance.

---

## 4. First Aid Measures

First aid procedures given apply to concentrated solutions. Exposures to dilute solutions may not require these extensive first aid procedures.

**Inhalation:**

Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention immediately.

**Ingestion:**

If swallowed, DO NOT INDUCE VOMITING. Give large quantities of water. Never give anything by mouth to an unconscious person. Get medical attention immediately.

**Skin Contact:**

Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention immediately. Wash clothing before reuse. Thoroughly clean shoes before reuse.

**Eye Contact:**

Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention immediately.

---

## 5. Fire Fighting Measures

**Fire:**

Not considered to be a fire hazard.

**Explosion:**

Sealed containers may rupture when heated.

**Fire Extinguishing Media:**

Use any means suitable for extinguishing surrounding fire.

**Special Information:**

In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode.

---

## 6. Accidental Release Measures

Ventilate area of leak or spill. Wear appropriate personal protective equipment as specified in Section 8. Contain and recover liquid when possible. Collect liquid in an appropriate container or absorb with an inert material (e. g., vermiculite, dry sand, earth), and place in a chemical waste container. Do not use combustible materials, such as saw dust. Do not flush to sewer! US Regulations (CERCLA) require reporting spills and releases to soil, water and air in excess of reportable quantities. The toll free number for the US Coast Guard National Response Center is (800) 424-8802.

---

## 7. Handling and Storage

Keep in a tightly closed container. Store in a cool, dry, ventilated area. Protect against physical damage. Separate from acids and alkalis. Protect from freezing. Containers of this material may be hazardous when empty since they retain product residues (vapors, liquid); observe all warnings and precautions listed for the product.

---

## 8. Exposure Controls/Personal Protection

### **Airborne Exposure Limits:**

For Potassium Hydroxide [1310-58-3]:

- ACGIH Threshold Limit value (TLV):

2 mg/m<sup>3</sup> Ceiling

### **Ventilation System:**

A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, *Industrial Ventilation, A Manual of Recommended Practices*, most recent edition, for details.

### **Personal Respirators (NIOSH Approved):**

If the exposure limit is exceeded and engineering controls are not feasible, a half facepiece particulate respirator (NIOSH type N95 or better filters) may be worn for up to ten times the exposure limit or the maximum use concentration specified by the appropriate regulatory agency or respirator supplier, whichever is lowest. A full-face piece particulate respirator (NIOSH type N100 filters) may be worn up to 50 times the exposure limit, or the maximum use concentration specified by the appropriate regulatory agency, or respirator supplier, whichever is lowest. If oil particles (e.g. lubricants, cutting fluids, glycerine, etc.) are present, use a NIOSH type R or P filter. For emergencies or instances where the exposure levels are not known, use a full-facepiece positive-pressure, air-supplied respirator. **WARNING:** Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.

### **Skin Protection:**

Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact.

### **Eye Protection:**

Use chemical safety goggles and/or a full face shield where splashing is possible. Maintain eye wash fountain and quick-drench facilities in work area.

---

## 9. Physical and Chemical Properties

### **Appearance:**

Clear, colorless liquid.

### **Odor:**

Odorless.

### **Solubility:**

Complete (100%)

**Specific Gravity:**

No information found.

**pH:**

10

**% Volatiles by volume @ 21C (70F):**

ca. 99 (as water)

**Boiling Point:**

ca. 100C (ca. 212F)

**Melting Point:**

ca. 0C (ca. 32F)

**Vapor Density (Air=1):**

Essentially the same as water.

**Vapor Pressure (mm Hg):**

Essentially the same as water.

**Evaporation Rate (BuAc=1):**

Essentially the same as water.

## 10. Stability and Reactivity

**Stability:**

Stable under ordinary conditions of use and storage.

**Hazardous Decomposition Products:**

Potassium oxide at very high temperatures.

**Hazardous Polymerization:**

Will not occur.

**Incompatibilities:**

Acids.

**Conditions to Avoid:**

Incompatibles.

## 11. Toxicological Information

For potassium hydroxide: Oral rat LD50: 273 mg/kg; Investigated as a mutagen. Skin Irritation Data (std Draize, 50 mg/24 H): Human, Severe; Rabbit, Severe. Eye Irritation Data(Rabbit, non-std test, 1 mg/24 H, rinse): Moderate.

-----\Cancer Lists\-----			
Ingredient	---NTP Carcinogen---		IARC Category
	Known	Anticipated	
Boric Acid (10043-35-3)	No	No	None
Potassium Hydroxide (1310-58-3)	No	No	None
Water (7732-18-5)	No	No	None

## 12. Ecological Information

**Environmental Fate:**

No information found.

**Environmental Toxicity:**

Potassium Hydroxide: TLm: 80 ppm/Mosquito fish/ 24 hr./ Fresh water

## 13. Disposal Considerations

Whatever cannot be saved for recovery or recycling should be managed in an appropriate and approved waste facility. Although not a listed RCRA hazardous waste, this material may exhibit one or more characteristics of a hazardous waste and require appropriate analysis to determine specific disposal requirements. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

## 14. Transport Information

### Domestic (Land, D.O.T.)

**Proper Shipping Name:** CORROSIVE LIQUID, BASIC, INORGANIC, N.O.S. (POTASSIUM HYDROXIDE, BORIC ACID)

**Hazard Class:** 8

**UN/NA:** UN3266

**Packing Group:** III

**Information reported for product/size:** 20L

### International (Water, I.M.O.)

**Proper Shipping Name:** CORROSIVE LIQUID, BASIC, INORGANIC, N.O.S. (POTASSIUM HYDROXIDE, BORIC ACID)

**Hazard Class:** 8

**UN/NA:** UN3266

**Packing Group:** III

**Information reported for product/size:** 20L

### International (Air, I.C.A.O.)

**Proper Shipping Name:** CORROSIVE LIQUID, BASIC, INORGANIC, N.O.S. (POTASSIUM HYDROXIDE, BORIC ACID)

**Hazard Class:** 8

**UN/NA:** UN3266

**Packing Group:** III

**Information reported for product/size:** 20L

## 15. Regulatory Information

-----\Chemical Inventory Status - Part 1\-----				
Ingredient	TSCA	EC	Japan	Australia
Boric Acid (10043-35-3)	Yes	Yes	Yes	Yes
Potassium Hydroxide (1310-58-3)	Yes	Yes	Yes	Yes
Water (7732-18-5)	Yes	Yes	Yes	Yes

-----\Chemical Inventory Status - Part 2\-----				
Ingredient	Korea	--Canada--		
		DSL	NDSL	Phil.
Boric Acid (10043-35-3)	Yes	Yes	No	Yes
Potassium Hydroxide (1310-58-3)	Yes	Yes	No	Yes
Water (7732-18-5)	Yes	Yes	No	Yes

-----\Federal, State & International Regulations - Part 1\-----				
Ingredient	-SARA 302-		-----SARA 313-----	
	RQ	TPQ	List	Chemical Catg.
Boric Acid (10043-35-3)	No	No	No	No
Potassium Hydroxide (1310-58-3)	No	No	No	No
Water (7732-18-5)	No	No	No	No

-----\Federal, State & International Regulations - Part 2\-----			
Ingredient	CERCLA	-RCRA- 261.33	-TSCA- 8 (d)
Boric Acid (10043-35-3)	No	No	No
Potassium Hydroxide (1310-58-3)	1000	No	No
Water (7732-18-5)	No	No	No

Chemical Weapons Convention: No      TSCA 12(b): No      CDTA: No  
 SARA 311/312: Acute: Yes      Chronic: Yes      Fire: No      Pressure: No  
 Reactivity: No      (Mixture / Liquid)

**Australian Hazchem Code:** None allocated.

**Poison Schedule:** None allocated.

**WHMIS:**

This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

## 16. Other Information

**NFPA Ratings:** Health: **3** Flammability: **0** Reactivity: **0**

**Label Hazard Warning:**

DANGER! CORROSIVE. HARMFUL IF SWALLOWED OR INHALED. CAUSES BURNS TO ANY AREA OF CONTACT.

**Label Precautions:**

Do not breathe mist.

Do not get in eyes, on skin, or on clothing.

Keep container closed.

Use only with adequate ventilation.

Wash thoroughly after handling.

**Label First Aid:**

If swallowed, DO NOT INDUCE VOMITING. Give large quantities of water. Never give anything by mouth to an unconscious person. In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. If inhaled, remove to fresh air. If not breathing give artificial respiration. If breathing is difficult, give oxygen. In all cases get medical attention immediately.

**Product Use:**

Laboratory Reagent.

**Revision Information:**

MSDS Section(s) changed since last revision of document include: 3.

**Disclaimer:**

\*\*\*\*\*

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\*\*\*\*\*

**Prepared by:** Environmental Health & Safety

Phone Number: (314) 654-1600 (U.S.A.)

MSDS Number: **B5638** \* \* \* \* Effective Date: **07/03/07** \* \* \* \* Supercedes: **05/07/07**



From: Mallinckrodt Baker, Inc.  
222 Red School Lane  
Phillipsburg, NJ 08865



24 Hour Emergency Telephone: 908-859-2151  
CHEMTREC: 1-800-424-9300

National Response in Canada  
CANUTEC: 613-996-6666

Outside U.S. And Canada  
Chemtrec: 703-527-3887

NOTE: CHEMTREC, CANUTEC and National Response Center emergency numbers to be used only in the event of chemical emergencies involving a spill, leak, fire, exposure or accident involving chemicals.

All non-emergency questions should be directed to Customer Service (1-800-582-2537) for assistance.

## pH 10 BUFFER NH<sub>4</sub>Cl, NH<sub>4</sub>OH

### 1. Product Identification

**Synonyms:** Ammonium hydroxide buffer, NH<sub>4</sub>Cl, NH<sub>4</sub>OH

**CAS No.:** Not applicable to mixtures.

**Molecular Weight:** Not applicable to mixtures.

**Chemical Formula:** Not applicable to mixtures.

**Product Codes:** 5887

### 2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
Ammonium Hydroxide	1336-21-6	7%	Yes
Ammonium Chloride	12125-02-9	1%	Yes
Water	7732-18-5	92%	No

### 3. Hazards Identification

#### Emergency Overview

**POISON! DANGER! CORROSIVE. MAY BE FATAL IF SWALLOWED OR INHALED. MIST AND VAPOR CAUSE BURNS TO EVERY AREA OF CONTACT.**

**SAF-T-DATA<sup>(tm)</sup>** Ratings (Provided here for your convenience)

Health Rating: 3 - Severe (Poison)

Flammability Rating: 1 - Slight

Reactivity Rating: 1 - Slight

Contact Rating: 3 - Severe (Corrosive)

Lab Protective Equip: GOGGLES & SHIELD; LAB COAT & APRON; VENT HOOD; PROPER GLOVES

Storage Color Code: White Stripe (Store Separately)

## Potential Health Effects

---

The following hazards are for concentrated solutions. Hazards of less concentrated solutions may be reduced. Degree of hazard for reduced concentrations is not currently addressed in the available literature.

### **Inhalation:**

Vapors and mists cause irritation to the respiratory tract. Higher concentrations can cause burns, pulmonary edema and death. Brief exposure to 5000 ppm can be fatal.

### **Ingestion:**

Toxic! May cause corrosion to the esophagus and stomach with perforation and peritonitis. Symptoms may include pain in the mouth, chest, and abdomen, with coughing, vomiting and collapse. Ingestion of as little as 3-4 mL may be fatal.

### **Skin Contact:**

Causes irritation and burns to the skin.

### **Eye Contact:**

Vapors cause irritation. Splashes cause severe pain, eye damage, and permanent blindness.

### **Chronic Exposure:**

Repeated exposure may cause damage to the tissues of the mucous membranes, upper respiratory tract, eyes and skin.

### **Aggravation of Pre-existing Conditions:**

Persons with pre-existing eye disorders or impaired respiratory function may be more susceptible to the effects of this material.

---

## 4. First Aid Measures

### **Inhalation:**

Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician immediately.

### **Ingestion:**

If swallowed, DO NOT INDUCE VOMITING. Give large quantities of water. Never give anything by mouth to an unconscious person. Get medical attention immediately. Call a physician immediately.

### **Skin Contact:**

Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Call a physician, immediately. Wash clothing before reuse.

### **Eye Contact:**

Immediately flush eyes with gentle but large stream of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Call a physician immediately. Immediate action is critical to minimize possibility of blindness.

---

## 5. Fire Fighting Measures

### **Fire:**

Not expected to be a fire hazard.

### **Explosion:**

Flammable vapors may accumulate in confined spaces.

### **Fire Extinguishing Media:**

Use any means suitable for extinguishing surrounding fire. Use water spray to blanket fire, cool fire exposed containers, and to flush non-ignited spills or vapors away from fire.

### **Special Information:**

In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode.

---

## 6. Accidental Release Measures

Ventilate area of leak or spill. Keep unnecessary and unprotected people away from area of spill. Wear appropriate personal protective equipment as specified in Section 8. Contain and recover liquid when possible. Do not flush caustic residues to the sewer. Residues from spills can be diluted with water, neutralized with dilute acid such as acetic, hydrochloric or sulfuric. Absorb neutralized caustic residue on clay, vermiculite or other inert substance and package in a suitable container for disposal.

US Regulations (CERCLA) require reporting spills and releases to soil, water and air in excess of reportable quantities. The toll free number for the US Coast Guard National Response Center is (800) 424-8802.

J. T. Baker NEUTRACIT®-2 or BuCAIM® caustic neutralizers are recommended for spills of this product.

---

## 7. Handling and Storage

Keep in a tightly closed container, stored in a cool, dry, ventilated area. Protect against physical damage. Separate from incompatibilities. Store below 25C. Protect from direct sunlight. Containers of this material may be hazardous when empty since they retain product residues (vapors, liquid); observe all warnings and precautions listed for the product.

---

## 8. Exposure Controls/Personal Protection

### **Airborne Exposure Limits:**

-OSHA Permissible Exposure Limit (PEL):

50 ppm (NH<sub>3</sub>)

-ACGIH Threshold Limit Value (TLV):

25 ppm (NH<sub>3</sub>) (TWA) 35 ppm (STEL)

Ammonium chloride:

-ACGIH Threshold Limit Value (TLV):

10 mg/m<sup>3</sup> (TWA); 20 mg/m<sup>3</sup> (STEL) Fume

### **Ventilation System:**

A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, *Industrial Ventilation, A Manual of Recommended Practices*, most recent edition, for details.

### **Personal Respirators (NIOSH Approved):**

If the exposure limit is exceeded and engineering controls are not feasible, a full facepiece respirator with an ammonia/methylamine cartridge may be worn up to 50 times the exposure limit or the maximum use concentration specified by the appropriate regulatory agency or respirator supplier, whichever is lowest. For emergencies or instances where the exposure levels are not known, use a full-facepiece positive-pressure, air-supplied respirator. **WARNING:** Air purifying respirators do not protect workers in oxygen-deficient atmospheres.

### **Skin Protection:**

Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact. Neoprene and nitrile rubber are recommended materials. Polyvinyl alcohol is not recommended.

### **Eye Protection:**

Use chemical safety goggles and/or full face shield where dusting or splashing of solutions is possible. Maintain eye wash fountain and quick-drench facilities in work area.

---

## 9. Physical and Chemical Properties

### **Appearance:**



Clear, colorless solution.

**Odor:**

Ammonia odor.

**Solubility:**

Infinitely soluble.

**Specific Gravity:**

No information found.

**pH:**

10-11

**% Volatiles by volume @ 21C (70F):**

No information found.

**Boiling Point:**

No information found.

**Melting Point:**

No information found.

**Vapor Density (Air=1):**

No information found.

**Vapor Pressure (mm Hg):**

No information found.

**Evaporation Rate (BuAc=1):**

No information found.

## 10. Stability and Reactivity

**Stability:**

Stable under ordinary conditions of use and storage.

**Hazardous Decomposition Products:**

Burning may produce ammonia, nitrogen oxides.

**Hazardous Polymerization:**

Will not occur.

**Incompatibilities:**

Acids, acrolein, dimethyl sulfate, halogens, silver nitrate, propylene oxide, nitromethane, silver oxide, silver permanganate, oleum, beta-propiolactone. Most common metals.

**Conditions to Avoid:**

Heat, sunlight, incompatibles, sources of ignition.

## 11. Toxicological Information

For ammonium hydroxide:

oral rat LD50: 350 mg/kg; eye, rabbit, standard Draize, 250 ug; severe, investigated as a mutagen.

For ammonia:

inhalation rat LC50: 2000 ppm/4-hr; investigated as a tumorigen, mutagen.

Ammonium Chloride:

Oral rat LD50 : 1650 mg/kg

Investigated as a mutagen.

-----\Cancer Lists\-----			
Ingredient	---NTP Carcinogen---		IARC Category
	Known	Anticipated	
Ammonium Hydroxide (1336-21-6)	No	No	None
Ammonium Chloride (12125-02-9)	No	No	None
Water (7732-18-5)	No	No	None

## 12. Ecological Information

**Environmental Fate:**

This material is not expected to significantly bioaccumulate.

**Environmental Toxicity:**

This material is expected to be very toxic to aquatic life. The LC50/96-hour values for fish are less than 1 mg/l.

The EC50/48-hour values for daphnia are less than 1 mg/l.

## 13. Disposal Considerations

Whatever cannot be saved for recovery or recycling should be managed in an appropriate and approved waste facility. Although not a listed RCRA hazardous waste, this material may exhibit one or more characteristics of a hazardous waste and require appropriate analysis to determine specific disposal requirements. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

## 14. Transport Information

### Domestic (Land, D.O.T.)

**Proper Shipping Name:** CORROSIVE LIQUIDS, N.O.S. (AMMONIUM HYDROXIDE, AMMONIUM CHLORIDE)

**Hazard Class:** 8

**UN/NA:** UN1760

**Packing Group:** III

**Information reported for product/size:** 1L

### International (Water, I.M.O.)

**Proper Shipping Name:** CORROSIVE LIQUIDS, N.O.S. (AMMONIUM HYDROXIDE, AMMONIUM CHLORIDE)

**Hazard Class:** 8

**UN/NA:** UN1760

**Packing Group:** III

**Information reported for product/size:** 1L

### International (Air, I.C.A.O.)

**Proper Shipping Name:** CORROSIVE LIQUIDS, N.O.S. (AMMONIUM HYDROXIDE, AMMONIUM CHLORIDE)

**Hazard Class:** 8

**UN/NA:** UN1760

**Packing Group:** III

**Information reported for product/size:** 1L

## 15. Regulatory Information

-----\Chemical Inventory Status - Part 1\-----				
Ingredient	TSCA	EC	Japan	Australia
Ammonium Hydroxide (1336-21-6)	Yes	Yes	Yes	Yes
Ammonium Chloride (12125-02-9)	Yes	Yes	Yes	Yes
Water (7732-18-5)	Yes	Yes	Yes	Yes

-----\Chemical Inventory Status - Part 2\-----				
Ingredient	Korea	DSL	NDSL	Phil.
				--Canada--

-----\Federal, State & International Regulations - Part 1\-----				
	-SARA 302-		-----SARA 313-----	
Ingredient	RQ	TPQ	List	Chemical Catg.
-----				
Ammonium Hydroxide (1336-21-6)	Yes	Yes	No	Yes
Ammonium Chloride (12125-02-9)	Yes	Yes	No	Yes
Water (7732-18-5)	Yes	Yes	No	Yes
-----\Federal, State & International Regulations - Part 2\-----				
	-RCRA-		-TSCA-	
Ingredient	CERCLA	261.33	8 (d)	
-----				
Ammonium Hydroxide (1336-21-6)	1000	No	No	
Ammonium Chloride (12125-02-9)	5000	No	No	
Water (7732-18-5)	No	No	No	

Chemical Weapons Convention: No TSCA 12 (b): No CDTA: No  
 SARA 311/312: Acute: Yes Chronic: Yes Fire: No Pressure: No  
 Reactivity: No (Mixture / Liquid)

**Australian Hazchem Code:** 2P  
**Poison Schedule:** None allocated.  
**WHMIS:**

This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

## 16. Other Information

**NFPA Ratings:** Health: 3 Flammability: 1 Reactivity: 0

**Label Hazard Warning:**

POISON! DANGER! CORROSIVE. MAY BE FATAL IF SWALLOWED OR INHALED. MIST AND VAPOR CAUSE BURNS TO EVERY AREA OF CONTACT.

**Label Precautions:**

- Do not get in eyes, on skin, or on clothing.
- Do not breathe vapor or mist.
- Keep container closed.
- Use only with adequate ventilation.
- Wash thoroughly after handling.

**Label First Aid:**

If swallowed, DO NOT INDUCE VOMITING. Give large quantities of water. Never give anything by mouth to an unconscious person. Get medical attention immediately. If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. IMMEDIATE ACTION IS ESSENTIAL FOR EYE EXPOSURES. In all cases call a physician immediately.

**Product Use:**

Buffering solution.

**Revision Information:**

MSDS Section(s) changed since last revision of document include: 3.

**Disclaimer:**

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**Mallinckrodt Baker, Inc. provides the information contained herein in good faith but makes no representation as to its comprehensiveness or accuracy. This document is intended only as a guide to the appropriate precautionary handling of the material by a properly trained person using this product.**

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\*\*\*\*\*

**Prepared by:** Environmental Health & Safety  
Phone Number: (314) 654-1600 (U.S.A.)

MSDS Number: **A0329** \* \* \* \* *Effective Date: 08/22/08* \* \* \* \* *Supercedes: 11/01/06*



From: Mallinckrodt Baker, Inc.  
222 Red School Lane  
Phillipsburg, NJ 08865



24 Hour Emergency Telephone: 908-859-2151  
CHEMTREC: 1-800-424-9300

National Response in Canada  
CANUTEC: 613-996-6666

Outside U.S. And Canada  
Chemtrec: 703-527-3887

NOTE: CHEMTREC, CANUTEC and National Response Center emergency numbers to be used only in the event of chemical emergencies involving a spill, leak, fire, exposure or accident involving chemicals.

All non-emergency questions should be directed to Customer Service (1-800-582-2537) for assistance.

## pH 4.5 Acetate Buffer

### 1. Product Identification

**Synonyms:** Acetic acid solution

**CAS No.:** Not applicable to mixtures.

**Molecular Weight:** Not applicable to mixtures.

**Chemical Formula:**

**Product Codes:** D017, XL-224

### 2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
Sodium Acetate	127-09-3	8%	Yes
Water	7732-18-5	92%	No

### 3. Hazards Identification

#### Emergency Overview

**CAUTION! MAY BE HARMFUL IF SWALLOWED OR INHALED. MAY CAUSE SKIN AND EYE IRRITATION.**

**SAF-T-DATA<sup>(tm)</sup>** Ratings (Provided here for your convenience)

Health Rating: 1 - Slight

Flammability Rating: 1 - Slight

Reactivity Rating: 2 - Moderate

Contact Rating: 2 - Moderate

Lab Protective Equip: GOGGLES & SHIELD; LAB COAT & APRON; VENT HOOD; PROPER GLOVES

Storage Color Code: Green (General Storage)

## Potential Health Effects

---

### **Inhalation:**

May cause irritation to the respiratory tract. Inhalation is not an expected hazard unless misted or heated to high temperatures. Mist or vapor inhalation can cause irritation to the nose, throat, and upper respiratory tract. Severe exposures can lead to a chemical pneumonitis.

### **Ingestion:**

May cause irritation to the gastrointestinal tract. Symptoms may include nausea, vomiting and diarrhea.

### **Skin Contact:**

May cause irritation with redness and pain.

### **Eye Contact:**

May cause irritation, redness and pain.

### **Chronic Exposure:**

No information found.

### **Aggravation of Pre-existing Conditions:**

Persons with pre-existing skin disorders or eye problems or impaired respiratory function may be more susceptible to the effects of the substance. Persons with impaired kidney function may be more susceptible to the effects of the substance.

---

## 4. First Aid Measures

### **Inhalation:**

Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.

### **Ingestion:**

DO NOT INDUCE VOMITING! Give large quantities of water or milk if available. Never give anything by mouth to an unconscious person. Get medical attention immediately.

### **Skin Contact:**

In case of contact, immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. Call a physician.

### **Eye Contact:**

Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention immediately.

---

## 5. Fire Fighting Measures

### **Fire:**

Not considered to be a fire hazard.

### **Explosion:**

Contact with strong oxidizers may cause fire. Reacts with most metals to produce hydrogen gas, which can form an explosive mixture with air.

### **Fire Extinguishing Media:**

Water spray, dry chemical, alcohol foam, or carbon dioxide. Water spray may be used to keep fire exposed containers cool.

### **Special Information:**

In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode. Water diluted acid can react with metals to form hydrogen gas.

---

## 6. Accidental Release Measures

Ventilate area of leak or spill. Remove all sources of ignition. Wear appropriate personal protective equipment as specified in Section 8. Isolate hazard area. Keep unnecessary and unprotected personnel from entering. Use

water spray to dilute spill to a nonflammable mixture. Contain and recover liquid when possible. Collect liquid in an appropriate container or absorb with an inert material (e. g., vermiculite, dry sand, earth), and place in a chemical waste container. Use non-sparking tools and equipment. Do not use combustible materials, such as saw dust. Do not flush to sewer! US Regulations (CERCLA) require reporting spills and releases to soil, water and air in excess of reportable quantities. The toll free number for the US Coast Guard National Response Center is (800) 424-8802.

J. T. Baker NEUTRASORB® acid neutralizers are recommended for spills of this product.

---

## 7. Handling and Storage

Store at room temperature. Protect container from physical damage. Store in a well-ventilated area. Protect from moisture. Isolate from any source of heat or ignition. Outside or detached storage is recommended. Separate from incompatibles. Containers should be bonded and grounded for transfers to avoid static sparks. Storage and use areas should be No Smoking areas. Use non-sparking type tools and equipment, including explosion proof ventilation. Containers of this material may be hazardous when empty since they retain product residues (vapors, liquid); observe all warnings and precautions listed for the product.

---

## 8. Exposure Controls/Personal Protection

### **Airborne Exposure Limits:**

For Acetic Acid Component:

-OSHA Permissible Exposure Limit (PEL):

10 ppm (TWA).

-ACGIH Threshold Limit Value (TLV):

10 ppm (TWA); 15 ppm (STEL).

### **Ventilation System:**

A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, *Industrial Ventilation, A Manual of Recommended Practices*, most recent edition, for details.

### **Personal Respirators (NIOSH Approved):**

If the exposure limit is exceeded and engineering controls are not feasible, a full facepiece respirator with organic vapor cartridge may be worn up to 50 times the exposure limit or the maximum use concentration specified by the appropriate regulatory agency or respirator supplier, whichever is lowest. For emergencies or instances where the exposure levels are not known, use a full-facepiece positive-pressure, air-supplied respirator.

WARNING: Air purifying respirators do not protect workers in oxygen-deficient atmospheres.

### **Skin Protection:**

Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact.

### **Eye Protection:**

Use chemical safety goggles and/or a full face shield where splashing is possible. Maintain eye wash fountain and quick-drench facilities in work area.

---

## 9. Physical and Chemical Properties

### **Appearance:**

Clear, colorless liquid.

### **Odor:**

Strong, vinegar-like.

### **Solubility:**

Infinitely soluble.

### **Density:**

No information found.

**pH:**

No information found.

**% Volatiles by volume @ 21C (70F):**

No information found.

**Boiling Point:**

No information found.

**Melting Point:**

No information found.

**Vapor Density (Air=1):**

No information found.

**Vapor Pressure (mm Hg):**

No information found.

**Evaporation Rate (BuAc=1):**

No information found.

## 10. Stability and Reactivity

**Stability:**

Stable under ordinary conditions of use and storage. Heat and sunlight can contribute to instability.

**Hazardous Decomposition Products:**

Carbon dioxide and carbon monoxide may form when heated to decomposition. May also release toxic and irritating vapors.

**Hazardous Polymerization:**

Will not occur.

**Incompatibilities:**

Acetic Acid is incompatible with chromic acid, nitric acid, ethylene glycol, perchloric acid, phosphorous trichloride, oxidizers, sodium peroxide, strong caustics, most metals (except aluminum), carbonates, hydroxides, oxides, and phosphates.

**Conditions to Avoid:**

Heat, flame, ignition sources, freezing, incompatibles

## 11. Toxicological Information

For Acetic Acid: Oral rat LD50: 3310 mg/kg. Dermal rabbit LD50: 1.06g/Kg. Inhalation mouse LC50: 5620 ppm/1 hr. Investigated as a mutagen, reproductive effector.

Results from Corrositex® Testing: > 60 minutes, non-corrosive.

-----\Cancer Lists\-----			
Ingredient	---NTP Carcinogen---		IARC Category
	Known	Anticipated	
Sodium Acetate (127-09-3)	No	No	None
Water (7732-18-5)	No	No	None

## 12. Ecological Information

**Environmental Fate:**

For glacial acetic acid: If released to the atmosphere, it is degraded in the vapor phase by reaction with photochemically produced hydroxyl radicals (estimated typical half-life of 26.7 days). If released to water, acetic acid will biodegrade readily. If released to soil, it will biodegrade readily. Standard dilution BOD water, 5-day 57.7% theoretical BOD average. Acetic acid shows no potential for biological accumulation or food chain contamination. BCF estimated < 1.



**Environmental Toxicity:**

For glacial acetic acid:

EC50 (wheat fumigation) = 23.3 mg/m<sup>3</sup>/2-hr, effect: leaf injury

LC50 (shrimp) = 100 - 300 mg/l/48-hr

LC50 (fathead minnow) = 88 mg/l/96-hr

This material may be toxic to aquatic life.

### 13. Disposal Considerations

Whatever cannot be saved for recovery or recycling should be handled as hazardous waste and sent to a RCRA approved waste facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

### 14. Transport Information

Not regulated.

### 15. Regulatory Information

```
-----\Chemical Inventory Status - Part 1\-----
Ingredient
```

	TSCA	EC	Japan	Australia
Sodium Acetate (127-09-3)	Yes	Yes	Yes	Yes
Water (7732-18-5)	Yes	Yes	Yes	Yes

```
-----\Chemical Inventory Status - Part 2\-----
```

		--Canada--		
Ingredient	Korea	DSL	NDSL	Phil.
Sodium Acetate (127-09-3)	Yes	Yes	No	Yes
Water (7732-18-5)	Yes	Yes	No	Yes

```
-----\Federal, State & International Regulations - Part 1\-----
```

	-SARA 302-		-SARA 313-	
Ingredient	RQ	TPQ	List	Chemical Catg.
Sodium Acetate (127-09-3)	No	No	No	No
Water (7732-18-5)	No	No	No	No

```
-----\Federal, State & International Regulations - Part 2\-----
```

		-RCRA-	-TSCA-
Ingredient	CERCLA	261.33	8 (d)
Sodium Acetate (127-09-3)	No	No	No
Water (7732-18-5)	No	No	No

Chemical Weapons Convention: No      TSCA 12(b): No      CDTA: No  
 SARA 311/312: Acute: Yes      Chronic: Yes      Fire: No      Pressure: No  
 Reactivity: Yes      (Mixture / Liquid)

**Australian Hazchem Code: 2R****Poison Schedule: S5****WHMIS:**

This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

## 16. Other Information

**NFPA Ratings:** Health: **3** Flammability: **1** Reactivity: **0**

**Label Hazard Warning:**

CAUTION! MAY BE HARMFUL IF SWALLOWED OR INHALED. MAY CAUSE SKIN AND EYE IRRITATION.

**Label Precautions:**

Do not get in eyes, on skin, or on clothing.

Do not breathe vapor or mist.

Keep container closed.

Use only with adequate ventilation.

Wash thoroughly after handling.

**Label First Aid:**

In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. If swallowed, DO NOT INDUCE VOMITING.

Give large quantities of water. Never give anything by mouth to an unconscious person. If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. In all cases call a physician.

**Product Use:**

Laboratory Reagent.

**Revision Information:**

MSDS Section(s) changed since last revision of document include: 7.

**Disclaimer:**

\*\*\*\*\*

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\*\*\*\*\*

**Prepared by:** Environmental Health & Safety

Phone Number: (314) 654-1600 (U.S.A.)

MSDS Number: **B5625** \* \* \* \* *Effective Date: 03/14/07* \* \* \* \* *Supercedes: 11/10/05*



From: Mallinckrodt Baker, Inc.  
222 Red School Lane  
Phillipsburg, NJ 08865



All non-emergency questions should be directed to Customer Service (1-800-582-2537) for assistance.

24 Hour Emergency Telephone: 908-859-2151  
CHEMTREC: 1-800-424-9300

National Response in Canada  
CANUTEC: 613-996-6666

Outside U.S. And Canada  
Chemtrec: 703-527-3887

NOTE: CHEMTREC, CANUTEC and National Response Center emergency numbers to be used only in the event of chemical emergencies involving a spill, leak, fire, exposure or accident involving chemicals.

## Buffer Concentrate (Biphthalate), pH 4, DILUT-IT®

### 1. Product Identification

**Synonyms:** None

**CAS No.:** 877-24-7

**Molecular Weight:** Not applicable to mixtures.

**Chemical Formula:** HOOC-C6H4COOK in H2O

**Product Codes:** 4795

### 2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
Potassium Acid Phthalate	877-24-7	10 - 11%	Yes
Water	7732-18-5	89 - 90%	No

### 3. Hazards Identification

#### Emergency Overview

**CAUTION! MAY CAUSE IRRITATION TO SKIN AND EYES.**

SAF-T-DATA<sup>(tm)</sup> Ratings (Provided here for your convenience)

Health Rating: 1 - Slight

Flammability Rating: 0 - None

Reactivity Rating: 0 - None

Contact Rating: 2 - Moderate

Lab Protective Equip: GOGGLES; LAB COAT; PROPER GLOVES

Storage Color Code: Green (General Storage)

#### Potential Health Effects

-----

Information on the human health effects from exposure to this substance is limited.

**Inhalation:**

Not expected to be an inhalation hazard. May cause irritation to respiratory tract because of slight acidity. Symptoms may include coughing and sore throat.

**Ingestion:**

Large doses may produce nausea, vomiting, and abnormal sensations in hands and feet. Because of slight acidity, causes irritation to the mucous membranes.

**Skin Contact:**

Contact may cause irritation, with redness and pain.

**Eye Contact:**

May cause eye irritation.

**Chronic Exposure:**

No information found.

**Aggravation of Pre-existing Conditions:**

No information found.

---

## 4. First Aid Measures

**Inhalation:**

Remove to fresh air. Get medical attention for any breathing difficulty.

**Ingestion:**

If large amounts were swallowed, give water to drink and get medical advice.

**Skin Contact:**

Immediately flush skin with plenty of water for at least 15 minutes. Remove contaminated clothing and shoes.

Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention if irritation develops.

**Eye Contact:**

Immediately flush eyes with plenty of water for at least 15 minutes, lifting upper and lower eyelids occasionally.

Get medical attention if irritation persists.

---

## 5. Fire Fighting Measures

**Fire:**

Not expected to be a fire hazard.

**Explosion:**

No information found.

**Fire Extinguishing Media:**

Use any means suitable for extinguishing surrounding fire.

**Special Information:**

In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode.

---

## 6. Accidental Release Measures

Ventilate area of leak or spill. Wear appropriate personal protective equipment as specified in Section 8. Contain and recover liquid when possible. Collect liquid in an appropriate container or absorb with an inert material (e. g., vermiculite, dry sand, earth), and place in a chemical waste container. Do not use combustible materials, such as saw dust. Do not flush to sewer!

---

## 7. Handling and Storage

Keep in a tightly closed container, stored in a cool, dry, ventilated area. Protect against physical damage. Containers of this material may be hazardous when empty since they retain product residues (vapors, liquid); observe all warnings and precautions listed for the product.

---

## 8. Exposure Controls/Personal Protection

**Airborne Exposure Limits:**

None established.

**Ventilation System:**

In general, dilution ventilation is a satisfactory health hazard control for this substance. However, if conditions of use create discomfort to the worker, a local exhaust system should be considered.

**Personal Respirators (NIOSH Approved):**

Not expected to require personal respirator usage.

**Skin Protection:**

Wear protective gloves and clean body-covering clothing.

**Eye Protection:**

Use chemical safety goggles. Maintain eye wash fountain and quick-drench facilities in work area.

---

## 9. Physical and Chemical Properties

**Appearance:**

Clear, colorless liquid.

**Odor:**

Odorless.

**Solubility:**

Complete (100%)

**Specific Gravity:**

No information found.

**pH:**

No information found.

**% Volatiles by volume @ 21C (70F):**

ca. 90

**Boiling Point:**

No information found.

**Melting Point:**

No information found.

**Vapor Density (Air=1):**

Not applicable.

**Vapor Pressure (mm Hg):**

Not applicable.

**Evaporation Rate (BuAc=1):**

No information found.

---

## 10. Stability and Reactivity

**Stability:**

Stable under ordinary conditions of use and storage.

**Hazardous Decomposition Products:**

Carbon dioxide and carbon monoxide may form when heated to decomposition.

**Hazardous Polymerization:**

Will not occur.

**Incompatibilities:**

Nitric Acid. Strong oxidizing agents.

**Conditions to Avoid:**

Heat, ignition sources and incompatibilites.

## 11. Toxicological Information

No LD50/LC50 information found relating to normal routes of occupational exposure.

-----\Cancer Lists\-----			
Ingredient	---NTP Carcinogen---		IARC Category
	Known	Anticipated	
Potassium Acid Phthalate (877-24-7)	No	No	None
Water (7732-18-5)	No	No	None

## 12. Ecological Information

**Environmental Fate:**

No information found.

**Environmental Toxicity:**

No information found.

## 13. Disposal Considerations

Whatever cannot be saved for recovery or recycling should be managed in an appropriate and approved waste disposal facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

## 14. Transport Information

Not regulated.

## 15. Regulatory Information

-----\Chemical Inventory Status - Part 1\-----					
Ingredient	TSCA	EC	Japan	Australia	
Potassium Acid Phthalate (877-24-7)	Yes	Yes	Yes	Yes	
Water (7732-18-5)	Yes	Yes	Yes	Yes	

-----\Chemical Inventory Status - Part 2\-----					
Ingredient	Korea	--Canada--			
		DSL	NDSL	Phil.	
Potassium Acid Phthalate (877-24-7)	Yes	Yes	No	Yes	
Water (7732-18-5)	Yes	Yes	No	Yes	

-----\Federal, State & International Regulations - Part 1\-----				
Ingredient	-SARA 302-		-----SARA 313-----	
	RQ	TPQ	List	Chemical Catg.
Potassium Acid Phthalate (877-24-7)	No	No	No	No
Water (7732-18-5)	No	No	No	No

-----\Federal, State & International Regulations - Part 2\-----			
Ingredient	CERCLA	-RCRA-	-TSCA-
		261.33	8 (d)
Potassium Acid Phthalate (877-24-7)	No	No	No
Water (7732-18-5)	No	No	No

Chemical Weapons Convention: No      TSCA 12 (b): No      CDTA: No  
 SARA 311/312: Acute: Yes      Chronic: No      Fire: No      Pressure: No  
 Reactivity: No      (Mixture / Liquid)

**Australian Hazchem Code:** None allocated.

**Poison Schedule:** None allocated.

**WHMIS:**

This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

## 16. Other Information

**NFPA Ratings:** Health: **1** Flammability: **0** Reactivity: **0**

**Label Hazard Warning:**

CAUTION! MAY CAUSE IRRITATION TO SKIN AND EYES.

**Label Precautions:**

Avoid contact with eyes, skin and clothing.

Keep container closed.

Wash thoroughly after handling.

**Label First Aid:**

In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes. Get medical attention if irritation develops or persists.

**Product Use:**

Laboratory Reagent.

**Revision Information:**

MSDS Section(s) changed since last revision of document include: 3.

**Disclaimer:**

\*\*\*\*\*

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\*\*\*\*\*

**Prepared by:** Environmental Health & Safety

Phone Number: (314) 654-1600 (U.S.A.)

MSDS Number: **B5631** \* \* \* \* *Effective Date: 10/15/08* \* \* \* \* *Supercedes: 04/21/08*

	<b>24 Hour Emergency Telephone: 908-859-2151</b> <b>CHEMTREC: 1-800-424-9300</b>
	<b>National Response in Canada</b> <b>CANUTEC: 613-996-6565</b>
<b>Outside U.S. and Canada</b> <b>Chemtrec: 703-527-3887</b>	<b>NOTE: CHEMTREC, CANUTEC and National Response Center emergency numbers to be used only in the event of chemical emergencies involving a spill, leak, fire, exposure or accident involving chemicals.</b>
<b>From: Mallinckrodt Baker, Inc.</b> <b>222 Red School Lane</b> <b>Phillipsburg, NJ 08865</b>	

All non-emergency questions should be directed to Customer Service (1-800-582-2537) for assistance.

## Buffer Solution (Phosphate), pH 7

### 1. Product Identification

**Synonyms:** None

**CAS No.:** Not applicable to mixtures.

**Molecular Weight:** Not applicable to mixtures.

**Chemical Formula:** Not applicable to mixtures.

**Product Codes:**

J.T. Baker: 5608

Mallinckrodt: 0031

### 2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
Potassium Phosphate Monobasic	7778-77-0	< 1%	No
Sodium Phosphate, Dibasic	7558-79-4	< 1%	No
Water	7732-18-5	> 99%	No

### 3. Hazards Identification

#### Emergency Overview

**As part of good industrial and personal hygiene and safety procedure, avoid all unnecessary exposure to the chemical substance and ensure prompt removal from skin, eyes and clothing.**

**SAF-T-DATA<sup>(tm)</sup>** Ratings (Provided here for your convenience)

Health Rating: 0 - None

Flammability Rating: 0 - None

Reactivity Rating: 0 - None

Contact Rating: 0 - None

Lab Protective Equip: GOGGLES; LAB COAT



Storage Color Code: Green (General Storage)

---

### Potential Health Effects

---

**Inhalation:**

No adverse health effects via inhalation.

**Ingestion:**

Not expected to be a health hazard via ingestion. Large oral doses may cause irritation to the gastrointestinal tract.

**Skin Contact:**

Not expected to be a health hazard from skin exposure.

**Eye Contact:**

No adverse effects expected.

**Chronic Exposure:**

No information found.

**Aggravation of Pre-existing Conditions:**

No information found.

---

## 4. First Aid Measures

Not expected to require first aid measures.

**Inhalation:**

Remove to fresh air. Get medical attention for any breathing difficulty.

**Ingestion:**

If large amounts were swallowed, give water to drink and get medical advice.

**Skin Contact:**

Wash exposed area with soap and water. Get medical advice if irritation develops.

**Eye Contact:**

Wash thoroughly with running water. Get medical advice if irritation develops.

---

## 5. Fire Fighting Measures

**Fire:**

Not considered to be a fire hazard.

**Explosion:**

Not considered to be an explosion hazard.

**Fire Extinguishing Media:**

Use any means suitable for extinguishing surrounding fire.

**Special Information:**

Use protective clothing and breathing equipment appropriate for the surrounding fire.

---

## 6. Accidental Release Measures

Ventilate area of leak or spill. Wear appropriate personal protective equipment as specified in Section 8. Contain and recover liquid when possible. Collect liquid in an appropriate container or absorb with an inert material (e. g., vermiculite, dry sand, earth), and place in a chemical waste container. Do not use combustible materials, such as saw dust.

---

## 7. Handling and Storage

Keep in a tightly closed container, stored in a cool, dry, ventilated area. Protect against physical damage. Containers of this material may be hazardous when empty since they retain product residues (vapors, liquid); observe all warnings and precautions listed for the product.

---

## 8. Exposure Controls/Personal Protection

**Airborne Exposure Limits:**

None established.

**Ventilation System:**

In general, dilution ventilation is a satisfactory health hazard control for this substance. However, if conditions of use create discomfort to the worker, a local exhaust system should be considered.

**Personal Respirators (NIOSH Approved):**

Not expected to require personal respirator usage.

**Skin Protection:**

Wear protective gloves and clean body-covering clothing.

**Eye Protection:**

Use chemical safety goggles and/or a full face shield where splashing is possible. Maintain eye wash fountain and quick-drench facilities in work area.

---

## 9. Physical and Chemical Properties

**Appearance:**

Clear, colorless liquid.

**Odor:**

Odorless.

**Solubility:**

Complete (100%)

**Specific Gravity:**

No information found.

**pH:**

7

**% Volatiles by volume @ 21C (70F):**

ca. 99

**Boiling Point:**

No information found.

**Melting Point:**

No information found.

**Vapor Density (Air=1):**

Not applicable.

**Vapor Pressure (mm Hg):**

Not applicable.

**Evaporation Rate (BuAc=1):**

No information found.

---

## 10. Stability and Reactivity

**Stability:**

Stable under ordinary conditions of use and storage.

**Hazardous Decomposition Products:**

No information found.

**Hazardous Polymerization:**

Will not occur.

**Incompatibilities:**

No information found.

**Conditions to Avoid:**

Heat.

## 11. Toxicological Information

No LD50/LC50 information found relating to normal routes of occupational exposure.

-----\Cancer Lists\-----			
Ingredient	---NTP Carcinogen---		IARC Category
	Known	Anticipated	
Potassium Phosphate Monobasic (7778-77-0)	No	No	None
Sodium Phosphate, Dibasic (7558-79-4)	No	No	None
Water (7732-18-5)	No	No	None

## 12. Ecological Information

**Environmental Fate:**

No information found.

**Environmental Toxicity:**

No information found.

## 13. Disposal Considerations

Dilute with water and flush to sewer if local ordinances allow, otherwise, whatever cannot be saved for recovery or recycling should be managed in an appropriate and approved waste disposal facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

## 14. Transport Information

Not regulated.

## 15. Regulatory Information

-----\Chemical Inventory Status - Part 1\-----				
Ingredient	TSCA	EC	Japan	Australia
Potassium Phosphate Monobasic (7778-77-0)	Yes	Yes	Yes	Yes
Sodium Phosphate, Dibasic (7558-79-4)	Yes	Yes	Yes	Yes
Water (7732-18-5)	Yes	Yes	Yes	Yes

-----\Chemical Inventory Status - Part 2\-----				
Ingredient	Korea	--Canada--		Phil.
		DSL	NDSL	
Potassium Phosphate Monobasic (7778-77-0)	Yes	Yes	No	Yes
Sodium Phosphate, Dibasic (7558-79-4)	Yes	Yes	No	Yes

Water (7732-18-5)	Yes	Yes	No	Yes
-----\Federal, State & International Regulations - Part 1\-----				
	-SARA 302-		-----SARA 313-----	
Ingredient	RQ	TPQ	List	Chemical Catg.
-----				
Potassium Phosphate Monobasic (7778-77-0)	No	No	No	No
Sodium Phosphate, Dibasic (7558-79-4)	No	No	No	No
Water (7732-18-5)	No	No	No	No

-----\Federal, State & International Regulations - Part 2\-----			
		-RCRA-	-TSCA-
Ingredient	CERCLA	261.33	8 (d)
-----			
Potassium Phosphate Monobasic (7778-77-0)	No	No	No
Sodium Phosphate, Dibasic (7558-79-4)	5000	No	No
Water (7732-18-5)	No	No	No

Chemical Weapons Convention: No      TSCA 12(b): No      CDTA: No  
 SARA 311/312: Acute: No      Chronic: No      Fire: No      Pressure: No  
 Reactivity: No      (Mixture / Liquid)

**Australian Hazchem Code:** None allocated.

**Poison Schedule:** None allocated.

**WHMIS:**

This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

## 16. Other Information

**NFPA Ratings:** Health: 0 Flammability: 0 Reactivity: 0

**Label Hazard Warning:**

As part of good industrial and personal hygiene and safety procedure, avoid all unnecessary exposure to the chemical substance and ensure prompt removal from skin, eyes and clothing.

**Label Precautions:**

None.

**Label First Aid:**

Not applicable.

**Product Use:**

Laboratory Reagent.

**Revision Information:**

MSDS Section(s) changed since last revision of document include: 9.

**Disclaimer:**

\*\*\*\*\*

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\*\*\*\*\*

**Prepared by:** Environmental Health & Safety

Phone Number: (314) 654-1600 (U.S.A.)

# FLINN SCIENTIFIC, INC.

## Material Safety Data Sheet (MSDS)

MSDS #: 834.50

Revision Date: October 1, 2007

---

### SECTION 1 — CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

---

#### Tris-glycine - SDS Buffer (10X)

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### SECTION 2 — COMPOSITION, INFORMATION ON INGREDIENTS

---

Tris (hydroxymethyl) aminomethane (77-86-1) 30%, Glycine (56-40-6) 14.4%, sodiumdodecyl sulfate (151-21-3) 1%  
water (7732-18-5) 82%

CAS#: None Established

---

### SECTION 3 — HAZARDS IDENTIFICATION

---

Clear colorless liquid, no odor.  
Body tissue irritant. Avoid contact with body tissues.

#### FLINN AT-A-GLANCE

Health-1  
Flammability-0  
Reactivity-0  
Exposure-1  
Storage-0

0 is low hazard, 3 is high hazard

---

### SECTION 4 — FIRST AID MEASURES

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash continuously with fresh water for 15 minutes.

Internal: Give large quantities of water. Call a physician or poison control at once.

---

### SECTION 5 — FIRE FIGHTING MEASURES

---

Non flammable, non combustible liquid.

#### NFPA CODE

H-1  
F-0  
R-0

---

### SECTION 6 — ACCIDENTAL RELEASE MEASURES

---

Restrict unprotected personnel from area and ventilate area. Contain spill with sand or absorbent material; deposit in sealed bag or container. See Sections 8 and 13 for further information.

---

### SECTION 7 — HANDLING AND STORAGE

---

Flinn Suggested Chemical Storage Pattern: Organic Miscellaneous. Store with other electrophoresis supplies.

---

### SECTION 8 — EXPOSURE CONTROLS, PERSONAL PROTECTION

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron.

---

**SECTION 9 — PHYSICAL AND CHEMICAL PROPERTIES**

---

Clear, colorless liquid.  
pH @ 20 C = 8.3-8.6  
Note: This is a 10X buffer concentrate. Dilute 1:10 with water to obtain working strength buffer for electrophoresis.

---

**SECTION 10 — STABILITY AND REACTIVITY**

---

Avoid heat.  
Shelf life: Good

---

**SECTION 11 — TOXICOLOGICAL INFORMATION**

---

Acute effects: N.A.	ORL-RAT LD50: N.A.
Chronic effects: N.A.	IHL-RAT LC50: N.A.
Target organs: N.A.	SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

---

**SECTION 12 — ECOLOGICAL INFORMATION**

---

Data not yet available.

---

**SECTION 13 — DISPOSAL CONSIDERATIONS**

---

Please consult with state and local regulations.  
Flinn Suggested Disposal Method #26b is one option.

---

**SECTION 14 — TRANSPORT INFORMATION**

---

Shipping Name: Not regulated  
Hazard Class: N/A  
UN Number: N/A  
N/A = Not applicable

---

**SECTION 15 — REGULATORY INFORMATION**

---

Not listed.

---

**SECTION 16 — OTHER INFORMATION**

---

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for additional information about laboratory chemicals**

# FLINN SCIENTIFIC INC.

"Your Safer Source for Science Supplies"

## Material Safety Data Sheet (MSDS)

MSDS #: 589.00

Revision Date: November 25, 2002

---

### Section 1 — Chemical Product and Company Identification

---

#### Phenol Red

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### Section 2 — Composition, Information on Ingredients

---

Phenol Red, sodium salt

Synonyms: phenolsulfonephthalein indicator

CAS#: 34487-61-1

---

### Section 3 — Hazards Identification

---

Bright to dark red crystal or powder. Odorless.  
Irritating to body tissues. Avoid all body tissue contact.

#### FLINN AT-A-GLANCE

Health-0  
Flammability-0  
Reactivity-0  
Exposure-1  
Storage-0

0 is low hazard, 3 is high hazard

---

### Section 4 — First Aid Measures

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash continuously with fresh water for 15 minutes.

Internal: Give large quantities of water. Call a physician or poison control at once.

---

### Section 5 — Fire Fighting Measures

---

Non flammable solid.

When heated to decomposition, emits toxic fumes of SO<sub>x</sub>.

**Fire Fighting Instructions:** Use triclass, dry chemical fire extinguisher. Firefighters should wear PPE and SCBA with full facepiece operated in positive pressure mode.

#### NFPA CODE

None Established

---

### Section 6 — Accidental Release Measures

---

Restrict unprotected personnel from area. Sweep up, place in sealed bag or container and dispose. Ventilate area and wash spill site after material pickup is complete. See Sections 8 and 13 for further information.

---

### Section 7 — Handling and Storage

---

Flinn Suggested Chemical Storage Pattern: Organic #9. Store with dyes, indicators, and stains.

Store in a cool dry place.

---

### Section 8 — Exposure Controls, Personal Protection

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron.

### Section 9 — Physical and Chemical Properties

Bright to dark red crystal or powder. Odorless.  
Acid/base Indicator: pH 6.8 yellow to 8.4 red  
Solubility: Alkali hydroxides and carbonates; slightly in water and alcohol.

Formula: C<sub>19</sub>H<sub>13</sub>NaO<sub>5</sub>S  
Formula Weight: 376.36

### Section 10 — Stability and Reactivity

Avoid contact with strong oxidizers.  
Shelf life: Indefinite.

### Section 11 — Toxicological Information

Acute effects: Irritant  
Chronic effects: N.A.  
Target organs: N.A.

ORL-RAT LD50: N.A.  
IHL-RAT LC50: N.A.  
SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

### Section 12 — Ecological Information

Data not yet available.

### Section 13 — Disposal Considerations

Please consult with state and local regulations.  
Flinn Suggested Disposal Method #26a is one option.

### Section 14 — Transport Information

Shipping Name: Not regulated  
Hazard Class: N/A  
UN Number: N/A

N/A = Not applicable

### Section 15 — Regulatory Information

TSCA-listed, EINECS-listed (252-057-8).

### Section 16 — Other Information

Consult your copy of the Flinn Scientific Catalog/Reference Manual for additional information about laboratory chemicals. This Material Safety Data Sheet (MSDS) is for guidance and is based upon information and tests believed to be reliable. Flinn Scientific Inc. makes no guarantee of the accuracy or completeness of the data and shall not be liable for any damages relating thereto. The data is offered solely for your consideration, investigation, and verification. Flinn Scientific Inc. assumes no legal responsibility for use or reliance upon this data.

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"Your Safer Source for Science Supplies"

*Reduce Science Accidents--  
Use Flinn Chemicals*

flinn@flinnsci.com www.flinnsci.com  
P.O. Box 219 Batavia IL 60510  
(800) 452-1261 Fax (866) 452-1436



# FLINN SCIENTIFIC, INC.

## Material Safety Data Sheet (MSDS)

MSDS #: 591.00

Revision Date: May 20, 2008

---

### SECTION 1 — CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

---

#### Phenolphthalein

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### SECTION 2 — COMPOSITION, INFORMATION ON INGREDIENTS

---

Phenolphthalein

CAS#: 77-09-8

---

### SECTION 3 — HAZARDS IDENTIFICATION

---

Pale yellow or off-white powder. Odorless.

Acts as a laxative upon ingestion. Irritating to body tissues. Avoid body tissue contact.

Possible carcinogen.

#### FLINN AT-A-GLANCE

Health-2

Flammability-0

Reactivity-1

Exposure-1

Storage-0

0 is low hazard, 3 is high hazard

---

### SECTION 4 — FIRST AID MEASURES

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash continuously with fresh water for 15 minutes.

Internal: Give large quantities of water. Call a physician or poison control at once.

---

### SECTION 5 — FIRE FIGHTING MEASURES

---

Non flammable solid.

When heated to decomposition, emits acrid and toxic fumes.

**Fire Fighting Instructions:** Use triclass, dry chemical fire extinguisher. Firefighters should wear PPE and SCBA with full facepiece operated in positive pressure mode.

#### NFPA CODE

None

Established

---

### SECTION 6 — ACCIDENTAL RELEASE MEASURES

---

Restrict unprotected personnel from area. Sweep up, place in sealed bag or container and dispose. Ventilate area and wash spill site after material pickup is complete. See Sections 8 and 13 for further information.

---

### SECTION 7 — HANDLING AND STORAGE

---

Flinn Suggested Chemical Storage Pattern: Organic #9. Store with dyes, indicators, and stains.

Store in a cool dry place.

---

### SECTION 8 — EXPOSURE CONTROLS, PERSONAL PROTECTION

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron.

---

**SECTION 9 — PHYSICAL AND CHEMICAL PROPERTIES**

---

Pale yellow powder.

Solubility: Insoluble in water. Soluble in alcohol, alkalis, and ether.

Formula: C<sub>20</sub>H<sub>14</sub>O<sub>4</sub>

Formula Weight: 318.31

Specific Gravity: 1.299

Melting Point: 258-262 C

---

**SECTION 10 — STABILITY AND REACTIVITY**

---

Avoid contact with strong oxidizers.

Shelf Life: Indefinite.

---

**SECTION 11 — TOXICOLOGICAL INFORMATION**

---

Acute effects: Irritant, laxative

Chronic effects: Possible carcinogen.

Target organs: N.A.

ORL-RAT LD50: N.A.

IHL-RAT LC50: N.A.

SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

---

**SECTION 12 — ECOLOGICAL INFORMATION**

---

Data not yet available.

---

**SECTION 13 — DISPOSAL CONSIDERATIONS**

---

Please consult with state and local regulations.

Flinn Suggested Disposal Method #26a is one option.

---

**SECTION 14 — TRANSPORT INFORMATION**

---

Shipping Name: Not regulated

Hazard Class: N/A

UN Number: N/A

N/A = Not applicable

---

**SECTION 15 — REGULATORY INFORMATION**

---

TSCA-listed, EINECS-listed (201-004-7).

---

**SECTION 16 — OTHER INFORMATION**

---

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# FLINN SCIENTIFIC INC.

"Your Safer Source for Science Supplies"

## Material Safety Data Sheet (MSDS)

MSDS #: 600.00

Revision Date: March 10, 2001

---

### Section 1 — Chemical Product and Company Identification

---

#### o-Phosphoric Acid

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### Section 2 — Composition, Information on Ingredients

---

o-Phosphoric Acid

Synonym: orthophosphoric acid

CAS#: 7664-38-2

---

### Section 3 — Hazards Identification

---

Colorless, odorless viscous liquid.

Moderately toxic by ingestion and inhalation; severe corrosive to body tissues.

Avoid all body tissue contact.

#### FLINN AT-A-GLANCE

Health-2

Flammability-0

Reactivity-2

Exposure-3

Storage-3

0 is low hazard, 3 is high hazard

---

### Section 4 — First Aid Measures

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash continuously with fresh water for 15 minutes.

Internal: Give 1 to 2 cups of water or milk, followed by a gastric antacid, such as milk of magnesia. Do not induce vomiting. Call a physician or poison control at once.

---

### Section 5 — Fire Fighting Measures

---

Non flammable liquid.

When heated to decomposition, emits toxic fumes of POx.

**Fire Fighting Instructions:** Use triclass, dry chemical fire extinguisher. Firefighters should wear PPE and SCBA with full facepiece operated in positive pressure mode.

#### NFPA CODE

H-3

F-0

R-0

---

### Section 6 — Accidental Release Measures

---

Restrict unprotected personnel from area. Remove all ignition sources and ventilate area. Contain spill with sand and absorbent material, neutralize with sodium bicarbonate or calcium hydroxide and deposit in sealed bag or container. See Sections 8 and 13 for further information.

---

### Section 7 — Handling and Storage

---

Flinn Suggested Chemical Storage Pattern: Inorganic #9. Store with acids.

Store in a dedicated acid cabinet and away from any source of water; if an acid cabinet is not available, store in Flinn Saf-Cube.

---

### Section 8 — Exposure Controls, Personal Protection

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron. Use ventilation to keep airborne concentrations below exposure limits. Always wear a NIOSH-approved respirator with proper cartridges or a positive pressure, air-supplied respirator when handling this material in emergency situations (spill or fire). Exposure guidelines: TWA 1.0 mg/m<sup>3</sup> (STEL) 3.0 mg/m<sup>3</sup> (OSHA)

### Section 9 — Physical and Chemical Properties

Colorless, odorless, viscous liquid.

Solubility: Soluble in water and alcohol.

Formula: H<sub>3</sub>PO<sub>4</sub>

Formula Weight: 98.00

Specific Gravity: 1.685

### Section 10 — Stability and Reactivity

Avoid contact with strong bases, finely powdered metals. Forms a detonable mixture with nitromethane.

Shelf life: Good, if stored safely.

### Section 11 — Toxicological Information

Acute effects: Harmful liquid, corrosive

Chronic effects: N.A.

Target organs: N.A.

ORL-RAT LD50: 1530 mg/kg

IHL-RAT LC50: N.A.

SKN-RBT LD50: 2740 mg/kg

N.A. = Not available, not all health aspects of this substance have been fully investigated.

### Section 12 — Ecological Information

Data not yet available.

### Section 13 — Disposal Considerations

Please consult with state and local regulations.

Flinn Suggested Disposal Method #24b is one option.

### Section 14 — Transport Information

Shipping Name: Phosphoric Acid

Hazard Class: 8, Corrosive

UN Number: UN1805

N/A = Not applicable

### Section 15 — Regulatory Information

TSCA-listed, EINECS-listed (231-633-2), RCRA code D002.

### Section 16 — Other Information

Consult your copy of the Flinn Scientific Catalog/Reference Manual for additional information about laboratory chemicals. This Material Safety Data Sheet (MSDS) is for guidance and is based upon information and tests believed to be reliable. Flinn Scientific Inc. makes no guarantee of the accuracy or completeness of the data and shall not be liable for any damages relating thereto. The data is offered solely for your consideration, investigation, and verification. Flinn Scientific Inc. assumes no legal responsibility for use or reliance upon this data.

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"Your Safer Source for Science Supplies"

*Questions on Chemical Disposal  
or Storage?--Call Flinn*

flinn@flinnsci.com www.flinnsci.com  
P.O. Box 219 Batavia IL 60510  
(800) 452-1261 Fax (866) 452-1436

# FLINN SCIENTIFIC INC.

"Your Safer Source for Science Supplies"

## Material Safety Data Sheet (MSDS)

MSDS #: 607.50

Revision Date: November 25, 2002

---

### Section 1 — Chemical Product and Company Identification

---

#### Polyurethane Foam System (Part A)

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### Section 2 — Composition, Information on Ingredients

---

Part A: proprietary mixture containing a poly ether polyol, a tertiary amine, and a silicone surfactant.

CAS#: None Established

---

### Section 3 — Hazards Identification

---

Yellow/amber colored liquid with a rubber-like odor.

Irritating to body tissues and respiratory tract.

Avoid all body tissue contact. Do not breathe vapor.

#### FLINN AT-A-GLANCE

Health-0

Flammability-1

Reactivity-1

Exposure-1

Storage-0

0 is low hazard, 3 is high hazard

---

### Section 4 — First Aid Measures

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash continuously with fresh water for 15 minutes.

Internal: Give large quantities of water. Call a physician or poison control at once.

---

### Section 5 — Fire Fighting Measures

---

Class IIIB combustible liquid.

Flash Point: 200 F

When heated to decomposition, emits toxic fumes.

**Fire Fighting Instructions:** Use triclass, dry chemical fire extinguisher. Firefighters should wear PPE and SCBA with full facepiece operated in positive mode.

#### NFPA CODE

None Established

---

### Section 6 — Accidental Release Measures

---

Restrict unprotected personnel from area. Remove all ignition sources and ventilate area. Contain spill with sand and absorbent material; deposit in sealed bag or container. See Sections 8 and 13 for further information.

---

### Section 7 — Handling and Storage

---

Flinn Suggested Chemical Storage Pattern: Organic #2. Store with alcohols, glycols, amines and amides.

Do not store longer than 3 years. Immediately reseal container after dispensing to preserve the expanding property.

---

### Section 8 — Exposure Controls, Personal Protection

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron.

Use exhaust ventilation to keep airborne concentrations low.

### Section 9 — Physical and Chemical Properties

Yellow/amber colored liquid with a rubber-like odor.  
Solubility: Acetone and some other organic solvents.

### Section 10 — Stability and Reactivity

Avoid exposure to flame.  
Shelf life: Should not be stored for more than 3 years.

### Section 11 — Toxicological Information

Acute effects: Irritant  
Chronic effects: N.A.  
Target organs: N.A.

ORL-RAT LD50: >5000 mg/kg  
IHL-RAT LC50: N.A.  
SKN-RBT LD50: >5000 mg/kg

N.A. = Not available, not all health aspects of this substance have been fully investigated.

### Section 12 — Ecological Information

Data not yet available.

### Section 13 — Disposal Considerations

Please consult with state and local regulations.  
Flinn Suggested Disposal Method #26a is one option.

### Section 14 — Transport Information

Shipping Name: Not regulated  
Hazard Class: N/A  
UN Number: N/A

N/A = Not applicable

### Section 15 — Regulatory Information

Not listed.

### Section 16 — Other Information

Consult your copy of the Flinn Scientific Catalog/Reference Manual for additional information about laboratory chemicals. This Material Safety Data Sheet (MSDS) is for guidance and is based upon information and tests believed to be reliable. Flinn Scientific Inc. makes no guarantee of the accuracy or completeness of the data and shall not be liable for any damages relating thereto. The data is offered solely for your consideration, investigation, and verification. Flinn Scientific Inc. assumes no legal responsibility for use or reliance upon this data.

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P.O. Box 219 Batavia IL 60510  
(800) 452-1261 Fax (866) 452-1436

# FLINN SCIENTIFIC INC.

"Your Safer Source for Science Supplies"

## Material Safety Data Sheet (MSDS)

MSDS #: 607.60

Revision Date: November 25, 2002

---

### Section 1 — Chemical Product and Company Identification

---

#### Polyurethane Foam System (Part B)

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### Section 2 — Composition, Information on Ingredients

---

Part B: proprietary mixture containing a 4,4-diphenylmethane diisocyanate (101-68-8) 38-50%, polymethylene polyphenyl isocyanate (9016-87-9) 20-35%, and diphenylmethane diisocyanate (26447-40-5) 20-35%.

CAS#: None Established

---

### Section 3 — Hazards Identification

---

Dark brown liquid; odorless.

Irritating to body tissues and respiratory tract. Avoid all body tissue contact. Do not breathe vapor.

Combustible liquid.

#### FLINN AT-A-GLANCE

Health-0

Flammability-1

Reactivity-1

Exposure-1

Storage-0

0 is low hazard, 3 is high hazard

---

### Section 4 — First Aid Measures

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash continuously with fresh water for 15 minutes.

Internal: Give large quantities of water. Call a physician or poison control at once.

---

### Section 5 — Fire Fighting Measures

---

Class IIIB combustible liquid.

Flash Point: 425 F

**Fire Fighting Instructions:** Use triclass, dry chemical fire extinguisher. Firefighters should wear PPE and SCBA with full facepiece operated in positive pressure mode.

#### NFPA CODE

None Established

---

### Section 6 — Accidental Release Measures

---

Restrict unprotected personnel from area. Remove all ignition sources and ventilate area. Contain spill with sand and absorbent material; deposit in sealed bag or container. See Sections 8 and 13 for further information.

---

### Section 7 — Handling and Storage

---

Flinn Suggested Chemical Storage Pattern: Organic #5. Store with epoxy compounds and isocyanates.

Do not store longer than 3 years. Immediately reseal container after dispensing to preserve the expanding property.

---

### Section 8 — Exposure Controls, Personal Protection

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron.

Use exhaust ventilation to keep airborne concentrations low.

### Section 9 — Physical and Chemical Properties

Dark brown liquid; odorless.

Solubility: Acetone and some other organic solvents.

Specific Gravity: 1.24

### Section 10 — Stability and Reactivity

Avoid contact with water, alcohols, amines, strong bases, acids and metal compounds.

Shelf life: Should not be stored for more than 3 years.

### Section 11 — Toxicological Information

Acute effects: Irritant

Chronic effects: N.A.

Target organs: N.A.

ORL-RAT LD50: >10000 mg/kg

IHL-RAT LC50: 370-490 mg/m<sup>3</sup>/4H

SKN-RBT LD50: >9400 mg/kg

N.A. = Not available, not all health aspects of this substance have been fully investigated.

### Section 12 — Ecological Information

Data not yet available.

### Section 13 — Disposal Considerations

Please consult with state and local regulations.

Flinn Suggested Disposal Method #26a is one option.

### Section 14 — Transport Information

Shipping Name: Not regulated

Hazard Class: N/A

UN Number: N/A

N/A = Not applicable

### Section 15 — Regulatory Information

Not listed.

### Section 16 — Other Information

Consult your copy of the Flinn Scientific Catalog/Reference Manual for additional information about laboratory chemicals. This Material Safety Data Sheet (MSDS) is for guidance and is based upon information and tests believed to be reliable. Flinn Scientific Inc. makes no guarantee of the accuracy or completeness of the data and shall not be liable for any damages relating thereto. The data is offered solely for your consideration, investigation, and verification. Flinn Scientific Inc. assumes no legal responsibility for use or reliance upon this data.

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MSDS Number: **P5521** \* \* \* \* *Effective Date: 11/21/08* \* \* \* \* *Supercedes: 01/09/06*

**MSDS** **Material Safety Data Sheet**

From: Mallinckrodt Baker, Inc.  
222 Red School Lane  
Phillipsburg, NJ 08865



24 Hour Emergency Telephone: 908-859-2151  
CHEMTREC: 1-800-424-9300

National Response in Canada  
CANUTEC: 613-996-6565

Outside U.S. and Canada  
Chemtec: 703-527-3887

**NOTE:** CHEMTREC, CANUTEC and National Response Center emergency numbers to be used only in the event of chemical emergencies involving a spill, leak, fire, exposure or accident involving chemicals.

All non-emergency questions should be directed to Customer Service (1-800-582-2537) for assistance.

# POTASSIUM ACID PHTHALATE

## 1. Product Identification

**Synonyms:** 1,2-Benzenedicarboxylic acid monopotassium salt; potassium biphthalate; potassium hydrogen phthalate; Phthalic acid, potassium salt

**CAS No.:** ç

**Molecular Weight:** 204.23

**Chemical Formula:** HOOC-C6H4COOK

**Product Codes:**

J.T. Baker: 2958, 4889

Mallinckrodt: 6704

## 2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
Potassium Acid Phthalate	877-24-7	100%	Yes

## 3. Hazards Identification

### Emergency Overview

**CAUTION! MAY CAUSE IRRITATION TO SKIN, EYES, AND RESPIRATORY TRACT.**

**SAF-T-DATA<sup>(tm)</sup>** Ratings (Provided here for your convenience)

Health Rating: 0 - None

Flammability Rating: 1 - Slight

Reactivity Rating: 0 - None

Contact Rating: 1 - Slight

Lab Protective Equip: GOGGLES; LAB COAT; VENT HOOD; PROPER GLOVES

Storage Color Code: Green (General Storage)

---

### Potential Health Effects

---

Information on the human health effects from exposure to this substance is limited.

**Inhalation:**

May cause irritation to respiratory tract because of slight acidity. Symptoms may include coughing and sore throat.

**Ingestion:**

Large doses may produce nausea, vomiting, and abnormal sensations in hands and feet. Because of slight acidity, causes irritation to the mucous membranes.

**Skin Contact:**

Contact may cause irritation, with redness and pain.

**Eye Contact:**

May cause eye irritation.

**Chronic Exposure:**

No information found.

**Aggravation of Pre-existing Conditions:**

No information found.

---

## 4. First Aid Measures

**Inhalation:**

Remove to fresh air. Get medical attention for any breathing difficulty.

**Ingestion:**

Give large amounts of water to drink. Never give anything by mouth to an unconscious person. Get medical attention.

**Skin Contact:**

Immediately flush skin with plenty of water for at least 15 minutes. Call a physician if irritation develops.

**Eye Contact:**

In case of contact, immediately flush eyes with plenty of water for at least 15 minutes, lifting upper and lower eyelids occasionally. Call a physician if irritation persists.

---

## 5. Fire Fighting Measures

**Fire:**

As with most organic solids, fire is possible at elevated temperatures or by contact with an ignition source.

**Explosion:**

Fine dust dispersed in air in sufficient concentrations, and in the presence of an ignition source is a potential dust explosion hazard.

**Fire Extinguishing Media:**

Water spray, dry chemical, alcohol foam, or carbon dioxide.

**Special Information:**

In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode.

---

## 6. Accidental Release Measures

Remove all sources of ignition. Ventilate area of leak or spill. Wear appropriate personal protective equipment as specified in Section 8. Spills: Clean up spills in a manner that does not disperse dust into the air. Use non-sparking tools and equipment. Reduce airborne dust and prevent scattering by moistening with water. Pick up spill for recovery or disposal and place in a closed container.

---

## 7. Handling and Storage

Keep in a tightly closed container. Protect from physical damage. Store in a cool, dry, ventilated area away from sources of heat, moisture and incompatibilities. Containers of this material may be hazardous when empty since they retain product residues (dust, solids); observe all warnings and precautions listed for the product.

---

## 8. Exposure Controls/Personal Protection

### **Airborne Exposure Limits:**

None established.

### **Ventilation System:**

A system of local and/or general exhaust is recommended to keep employee exposures as low as possible. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, *Industrial Ventilation, A Manual of Recommended Practices*, most recent edition, for details.

### **Personal Respirators (NIOSH Approved):**

For conditions of use where exposure to dust or mist is apparent and engineering controls are not feasible, a particulate respirator (NIOSH type N95 or better filters) may be worn. If oil particles (e.g. lubricants, cutting fluids, glycerine, etc.) are present, use a NIOSH type R or P filter. For emergencies or instances where the exposure levels are not known, use a full-face positive-pressure, air-supplied respirator. **WARNING:** Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.

### **Skin Protection:**

Wear protective gloves and clean body-covering clothing.

### **Eye Protection:**

Use chemical safety goggles. Maintain eye wash fountain and quick-drench facilities in work area.

---

## 9. Physical and Chemical Properties

### **Appearance:**

Colorless or white crystals.

### **Odor:**

Odorless.

### **Solubility:**

25g/100ml cold water

### **Specific Gravity:**

1.64

### **pH:**

4.0 0.05M soln.:

### **% Volatiles by volume @ 21C (70F):**

0

### **Boiling Point:**

No information found.

### **Melting Point:**

No information found.

### **Vapor Density (Air=1):**

No information found.

### **Vapor Pressure (mm Hg):**

No information found.

### **Evaporation Rate (BuAc=1):**

No information found.

---

## 10. Stability and Reactivity

**Stability:**

Stable under ordinary conditions of use and storage.

**Hazardous Decomposition Products:**

Carbon dioxide and carbon monoxide may form when heated to decomposition.

**Hazardous Polymerization:**

Will not occur.

**Incompatibilities:**

Nitric Acid. Strong oxidizing agents.

**Conditions to Avoid:**

Heat, ignition sources and incompatibilites.

## 11. Toxicological Information

Oral rat LD50: >3200 mg/kg

```

-----\Cancer Lists\-----
Ingredient                                     ---NTP Carcinogen---
Known      Anticipated      IARC Category
-----
Potassium Acid Phthalate (877-24-7)          No             No             None
    
```

## 12. Ecological Information

**Environmental Fate:**

No information found.

**Environmental Toxicity:**

No information found.

## 13. Disposal Considerations

Whatever cannot be saved for recovery or recycling should be managed in an appropriate and approved waste disposal facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

## 14. Transport Information

Not regulated.

## 15. Regulatory Information

```

-----\Chemical Inventory Status - Part 1\-----
Ingredient                                     TSCA  EC   Japan  Australia
-----
Potassium Acid Phthalate (877-24-7)          Yes   Yes  Yes    Yes

-----\Chemical Inventory Status - Part 2\-----
Ingredient                                     Korea  DSL  NDSL  Phil.
-----
--Canada--
    
```

Potassium Acid Phthalate (877-24-7)	Yes	Yes	No	Yes
-----\Federal, State & International Regulations - Part 1\-----				
	-SARA 302-		-----SARA 313-----	
Ingredient	RQ	TPQ	List	Chemical Catg.
-----\Federal, State & International Regulations - Part 2\-----				
		-RCRA-	-TSCA-	
Ingredient	CERCLA	261.33	8 (d)	
Potassium Acid Phthalate (877-24-7)	No	No	No	

Chemical Weapons Convention: No TSCA 12(b): No CDTA: No  
 SARA 311/312: Acute: Yes Chronic: No Fire: No Pressure: No  
 Reactivity: No (Pure / Solid)

**Australian Hazchem Code:** None allocated.

**Poison Schedule:** None allocated.

**WHMIS:**

This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

## 16. Other Information

**NFPA Ratings:** Health: 1 Flammability: 1 Reactivity: 0

**Label Hazard Warning:**

CAUTION! MAY CAUSE IRRITATION TO SKIN, EYES, AND RESPIRATORY TRACT.

**Label Precautions:**

- Avoid breathing dust.
- Avoid contact with eyes, skin and clothing.
- Keep container closed.
- Wash thoroughly after handling.
- Use with adequate ventilation.

**Label First Aid:**

In case of contact, immediately flush skin or eyes with plenty of water for at least 15 minutes. Call a physician if irritation develops or persists. If inhaled, remove to fresh air. Get medical attention for any breathing difficulty.

**Product Use:**

Laboratory Reagent.

**Revision Information:**

No Changes.

**Disclaimer:**

\*\*\*\*\*

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\*\*\*\*\*

**Prepared by:** Environmental Health & Safety  
 Phone Number: (314) 654-1600 (U.S.A.)

# FLINN SCIENTIFIC INC.

"Your Safer Source for Science Supplies"

## Material Safety Data Sheet (MSDS)

MSDS #: 620.00

Revision Date: May 22, 2001

---

### Section 1 — Chemical Product and Company Identification

---

#### Potassium Chlorate

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### Section 2 — Composition, Information on Ingredients

---

Potassium Chlorate

Synonym: chloric acid, potassium salt

CAS#: 3811-04-9

---

### Section 3 — Hazards Identification

---

White, crystals or powder. Odorless.

Slightly toxic by ingestion.

Irritating to body tissues. Avoid all body tissue contact.

Strong oxidizer, fire and explosion risk.

#### FLINN AT-A-GLANCE

Health-1

Flammability-0

Reactivity-3

Exposure-1

Storage-0

0 is low hazard, 3 is high hazard

---

### Section 4 — First Aid Measures

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash continuously with fresh water for 15 minutes.

Internal: Rinse out mouth, give 1 to 2 cups of water or milk, induce vomiting. After vomiting, give mixture of 2 Tbs. of activated charcoal mixed with one cup of water. Call a physician or poison control at once.

---

### Section 5 — Fire Fighting Measures

---

Non flammable solid. Strong oxidizer. Forms explosive mixtures with combustible materials. If only slightly contaminated, will explode when exposed to moderate shock or when heated. When heated to decomposition, emits toxic fumes of Cl and K<sub>2</sub>O.

**Fire Fighting Instructions:** Use triclass, dry chemical fire extinguisher. Firefighters should wear PPE and SCBA with full facepiece operated in positive mode.

#### NFPA CODE

H-1

F-0

R-1

OX

---

### Section 6 — Accidental Release Measures

---

Restrict unprotected personnel from area. Sweep up, place in sealed bag or container and dispose. Ventilate area and wash spill site after material pickup is complete. See Sections 8 and 13 for further information.

---

### Section 7 — Handling and Storage

---

Flinn Suggested Chemical Storage Pattern: Inorganic #6. Store with bromates and chlorates.

---

### Section 8 — Exposure Controls, Personal Protection

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron.

### Section 9 — Physical and Chemical Properties

White crystals or powder. Odorless.  
Solubility: Soluble in boiling water.  
Formula:  $\text{KClO}_3$   
Formula Weight: 122.56

Specific Gravity: 2.337  
Melting Point: 368 C

### Section 10 — Stability and Reactivity

Avoid contact with reducers, finely powdered metals, strong acids, alcohols, organic materials, and other combustible materials.  
Shelf Life: Indefinite.

### Section 11 — Toxicological Information

Acute effects: Irritant  
Chronic effects: Anemia  
Target organs: Blood, liver, kidneys

ORL-RAT LD50: 1870 mg/kg  
IHL-RAT LC50: N.A.  
SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

### Section 12 — Ecological Information

Data not yet available.

### Section 13 — Disposal Considerations

Please consult with state and local regulations.  
Flinn Suggested Disposal Method #12a is one option.

### Section 14 — Transport Information

Shipping Name: Potassium Chlorate  
Hazard Class: 5.1, Oxidizer  
UN Number: UN1485

N/A = Not applicable

### Section 15 — Regulatory Information

TSCA-listed, EINECS-listed (223-289-7), RCRA code D001, D003.

### Section 16 — Other Information

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# FLINN SCIENTIFIC INC.

"Your Safer Source for Science Supplies"

## Material Safety Data Sheet (MSDS)

MSDS #: 621.00

Revision Date: November 25, 2002

---

### Section 1 — Chemical Product and Company Identification

---

## Potassium Chloride

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### Section 2 — Composition, Information on Ingredients

---

Potassium Chloride

CAS#: 7447-40-7

---

### Section 3 — Hazards Identification

---

Colorless or white crystals. Odorless.

Slightly toxic by ingestion. Ingestion of large quantities can cause weakness, GI and circulatory disturbances. Irritating to body tissues. Avoid all body tissue content.

#### FLINN AT-A-GLANCE

Health-1  
Flammability-0  
Reactivity-0  
Exposure-1  
Storage-0

0 is low hazard, 3 is high hazard

---

### Section 4 — First Aid Measures

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash continuously with fresh water for 15 minutes.

Internal: Rinse out mouth, give 1 to 2 cups of water or milk, induce vomiting. After vomiting, give mixture of 2 Tbs. of activated charcoal mixed with one cup of water. Call a physician or poison control at once.

---

### Section 5 — Fire Fighting Measures

---

Non flammable solid.

When heated to decomposition, emits toxic fumes of K<sub>2</sub>O and Cl.

**Fire Fighting Instructions:** Use triclass, dry chemical fire extinguisher. Firefighters should wear PPE and SCBA with full facepiece operated in positive mode.

#### NFPA CODE

None Established

---

### Section 6 — Accidental Release Measures

---

Restrict unprotected personnel from area. Sweep up, place in sealed bag or container and dispose. Ventilate area and wash spill site after material pickup is complete. See Sections 8 and 13 for further information.

---

### Section 7 — Handling and Storage

---

Flinn Suggested Chemical Storage Pattern: Inorganic #2. Store with acetates, halides, sulfates, sulfites, thiosulfates and phosphates. Store in a cool dry place.

---

### Section 8 — Exposure Controls, Personal Protection

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron.



### Section 9 — Physical and Chemical Properties

Colorless or white crystals. Odorless.  
Solubility: Soluble in water; slightly in alcohol.  
Formula: KCl  
Formula Weight: 74.6

Specific Gravity: 1.987  
Melting Point: 772 C

### Section 10 — Stability and Reactivity

Avoid contact with strong oxidizers, strong acids.  
Shelf life: Poor; hygroscopic

### Section 11 — Toxicological Information

Acute effects: Irritant  
Chronic effects: N.A.  
Target organs: stomach, blood

ORL-RAT LD50: 2430 mg/kg  
IHL-RAT LC50: N.A.  
SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

### Section 12 — Ecological Information

Data not yet available.

### Section 13 — Disposal Considerations

Please consult with state and local regulations.  
Flinn Suggested Disposal Method #26a is one option.

### Section 14 — Transport Information

Shipping Name: Not regulated  
Hazard Class: N/A  
UN Number: N/A

N/A = Not applicable

### Section 15 — Regulatory Information

TSCA-listed, EINECS-listed (231-211-8).

### Section 16 — Other Information

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P.O. Box 219 Batavia IL 60510  
(800) 452-1261 Fax (866) 452-1436

# FLINN SCIENTIFIC INC.

"Your Safer Source for Science Supplies"

## Material Safety Data Sheet (MSDS)

MSDS #: 627.00

Revision Date: November 25, 2002

---

### Section 1 — Chemical Product and Company Identification

---

## Potassium Dichromate

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### Section 2 — Composition, Information on Ingredients

---

Potassium Dichromate

Synonym: potassium bichromate

CAS#: 7778-50-9

---

### Section 3 — Hazards Identification

---

Orange crystalline powder. Odorless.

Corrosive to body tissues. Sensitizer. Known carcinogen.

Toxic by inhalation, ingestion and skin absorption. Can cause severe ulceration and inflammation of skin and mucous membranes. Avoid all body contact.

#### FLINN AT-A-GLANCE

Health-3

Flammability-0

Reactivity-3

Exposure-3

Storage-3

0 is low hazard, 3 is high hazard

---

### Section 4 — First Aid Measures

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash continuously with fresh water for 15 minutes.

Internal: Rinse out mouth, give 1 to 2 cups of water or milk, induce vomiting. After vomiting, give mixture of 2 Tbs. of activated charcoal mixed with one cup of water. Call a physician or poison control at once.

---

### Section 5 — Fire Fighting Measures

---

Non flammable solid.

Strong oxidizer. Dangerous fire risk when in contact with organic materials.

When heated to decomposition, emits toxic fumes of K<sub>2</sub>O and Cr.

**Fire Fighting Instructions:** Use triclass, dry chemical fire extinguisher. Firefighters should wear PPE and SCBA with full facepiece operated in positive mode.

#### NFPA CODE

None Established

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### Section 6 — Accidental Release Measures

---

Restrict unprotected personnel from area. Sweep up, place in sealed bag or container and dispose. Ventilate area and wash spill site after material pickup is complete. See Sections 8 and 13 for further information.

---

### Section 7 — Handling and Storage

---

Flinn Suggested Chemical Storage Pattern: Inorganic #8. Store with borates, chromates, manganates and permanganates.

Store in a cool dry place. Use and dispense in a hood. Store in a locked poisons cabinet.

---

### Section 8 — Exposure Controls, Personal Protection

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron.

Use ventilation to keep airborne concentrations below exposure limits. Always wear a NIOSH-approved respirator with proper cartridges or a positive pressure, air-supplied respirator when handling this material in emergency situations (spill or fire).

Exposure guidelines: TWA 0.5 mg/m<sup>3</sup> (CrO<sub>3</sub>) (ACGIH)

### Section 9 — Physical and Chemical Properties

Orange crystalline powder. Odorless.  
Solubility: Soluble in water; insoluble in alcohol.  
Formula:  $K_2Cr_2O_7$   
Formula Weight: 294.22

Specific Gravity: 2.676  
Melting Point: 396 C

### Section 10 — Stability and Reactivity

Avoid contact with reducers and organic materials.  
Shelf life: Indefinite.

### Section 11 — Toxicological Information

Acute effects: Poison, corrosive, sensitizer  
Chronic effects: Known carcinogen, mutagen  
Target organs: Lungs, kidneys

ORL-MUS LD50: 190 mg/kg  
IHL-RAT LC50: N.A.  
SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

### Section 12 — Ecological Information

Data not yet available.

### Section 13 — Disposal Considerations

Please consult with state and local regulations.  
Flinn Suggested Disposal Method #12a is one option.

### Section 14 — Transport Information

Shipping Name: Oxidizing solid, n.o.s.  
Hazard Class: 5.1, Oxidizer  
UN Number: UN1479

N/A = Not applicable

### Section 15 — Regulatory Information

TSCA-listed, EINECS-listed (231-906-6), RCRA code D001, D007.

### Section 16 — Other Information

Consult your copy of the Flinn Scientific Catalog/Reference Manual for additional information about laboratory chemicals. This Material Safety Data Sheet (MSDS) is for guidance and is based upon information and tests believed to be reliable. Flinn Scientific Inc. makes no guarantee of the accuracy or completeness of the data and shall not be liable for any damages relating thereto. The data is offered solely for your consideration, investigation, and verification. Flinn Scientific Inc. assumes no legal responsibility for use or reliance upon this data.

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# FLINN SCIENTIFIC INC.

"Your Safer Source for Science Supplies"

## Material Safety Data Sheet (MSDS)

MSDS #: 629.00

Revision Date: March 10, 2001

---

### Section 1 — Chemical Product and Company Identification

---

## Potassium Ferricyanide

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### Section 2 — Composition, Information on Ingredients

---

Potassium Ferricyanide

Synonym: red prussiate of potash, potassium hexacyanoferrate

CAS#: 13746-66-2

---

### Section 3 — Hazards Identification

---

Orange/lemon yellow crystals.

Slightly toxic by ingestion. Body tissue irritant.

When heated to decomposition or in contact with strong acids, may liberate toxic hydrogen cyanide fumes.

#### FLINN AT-A-GLANCE

Health-1

Flammability-0

Reactivity-2

Exposure-1

Storage-0

0 is low hazard, 3 is high hazard

---

### Section 4 — First Aid Measures

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash continuously with fresh water for 15 minutes.

Internal: Give large quantities of water. Call a physician or poison control at once.

---

### Section 5 — Fire Fighting Measures

---

Non flammable solid.

When heated to decomposition or in contact with strong acids, may liberate toxic fumes of CN and K<sub>2</sub>O.

**Fire Fighting Instructions:** Use triclass, dry chemical fire extinguisher. Firefighters should wear PPE and SCBA with full facepiece operated in positive mode.

#### NFPA CODE

None established

---

### Section 6 — Accidental Release Measures

---

Restrict unprotected personnel from area. Sweep up, place in sealed bag or container and dispose. Ventilate area and wash spill site after material pickup is complete. See Sections 8 and 13 for further information.

---

### Section 7 — Handling and Storage

---

Flinn Suggested Chemical Storage Pattern: Inorganic #7. Store with arsenates, cyanides and cyanates.

Store in a cool dry place and light sensitive.

---

### Section 8 — Exposure Controls, Personal Protection

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron.

### Section 9 — Physical and Chemical Properties

Orange/lemon yellow crystals.

Solubility: Soluble in water; slightly in alcohol.

Formula:  $K_3Fe(CN)_6$

Formula Weight: 329.27

Specific Gravity: 1.85

Melting Point: 390 F (dec.)

### Section 10 — Stability and Reactivity

Avoid contact with strong acids, strong oxidizers, sodium nitrite, ammonia, chromium trioxide, cupric nitrate. Reaction with strong acids may liberate toxic HCN fumes.

Shelf life: Fair.

### Section 11 — Toxicological Information

Acute effects: N.A.

Chronic effects: N.A.

Target organs: N.A.

ORL-RAT LD50: 1600 mg/kg

IHL-RAT LC50: N.A.

SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

### Section 12 — Ecological Information

Data not yet available.

### Section 13 — Disposal Considerations

Please consult with state and local regulations.

Flinn Suggested Disposal Method #14 is one option.

### Section 14 — Transport Information

Shipping Name: Not regulated

Hazard Class: N/A

UN Number: N/A

N/A = Not applicable

### Section 15 — Regulatory Information

TSCA-listed, EINECS-listed (237-323-3).

### Section 16 — Other Information

Consult your copy of the Flinn Scientific Catalog/Reference Manual for additional information about laboratory chemicals. This Material Safety Data Sheet (MSDS) is for guidance and is based upon information and tests believed to be reliable. Flinn Scientific Inc. makes no guarantee of the accuracy or completeness of the data and shall not be liable for any damages relating thereto. The data is offered solely for your consideration, investigation, and verification. Flinn Scientific Inc. assumes no legal responsibility for use or reliance upon this data.

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# FLINN SCIENTIFIC INC.

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## Material Safety Data Sheet (MSDS)

MSDS #: 634.00

Revision Date: March 10, 2001

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### Section 1 — Chemical Product and Company Identification

---

## Potassium Hydroxide

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### Section 2 — Composition, Information on Ingredients

---

Potassium Hydroxide

CAS#: 1310-58-3

---

### Section 3 — Hazards Identification

---

White pellets or flakes. Odorless.

Highly toxic by ingestion. Severely corrosive to body tissue, especially eyes. Avoid all body tissue contact.

#### FLINN AT-A-GLANCE

Health-3

Flammability-0

Reactivity-2

Exposure-3

Storage-0

0 is low hazard, 3 is high hazard

---

### Section 4 — First Aid Measures

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash continuously with fresh water for 15 minutes.

Internal: Give no more than 1-2 cups of water for dilution. Do not induce vomiting. Call a physician or poison control at once.

---

### Section 5 — Fire Fighting Measures

---

Non flammable solid.

When heated to decomposition, emits toxic fumes of K<sub>2</sub>O.

**Fire Fighting Instructions:** Use triclass, dry chemical fire extinguisher. Firefighters should wear PPE and SCBA with full facepiece operated in positive mode.

#### NFPA CODE

H-3

F-0

R-1

---

### Section 6 — Accidental Release Measures

---

Restrict unprotected personnel from area. Sweep up, place in sealed bag or container and dispose. Ventilate area and wash spill site after material pickup is complete. See Sections 8 and 13 for further information.

---

### Section 7 — Handling and Storage

---

Flinn Suggested Chemical Storage Pattern: Inorganic #4. Store with hydroxides, oxides, silicates and carbonates.

Use and dispense in a hood. Store in a cool dry place.

---

### Section 8 — Exposure Controls, Personal Protection

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron.

Use ventilation to keep airborne concentrations below exposure limits. Always wear a NIOSH-approved respirator with proper cartridges or a positive pressure, air-supplied respirator when handling this material in emergency situations (spill or fire).

Exposure guidelines: TWA 2 mg/m<sup>3</sup> (NIOSH)

### Section 9 — Physical and Chemical Properties

White pellets or flakes. Odorless.

Solubility: Soluble in water, alcohol and glycerol.

Formula: KOH

Formula Weight: 56.11

Reagent potassium hydroxide contains 10-15% water.

Specific Gravity: 2.044

Melting Point: 405 C (varies with water content)

Boiling Point: 1320 C

### Section 10 — Stability and Reactivity

Avoid contact with aluminum, organic materials, acid chlorides, acid anhydrides, magnesium, and copper.

Shelf Life: Indefinite.

### Section 11 — Toxicological Information

Acute effects: Toxic, corrosive

Chronic effects: N.A.

Target organs: N.A.

ORL-RAT LD50: 273 mg/kg

IHL-RAT LC50: N.A.

SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

### Section 12 — Ecological Information

Data not yet available.

### Section 13 — Disposal Considerations

Please consult with state and local regulations.

Flinn Suggested Disposal Method #10 is one option.

### Section 14 — Transport Information

Shipping Name: Potassium hydroxide, solid

Hazard Class: 8, Corrosive

UN Number: UN1813

N/A = Not applicable

### Section 15 — Regulatory Information

TSCA-listed, EINECS-listed (215-181-3), RCRA code D002, D003.

### Section 16 — Other Information

Consult your copy of the Flinn Scientific Catalog/Reference Manual for additional information about laboratory chemicals.

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# FLINN SCIENTIFIC INC.

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## Material Safety Data Sheet (MSDS)

MSDS #: 636.00

Revision Date: November 25, 2002

---

### Section 1 — Chemical Product and Company Identification

---

#### Potassium Iodate

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### Section 2 — Composition, Information on Ingredients

---

Potassium Iodate

CAS#: 7758-05-6

---

### Section 3 — Hazards Identification

---

White, crystalline powder. Strong iodine odor.

Irritating to body tissues. Moderately toxic by ingestion. Avoid body tissue contact.

#### FLINN AT-A-GLANCE

Health-2

Flammability-0

Reactivity-3

Exposure-1

Storage-0

0 is low hazard, 3 is high hazard

---

### Section 4 — First Aid Measures

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash continuously with fresh water for 15 minutes.

Internal: Give large quantities of water. Call a physician or poison control at once.

---

### Section 5 — Fire Fighting Measures

---

Non flammable solid.

Strong oxidizer. Fire risk when exposed to organic or combustible materials.

When heated to decomposition, emits toxic fumes of I and K<sub>2</sub>O.

**Fire Fighting Instructions:** Use triclass, dry chemical fire extinguisher. Firefighters should wear PPE and SCBA with full facepiece operated in positive mode.

#### NFPA CODE

None Established

---

### Section 6 — Accidental Release Measures

---

Restrict unprotected personnel from area. Sweep up, place in sealed bag or container and dispose. Ventilate area and wash spill site after material pickup is complete. See Sections 8 and 13 for further information.

---

### Section 7 — Handling and Storage

---

Flinn Suggested Chemical Storage Pattern: Inorganic #6. Store with chlorates, bromates, iodates, chlorites, perchloric acid, and peroxides. Store in a cool dry place. Use and dispense in a hood.

---

### Section 8 — Exposure Controls, Personal Protection

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron. Use exhaust ventilation to keep airborne concentrations low.



### Section 9 — Physical and Chemical Properties

White crystalline powder. Strong iodine odor.  
Solubility: Soluble in water, dilute sulfuric acid; insoluble in alcohol.

Formula: KIO<sub>3</sub>

Formula Weight: 214.01

Specific Gravity: 3.9

Melting Point: 560 C

### Section 10 — Stability and Reactivity

Avoid contact with strong reducers, finely powdered metals, organic and combustible materials.  
When mixed with iodate, aluminum, copper, arsenic, phosphorus, carbon and sulfur products may explode on heating.  
Shelf life: Indefinite.

### Section 11 — Toxicological Information

Acute effects: N.A.

Chronic effects: N.A.

Target organs: N.A.

ORL-MUS LDLO: 531 mg/kg

IHL-RAT LC50: N.A.

SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

### Section 12 — Ecological Information

Data not yet available.

### Section 13 — Disposal Considerations

Please consult with state and local regulations.  
Flinn Suggested Disposal Method #12a is one option.

### Section 14 — Transport Information

Shipping Name: Oxidizing solid, n.o.s.

Hazard Class: 5.1, Oxidizer

UN Number: UN1479

N/A = Not applicable

### Section 15 — Regulatory Information

TSCA-listed, EINECS-listed (231-831-9), RCRA code D001.

### Section 16 — Other Information

Consult your copy of the Flinn Scientific Catalog/Reference Manual for additional information about laboratory chemicals. This Material Safety Data Sheet (MSDS) is for guidance and is based upon information and tests believed to be reliable. Flinn Scientific Inc. makes no guarantee of the accuracy or completeness of the data and shall not be liable for any damages relating thereto. The data is offered solely for your consideration, investigation, and verification. Flinn Scientific Inc. assumes no legal responsibility for use or reliance upon this data.

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# FLINN SCIENTIFIC INC.

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## Material Safety Data Sheet (MSDS)

MSDS #: 638.00

Revision Date: November 25, 2002

---

### Section 1 — Chemical Product and Company Identification

---

#### Potassium Iodide

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### Section 2 — Composition, Information on Ingredients

---

Potassium Iodide

CAS#: 7681-11-0

---

### Section 3 — Hazards Identification

---

White crystals, granules or powder. Odorless.  
Irritating to body tissues. Possible sensitizer. Avoid all body tissue contact.

#### FLINN AT-A-GLANCE

Health-0  
Flammability-0  
Reactivity-0  
Exposure-1  
Storage-1

0 is low hazard, 3 is high hazard

---

### Section 4 — First Aid Measures

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.  
Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.  
Eye: Immediately flush with fresh water for 15 minutes.  
External: Wash continuously with fresh water for 15 minutes.  
Internal: Give large quantities of water. Call a physician or poison control at once.

---

### Section 5 — Fire Fighting Measures

---

Non-flammable solid.  
When heated to decomposition, emits toxic fumes of K<sub>2</sub>O and I.  
**Fire Fighting Instructions:** Use triclass, dry chemical fire extinguisher. Firefighters should wear PPE and SCBA with full facepiece operated in positive mode.

#### NFPA CODE

None Established

---

### Section 6 — Accidental Release Measures

---

Restrict unprotected personnel from area. Sweep up, place in sealed bag or container and dispose. Ventilate area and wash spill site after material pickup is complete. See Sections 8 and 13 for further information.

---

### Section 7 — Handling and Storage

---

Flinn Suggested Chemical Storage Pattern: Inorganic #2. Store with acetates, halides, sulfates, sulfites, thiosulfates and phosphates. Store in a cool dry place. Air, light and moisture sensitive. Store in a Flinn Chem-Saf bag.  
Use and dispense in a hood.

---

### Section 8 — Exposure Controls, Personal Protection

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron. Use exhaust ventilation to keep airborne concentrations low.

### Section 9 — Physical and Chemical Properties

White crystals, granules or powder. Odorless.  
Solubility: Soluble in water, alcohol, acetone, and glycerol.  
Formula: KI  
Formula Weight: 166.01

Boiling Point: 1420 C  
Specific Gravity: 3.123  
Melting Point: 686 C

### Section 10 — Stability and Reactivity

Avoid contact with reducers, acid, steel, aluminum, alkali metals, brass, magnesium, zinc, cadmium, copper, tin, nickel and their alloys.  
Shelf life: Poor.

### Section 11 — Toxicological Information

Acute effects: Irritant, possible sensitizer  
Chronic effects: Possible teratogen  
Target organs: N.A.

ORL-RAT LD50: N.A.  
IHL-RAT LC50: N.A.  
SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

### Section 12 — Ecological Information

Data not yet available.

### Section 13 — Disposal Considerations

Please consult with state and local regulations.  
Flinn Suggested Disposal Method #26a is one option.

### Section 14 — Transport Information

Shipping Name: Not regulated  
Hazard Class: N/A  
UN Number: N/A

N/A = Not applicable

### Section 15 — Regulatory Information

TSCA-listed, EINECS-listed (231-659-4).

### Section 16 — Other Information

Consult your copy of the Flinn Scientific Catalog/Reference Manual for additional information about laboratory chemicals. This Material Safety Data Sheet (MSDS) is for guidance and is based upon information and tests believed to be reliable. Flinn Scientific Inc. makes no guarantee of the accuracy or completeness of the data and shall not be liable for any damages relating thereto. The data is offered solely for your consideration, investigation, and verification. Flinn Scientific Inc. assumes no legal responsibility for use or reliance upon this data.

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# FLINN SCIENTIFIC INC.

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## Material Safety Data Sheet (MSDS)

MSDS #: 640.00

Revision Date: November 25, 2002

---

### Section 1 — Chemical Product and Company Identification

---

#### Potassium Nitrate

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### Section 2 — Composition, Information on Ingredients

---

Potassium Nitrate

CAS#: 7757-79-1

---

### Section 3 — Hazards Identification

---

Transparent, colorless crystals or powder. Odorless.  
Slightly toxic by ingestion. Irritating to body tissues. Avoid body tissue contact.  
Chronic exposure to small amounts can cause anemia, nephritis, methemoglobinemia.  
Strong oxidizer: Fire risk when in contact with combustible materials.

#### FLINN AT-A-GLANCE

Health-1  
Flammability-0  
Reactivity-3  
Exposure-1  
Storage-1

0 is low hazard, 3 is high hazard

---

### Section 4 — First Aid Measures

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.  
Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.  
Eye: Immediately flush with fresh water for 15 minutes.  
External: Wash continuously with fresh water for 15 minutes.  
Internal: Rinse out mouth, give 1 to 2 cups of water or milk, induce vomiting. Call a physician or poison control at once.

---

### Section 5 — Fire Fighting Measures

---

Non flammable solid.  
Strong oxidizer. Dangerous fire risk if shocked or heated. Avoid contact with organic materials.  
When heated to decomposition, emits toxic fumes of NO<sub>x</sub> and K<sub>2</sub>O.  
**Fire Fighting Instructions:** Use triclass, dry chemical fire extinguisher. Firefighters should wear PPE and SCBA with full facepiece operated in positive pressure mode.

**NFPA CODE**  
None Established

---

### Section 6 — Accidental Release Measures

---

Restrict unprotected personnel from area. Sweep up, place in sealed bag or container and dispose. Ventilate area and wash spill site after material pickup is complete. See Sections 8 and 13 for further information.

---

### Section 7 — Handling and Storage

---

Flinn Suggested Chemical Storage Pattern: Inorganic #3. Store with amides, nitrates and nitrites.  
Store in a cool dry place. Use and dispense in a hood. Store in a Flinn Chem-Saf Bag.

---

### Section 8 — Exposure Controls, Personal Protection

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron.  
Use exhaust ventilation to keep airborne concentrations low.

### Section 9 — Physical and Chemical Properties

Transparent, colorless crystals or powder. Odorless.  
Solubility: Soluble in water; slightly in alcohol.  
Formula: KNO<sub>3</sub>  
Formula Weight: 101.11

Specific Gravity: 2.1062  
Melting Point: 333 C

### Section 10 — Stability and Reactivity

Avoid contact with strong reducers, finely powdered metals, strong acids, organic and combustible materials.  
Shelf life: Good.

### Section 11 — Toxicological Information

Acute effects: Irritant  
Chronic effects: N.A.  
Target organs: Blood, central nervous system

ORL-RAT LD50: 3750 mg/kg  
IHL-RAT LC50: N.A.  
SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

### Section 12 — Ecological Information

Data not yet available.

### Section 13 — Disposal Considerations

Please consult with state and local regulations.  
Flinn Suggested Disposal Method #26a is one option.

### Section 14 — Transport Information

Shipping Name: Potassium Nitrate  
Hazard Class: 5.1, Oxidizer  
UN Number: UN1486

N/A = Not applicable

### Section 15 — Regulatory Information

TSCA-listed, EINECS-listed (231-818-8), RCRA code D001.

### Section 16 — Other Information

Consult your copy of the Flinn Scientific Catalog/Reference Manual for additional information about laboratory chemicals. This Material Safety Data Sheet (MSDS) is for guidance and is based upon information and tests believed to be reliable. Flinn Scientific Inc. makes no guarantee of the accuracy or completeness of the data and shall not be liable for any damages relating thereto. The data is offered solely for your consideration, investigation, and verification. Flinn Scientific Inc. assumes no legal responsibility for use or reliance upon this data.

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---

### Section 1 — Chemical Product and Company Identification

---

## Potassium Permanganate

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### Section 2 — Composition, Information on Ingredients

---

Potassium Permanganate

CAS#: 7722-64-7

---

### Section 3 — Hazards Identification

---

Dark purple or blue, odorless crystals with a metallic sheen.  
Slightly toxic by ingestion. Corrosive to body tissues. Avoid all body tissue contact.  
Strong oxidizing agent, dangerous fire risk when heated in contact with organic materials.

#### FLINN AT-A-GLANCE

Health-1  
Flammability-0  
Reactivity-3  
Exposure-2  
Storage-0

0 is low hazard, 3 is high hazard

---

### Section 4 — First Aid Measures

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.  
Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.  
Eye: Immediately flush with fresh water for 15 minutes.  
External: Wash continuously with fresh water for 15 minutes.  
Internal: Give large quantities of water. Call a physician or poison control at once.

---

### Section 5 — Fire Fighting Measures

---

Non flammable solid.  
Powerful oxidizing agent; dangerous fire and explosion risk. When heated in contact with organic or combustible materials, can explode. When heated to decomposition, emits toxic fumes of K<sub>2</sub>O.

#### NFPA CODE

None  
Established

**Fire Fighting Instructions:** Use triclass, dry chemical fire extinguisher. Firefighters should wear PPE and SCBA with full facepiece operated in positive pressure mode.

---

### Section 6 — Accidental Release Measures

---

Restrict unprotected personnel from area. Sweep up, place in sealed bag or container and dispose. Ventilate area and wash spill site after material pickup is complete. See Sections 8 and 13 for further information.

---

### Section 7 — Handling and Storage

---

Flinn Suggested Chemical Storage Pattern: Inorganic #8. Store with borates, chromates, manganates and permanganates.  
Store in a cool dry place. Use and dispense in a hood.

---

### Section 8 — Exposure Controls, Personal Protection

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron.  
Use exhaust ventilation to keep airborne concentrations low.

# FLINN SCIENTIFIC INC.

"Your Safer Source for Science Supplies"

## Material Safety Data Sheet (MSDS)

Potassium Permanganate

MSDS #: 645.00

Revision Date: February 24, 2003

### Section 9 — Physical and Chemical Properties

Dark, purple, blue, odorless crystals with a metallic sheen.  
Solubility: Soluble in water, acetone and methyl alcohol.  
Formula:  $KMnO_4$   
Formula Weight: 158.04

Specific Gravity: 2.7032  
Melting Point: Decomposes at 240 C.

### Section 10 — Stability and Reactivity

Avoid contact with strong reducers, organic and combustible materials, finely powdered metals, peroxides, aluminum, zinc, lead, copper, and their alloys.  
Shelf life: Indefinite.

### Section 11 — Toxicological Information

Acute effects: Toxic, corrosive. Overexposure may produce anemia, swelling of the throat with possible suffocation, kidney damage and infertility in men. Chronic effects: N.A.  
Target organs: Central nervous system, blood, kidneys, lungs

ORL-RAT LD50: 1090 mg/kg  
IHL-RAT LC50: N.A.  
SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

### Section 12 — Ecological Information

Data not yet available.

### Section 13 — Disposal Considerations

Please consult with state and local regulations.  
Flinn Suggested Disposal Method #12a is one option.

### Section 14 — Transport Information

Shipping Name: Potassium Permanganate  
Hazard Class: 5.1, Oxidizer  
UN Number: UN1490

N/A = Not applicable

### Section 15 — Regulatory Information

TSCA-listed, EINECS-listed (231-760-3), RCRA code D001.

### Section 16 — Other Information

Consult your copy of the Flinn Scientific Catalog/Reference Manual for additional information about laboratory chemicals. This Material Safety Data Sheet (MSDS) is for guidance and is based upon information and tests believed to be reliable. Flinn Scientific Inc. makes no guarantee of the accuracy or completeness of the data and shall not be liable for any damages relating thereto. The data is offered solely for your consideration, investigation, and verification. Flinn Scientific Inc. assumes no legal responsibility for use or reliance upon this data.

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# FLINN SCIENTIFIC INC.

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## Material Safety Data Sheet (MSDS)

MSDS #: 649.00

Revision Date: November 25, 2002

---

### Section 1 — Chemical Product and Company Identification

---

## Potassium Phosphate, Dibasic

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### Section 2 — Composition, Information on Ingredients

---

Potassium Phosphate, dibasic

Synonym: potassium hydrogen phosphate

CAS#: 7758-11-4

---

### Section 3 — Hazards Identification

---

White crystals or powder. Odorless.

Body tissue irritant. May cause irritation to eyes, skin, and mucous membranes.

#### FLINN AT-A-GLANCE

Health-0

Flammability-0

Reactivity-0

Exposure-1

Storage-1

0 is low hazard, 3 is high hazard

---

### Section 4 — First Aid Measures

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash continuously with fresh water for 15 minutes.

Internal: Give large quantities of water. Call a physician or poison control at once.

---

### Section 5 — Fire Fighting Measures

---

Non flammable solid.

When heated to decomposition, emits toxic fumes of POx.

**Fire Fighting Instructions:** Use triclass, dry chemical fire extinguisher. Firefighters should wear PPE and SCBA with full facepiece operated in positive mode.

#### NFPA CODE

None Established

---

### Section 6 — Accidental Release Measures

---

Restrict unprotected personnel from area. Sweep up, place in sealed bag or container and dispose. Ventilate area and wash spill site after material pickup is complete. See Sections 8 and 13 for further information.

---

### Section 7 — Handling and Storage

---

Flinn Suggested Chemical Storage Pattern: Inorganic #2. Store with acetates, halides, sulfates, sulfites, thiosulfates and phosphates. Store in a cool dry place. Deliquescent, store in Flinn Chem-Saf Bag.

---

### Section 8 — Exposure Controls, Personal Protection

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron. Use exhaust ventilation to keep airborne concentrations low.



---

### Section 9 — Physical and Chemical Properties

---

White crystals or powder. Odorless.

Solubility: Very soluble in water.

Formula: K<sub>2</sub>HPO<sub>4</sub>

Formula Weight: 174.18

---

### Section 10 — Stability and Reactivity

---

Avoid contact with strong oxidizers.

Shelf life: Poor; unless stored under dry conditions.

---

### Section 11 — Toxicological Information

---

Acute effects: N.A.

Chronic effects: N.A.

Target organs: N.A.

ORL-RAT LD50: N.A.

IHL-RAT LC50: N.A.

SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

---

### Section 12 — Ecological Information

---

Data not yet available.

---

### Section 13 — Disposal Considerations

---

Please consult with state and local regulations.

Flinn Suggested Disposal Method #26a is one option.

---

### Section 14 — Transport Information

---

Shipping Name: Not regulated

Hazard Class: N/A

UN Number: N/A

N/A = Not applicable

---

### Section 15 — Regulatory Information

---

TSCA-listed, EINECS-listed (231-834-5).

---

### Section 16 — Other Information

---

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## Material Safety Data Sheet (MSDS)

MSDS #: 648.00

Revision Date: November 25, 2002

---

### Section 1 — Chemical Product and Company Identification

---

#### Potassium Phosphate, Monobasic

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### Section 2 — Composition, Information on Ingredients

---

Potassium Phosphate, monobasic

Synonym: potassium dihydrogen phosphate

CAS#: 7778-77-0

---

### Section 3 — Hazards Identification

---

Colorless, odorless crystals.

Body tissue irritant. May cause irritation to eyes, skin, and mucous membranes.

#### FLINN AT-A-GLANCE

Health-0

Flammability-0

Reactivity-0

Exposure-1

Storage-1

0 is low hazard, 3 is high hazard

---

### Section 4 — First Aid Measures

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash continuously with fresh water for 15 minutes.

Internal: Give large quantities of water. Call a physician or poison control at once.

---

### Section 5 — Fire Fighting Measures

---

Non flammable solid.

#### NFPA CODE

None Established

---

### Section 6 — Accidental Release Measures

---

Restrict unprotected personnel from area. Sweep up, place in sealed bag or container and dispose. Ventilate area and wash spill site after material pickup is complete. See Sections 8 and 13 for further information.

---

### Section 7 — Handling and Storage

---

Flinn Suggested Chemical Storage Pattern: Inorganic #2. Store with acetates, halides, sulfates, sulfites, thiosulfates and phosphates. Store in a cool dry place. Deliquescent, store in Flinn Chem-Saf Bag.

---

### Section 8 — Exposure Controls, Personal Protection

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron. Use exhaust ventilation to keep airborne concentrations low.

### Section 9 — Physical and Chemical Properties

Colorless, odorless crystals.  
Solubility: Soluble in water; insoluble in alcohol.  
Formula: KH<sub>2</sub>PO<sub>4</sub>  
Formula Weight: 136.09

Specific Gravity: 2.338  
Melting Point: 253 C

### Section 10 — Stability and Reactivity

Avoid contact with strong oxidizers.  
Shelf life: Poor; hygroscopic.

### Section 11 — Toxicological Information

Acute effects: Eye irritant  
Chronic effects: N.A.  
Target organs: N.A.

ORL-RAT LD50: N.A.  
IHL-RAT LC50: N.A.  
SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

### Section 12 — Ecological Information

Data not yet available.

### Section 13 — Disposal Considerations

Please consult with state and local regulations.  
Flinn Suggested Disposal Method #26a is one option.

### Section 14 — Transport Information

Shipping Name: Not regulated  
Hazard Class: N/A  
UN Number: N/A

N/A = Not applicable

### Section 15 — Regulatory Information

TSCA-listed, EINECS-listed (231-913-4).

### Section 16 — Other Information

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## Material Safety Data Sheet (MSDS)

MSDS #: 650.00

Revision Date: November 25, 2002

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### Section 1 — Chemical Product and Company Identification

---

#### Potassium Phosphate, Tribasic

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### Section 2 — Composition, Information on Ingredients

---

Potassium Phosphate, tribasic

Synonym: tripotassium phosphate

CAS#: 7778-53-2

---

### Section 3 — Hazards Identification

---

White granules or powder. Deliquescent. Odorless.

Slightly toxic by ingestion. Corrosive to body tissue. Avoid body tissue contact.

#### FLINN AT-A-GLANCE

Health-1

Flammability-0

Reactivity-0

Exposure-2

Storage-1

0 is low hazard, 3 is high hazard

---

### Section 4 — First Aid Measures

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash continuously with fresh water for 15 minutes.

Internal: Give no more than 1-2 cups of water for dilution. Do not induce vomiting. Call a physician or poison control at once.

---

### Section 5 — Fire Fighting Measures

---

Non flammable solid.

When heated to decomposition, emits toxic fumes of POx.

**Fire Fighting Instructions:** Use triclass, dry chemical fire extinguisher. Firefighters should wear PPE and SCBA with full facepiece operated in positive mode.

#### NFPA CODE

None Established

---

### Section 6 — Accidental Release Measures

---

Restrict unprotected personnel from area. Sweep up, place in sealed bag or container and dispose. Ventilate area and wash spill site after material pickup is complete. See Sections 8 and 13 for further information.

---

### Section 7 — Handling and Storage

---

Flinn Suggested Chemical Storage Pattern: Inorganic #2. Store with acetates, halides, sulfates, sulfites, thiosulfates and phosphates. Store in a cool dry place. Deliquescent, store in Flinn Chem-Saf Bag. Use and dispense in a hood.

---

### Section 8 — Exposure Controls, Personal Protection

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron. Use exhaust ventilation to keep airborne concentrations low.

### Section 9 — Physical and Chemical Properties

White granules or powder. Odorless.  
Solubility: Soluble in water. Insoluble in alcohol.  
Formula:  $K_3PO_4 \cdot nH_2O$   
Formula Weight: 212.27 as  $K_3PO_4$

Specific Gravity: 2.564 (anhydrous)  
Melting Point: 1340 C (anhydrous)

### Section 10 — Stability and Reactivity

Shelf life: Poor, unless stored under dry conditions.

### Section 11 — Toxicological Information

Acute effects: Corrosive  
Chronic effects: N.A.  
Target organs: N.A.

ORL-RAT LD50: 1450 mg/kg  
IHL-RAT LC50: N.A.  
SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

### Section 12 — Ecological Information

Data not yet available.

### Section 13 — Disposal Considerations

Please consult with state and local regulations.  
Flinn Suggested Disposal Method #26a is one option.

### Section 14 — Transport Information

Shipping Name: Not regulated  
Hazard Class: N/A  
UN Number: N/A

N/A = Not applicable

### Section 15 — Regulatory Information

TSCA-listed, EINECS-listed (231-907-1).

### Section 16 — Other Information

Consult your copy of the Flinn Scientific Catalog/Reference Manual for additional information about laboratory chemicals. This Material Safety Data Sheet (MSDS) is for guidance and is based upon information and tests believed to be reliable. Flinn Scientific Inc. makes no guarantee of the accuracy or completeness of the data and shall not be liable for any damages relating thereto. The data is offered solely for your consideration, investigation, and verification. Flinn Scientific Inc. assumes no legal responsibility for use or reliance upon this data.

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# FLINN SCIENTIFIC INC.

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## Material Safety Data Sheet (MSDS)

MSDS #: 654.00

Revision Date: November 25, 2002

---

### Section 1 — Chemical Product and Company Identification

---

## Potassium Thiocyanate

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### Section 2 — Composition, Information on Ingredients

---

Potassium Thiocyanate

CAS#: 333-20-0

---

### Section 3 — Hazards Identification

---

Colorless, odorless, transparent crystals; deliquescent.

Moderately toxic by ingestion. Irritating to body tissues. Avoid all body tissue contact.

#### FLINN AT-A-GLANCE

Health-2

Flammability-0

Reactivity-1

Exposure-1

Storage-1

0 is low hazard, 3 is high hazard

---

### Section 4 — First Aid Measures

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash continuously with fresh water for 15 minutes.

Internal: Rinse out mouth, give 1 to 2 cups of water or milk, induce vomiting. Call a physician or poison control at once.

---

### Section 5 — Fire Fighting Measures

---

Non flammable solid.

When heated to decomposition, emits toxic fumes of HCN, K<sub>2</sub>O, SO<sub>x</sub> and NO<sub>x</sub>.

**Fire Fighting Instructions:** Use triclass, dry chemical fire extinguisher. Firefighters should wear PPE and SCBA with full facepiece operated in positive mode.

#### NFPA CODE

None Established

---

### Section 6 — Accidental Release Measures

---

Restrict unprotected personnel from area. Sweep up, place in sealed bag or container and dispose. Ventilate area and wash spill site after material pickup is complete. See Sections 8 and 13 for further information.

---

### Section 7 — Handling and Storage

---

Flinn Suggested Chemical Storage Pattern: Inorganic #7. Store with arsenates, cyanides and cyanates.

Moisture sensitive material, store in a Flinn Chem-Saf bag. Store in a cool dry place. Use and dispense in a hood.

---

### Section 8 — Exposure Controls, Personal Protection

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron.

Use exhaust ventilation to keep airborne concentrations low.

### Section 9 — Physical and Chemical Properties

Colorless, odorless, transparent crystals.  
Solubility: Soluble in water, alcohol and acetone.  
Formula: KSCN  
Formula Weight: 97.18

Specific Gravity: 1.88  
Melting Point: 173 C

### Section 10 — Stability and Reactivity

If heated or in contact with concentrated acids, may liberate poisonous fumes of hydrogen cyanide. Avoid contact with strong acids, oxidizing agents, and heat.

Shelf life: Fair to poor; substance deliquescent.

### Section 11 — Toxicological Information

Acute effects: Toxic, irritant, eczema  
Chronic effects: N.A.  
Target organs: N.A.

ORL-RAT LD50: 854 mg/kg  
IHL-RAT LC50: N.A.  
SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

### Section 12 — Ecological Information

Data not yet available.

### Section 13 — Disposal Considerations

Please consult with state and local regulations.  
Flinn Suggested Disposal Method #26a is one option.

### Section 14 — Transport Information

Shipping Name: Not regulated  
Hazard Class: N/A  
UN Number: N/A

N/A = Not applicable

### Section 15 — Regulatory Information

TSCA-listed, EINECS-listed (206-370-1).

### Section 16 — Other Information

Consult your copy of the Flinn Scientific Catalog/Reference Manual for additional information about laboratory chemicals. This Material Safety Data Sheet (MSDS) is for guidance and is based upon information and tests believed to be reliable. Flinn Scientific Inc. makes no guarantee of the accuracy or completeness of the data and shall not be liable for any damages relating thereto. The data is offered solely for your consideration, investigation, and verification. Flinn Scientific Inc. assumes no legal responsibility for use or reliance upon this data.

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# FLINN SCIENTIFIC INC.

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## Material Safety Data Sheet (MSDS)

MSDS #: 661.00

Revision Date: March 14, 2001

---

### Section 1 — Chemical Product and Company Identification

---

#### n-Propyl Alcohol

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### Section 2 — Composition, Information on Ingredients

---

n-Propyl Alcohol

Synonym: 1-propanol

CAS#: 71-23-8

---

### Section 3 — Hazards Identification

---

Colorless liquid; odor similar to ethyl alcohol.

Severe eye and skin irritant. Slightly toxic by ingestion, inhalation and skin absorption. Avoid all body contact.

Flammable liquid.

#### FLINN AT-A-GLANCE

Health-1

Flammability-3

Reactivity-1

Exposure-1

Storage-3

0 is low hazard, 3 is high hazard

---

### Section 4 — First Aid Measures

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash continuously with fresh water for 15 minutes.

Internal: Give 1 to 2 cups of water or milk, followed by a gastric antacid, such as milk of magnesia. Do not induce vomiting. Call a physician or poison control at once.

---

### Section 5 — Fire Fighting Measures

---

Class 1B flammable liquid.

Flash Point: 59 F UEL: 13.7% LEL: 2.1% Autoignition Temperature: 824 F

**Fire Fighting Instructions:** Use triclass, dry chemical fire extinguisher. Firefighters should wear PPE and SCBA with full facepiece operated in positive pressure mode.

#### NFPA CODE

H-1

F-3

R-0

---

### Section 6 — Accidental Release Measures

---

Restrict unprotected personnel from area. Remove all ignition sources and ventilate area. Contain spill with sand and absorbent material; deposit in sealed bag or container. See Sections 8 and 13 for further information.

---

### Section 7 — Handling and Storage

---

Flinn Suggested Chemical Storage Pattern: Organic #2. Store with alcohols, glycols, amines and amides.

Store in a dedicated flammables cabinet. If a flammables cabinet is not available, store in Flinn Saf-Stor can.

Use and dispense in a hood.

---

### Section 8 — Exposure Controls, Personal Protection

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron.

Use ventilation to keep airborne concentrations below exposure limits. Always wear a NIOSH-approved respirator with proper cartridges or a positive pressure, air-supplied respirator when handling this material in emergency situations (spill or fire).

Exposure guidelines: TWA 200 ppm, STEL 250 ppm (OSHA, NIOSH)



### Section 9 — Physical and Chemical Properties

Colorless liquid; odor similar to ethyl alcohol  
Solubility: Soluble in water, ethyl alcohol and ether.  
Formula: CH<sub>3</sub>CH<sub>2</sub>CH<sub>2</sub>OH  
Formula Weight: 60.11

Specific Gravity: 0.804  
Melting Point: -127 F  
Boiling Point: 97 C  
Vapor Pressure: 14.9 mm (20 C)  
Vapor Density: 2.1

### Section 10 — Stability and Reactivity

Avoid contact with oxidizers, acid chlorides, acid anhydrides, acids, halogens and aluminum.  
Shelf life: Indefinite.

### Section 11 — Toxicological Information

Acute effects: Harmful liquid and fumes, severe eye irritant, nausea, headache, and vomiting.  
Chronic effects: N.A.  
Target organs: Nerves, liver

ORL-RAT LD50: 1870 mg/kg  
IHL-MUS LC50: 48 gm/m<sup>3</sup>  
SKN-RBT LD50: 5040 mg/kg

N.A. = Not available, not all health aspects of this substance have been fully investigated.

### Section 12 — Ecological Information

Data not yet available.

### Section 13 — Disposal Considerations

Please consult with state and local regulations.  
Flinn Suggested Disposal Method 18b is one option.

### Section 14 — Transport Information

Shipping Name: n-Propanol  
Hazard Class: 3, Flammable liquid  
UN Number: UN1274

N/A = Not applicable

### Section 15 — Regulatory Information

TSCA-listed, EINECS-listed (200-746-9), RCRA code D001.

### Section 16 — Other Information

Consult your copy of the Flinn Scientific Catalog/Reference Manual for additional information about laboratory chemicals. This Material Safety Data Sheet (MSDS) is for guidance and is based upon information and tests believed to be reliable. Flinn Scientific Inc. makes no guarantee of the accuracy or completeness of the data and shall not be liable for any damages relating thereto. The data is offered solely for your consideration, investigation, and verification. Flinn Scientific Inc. assumes no legal responsibility for use or reliance upon this data.

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MSDS Number: **P6928** \* \* \* \* \* Effective Date: **07/09/08** \* \* \* \* \* Supercedes: **05/19/08**

**MSDS** **Material Safety Data Sheet**

From: Mallinckrodt Baker, Inc.  
222 Red School Lane  
Phillipsburg, NJ 08865



24 Hour Emergency Telephone: 908-859-2151  
CHEMTREC: 1-800-424-9300

National Response in Canada  
CANUTEC: 613-996-6565

Outside U.S. and Canada  
Chemtrec: 703-527-3887

**NOTE:** CHEMTREC, CANUTEC and National Response Center emergency numbers to be used only in the event of chemical emergencies involving a spill, leak, fire, exposure or accident involving chemicals.

All non-emergency questions should be directed to Customer Service (1-800-582-2537) for assistance.

# PROPYLENE GLYCOL

## 1. Product Identification

**Synonyms:** 1,2-propanediol; 1,2-dihydroxypropane; methyl glycol; methylethylene glycol

**CAS No.:** 57-55-6

**Molecular Weight:** 76.09

**Chemical Formula:** CH<sub>3</sub>CHOHCH<sub>2</sub>OH

**Product Codes:**

J.T. Baker: 9402, 9403, U510

Mallinckrodt: 1925, 6263

## 2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
Propylene Glycol	57-55-6	99 - 100%	Yes

## 3. Hazards Identification

### Emergency Overview

**CAUTION! MAY CAUSE IRRITATION TO SKIN AND EYES.**

**SAF-T-DATA<sup>(tm)</sup>** Ratings (Provided here for your convenience)

Health Rating: 2 - Moderate (Life)

Flammability Rating: 1 - Slight

Reactivity Rating: 1 - Slight

Contact Rating: 1 - Slight

Lab Protective Equip: GOGGLES; LAB COAT; VENT HOOD; PROPER GLOVES

Storage Color Code: Green (General Storage)

## Potential Health Effects

---

**Inhalation:**

No adverse health effects via inhalation.

**Ingestion:**

Relatively non-toxic. Ingestion of sizable amount (over 100ml) may cause some gastrointestinal upset and temporary central nervous system depression. Effects appear more severe in individuals with kidney problems.

**Skin Contact:**

Mild irritant and defatting agent, especially on prolonged contact.

**Eye Contact:**

May cause transitory stinging and tearing.

**Chronic Exposure:**

Lactic acidosis, stupor and seizures have been reported following chronic ingestion.

**Aggravation of Pre-existing Conditions:**

Kidney disorders.

---

## 4. First Aid Measures

**Inhalation:**

Remove to fresh air. Not expected to require first aid measures.

**Ingestion:**

Not expected to require first aid measures. Give several glasses of water to drink to dilute. If large amounts were swallowed, get medical advice.

**Skin Contact:**

Remove any contaminated clothing. Wash skin with soap and water for at least 15 minutes. Get medical attention if irritation develops or persists.

**Eye Contact:**

In case of contact, immediately flush eyes with plenty of water for at least 15 minutes, lifting upper and lower eyelids occasionally. Call a physician if irritation persists.

**Note to Physician:**

In case of ingestion, monitor for acidosis and central nervous system changes. Exposed persons with previous kidney dysfunction may require special treatment.

---

## 5. Fire Fighting Measures

**Fire:**

Flash point: 99C (210F) CC

Autoignition temperature: 371C (700F)

Flammable limits in air % by volume:

lfl: 2.6; uel: 12.5

Material can support combustion.

**Explosion:**

Containers may explode in heat or fire.

**Fire Extinguishing Media:**

Dry chemical, foam, water or carbon dioxide.

**Special Information:**

In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode. Move exposed containers from fire area, if it can be done without risk. Use water to keep fire-exposed containers cool.

---

## 6. Accidental Release Measures

Ventilate area of leak or spill. Remove all sources of ignition. Wear appropriate personal protective equipment as specified in Section 8. Isolate hazard area. Keep unnecessary and unprotected personnel from entering. Contain and recover liquid when possible. Use non-sparking tools and equipment. Collect liquid in an appropriate container or absorb with an inert material (e. g., vermiculite, dry sand, earth), and place in a chemical waste container. Do not use combustible materials, such as saw dust. Do not flush to sewer!

---

## 7. Handling and Storage

Protect container from physical damage. Store in a cool, dry, ventilated area away from sources of heat, moisture, and incompatible substances. Containers of this material may be hazardous when empty since they retain product residues (vapors, liquid); observe all warnings and precautions listed for the product.

---

## 8. Exposure Controls/Personal Protection

### **Airborne Exposure Limits:**

AIHA Workplace Environmental Exposure Level (WEEL): TWA = 10mg/m<sup>3</sup>.

### **Ventilation System:**

A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, *Industrial Ventilation, A Manual of Recommended Practices*, most recent edition, for details.

### **Personal Respirators (NIOSH Approved):**

If the exposure limit is exceeded, a half-face respirator with an organic vapor cartridge and particulate filter (NIOSH type P95 or R95 filter) may be worn for up to ten times the exposure limit or the maximum use concentration specified by the appropriate regulatory agency or respirator supplier, whichever is lowest. A full-face piece respirator with an organic vapor cartridge and particulate filter (NIOSH P100 or R100 filter) may be worn up to 50 times the exposure limit, or the maximum use concentration specified by the appropriate regulatory agency or respirator supplier, whichever is lowest. Please note that N series filters are not recommended for this material. For emergencies or instances where the exposure levels are not known, use a full-face piece positive-pressure, air-supplied respirator. **WARNING:** Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.

### **Skin Protection:**

Wear protective gloves and clean body-covering clothing.

### **Eye Protection:**

Use chemical safety goggles. Maintain eye wash fountain and quick-drench facilities in work area.

---

## 9. Physical and Chemical Properties

### **Appearance:**

Clear oily liquid.

### **Odor:**

Odorless.

### **Solubility:**

Miscible in water.

### **Specific Gravity:**

1.0361 @ 20C/4C

### **pH:**

No information found.

### **% Volatiles by volume @ 21C (70F):**

No information found.

### **Boiling Point:**

188.2C (370F)

**Melting Point:**

-59C (-74F)

**Vapor Density (Air=1):**

2.6

**Vapor Pressure (mm Hg):**

0.129 @ 25C (77F)

**Evaporation Rate (BuAc=1):**

0.01

## 10. Stability and Reactivity

**Stability:**

Stable under ordinary conditions of use and storage.

**Hazardous Decomposition Products:**

Carbon dioxide and carbon monoxide may form when heated to decomposition. Aldehydes or lactic, pyruvic or acetic acids may also be formed.

**Hazardous Polymerization:**

Will not occur.

**Incompatibilities:**

Strong oxidizing agents.

**Conditions to Avoid:**

Heat, flames, ignition sources and incompatibles.

## 11. Toxicological Information

Oral rat LD50: 20g/kg. Skin rabbit LD50: 20.8g/kg.

Irritation: Eye rabbit/Draize, 500 mg/24H mild.

Investigated as a mutagen and reproductive effector.

-----\Cancer Lists\-----			
Ingredient	---NTP Carcinogen---		IARC Category
	Known	Anticipated	
Propylene Glycol (57-55-6)	No	No	None

## 12. Ecological Information

**Environmental Fate:**

When released into the soil, this material is expected to readily biodegrade. When released into the soil, this material is expected to leach into groundwater. When released into water, this material is expected to readily biodegrade. When released into the air, this material is expected to be readily degraded by reaction with photochemically produced hydroxyl radicals. When released into the air, this material is expected to have a half-life between 1 and 10 days.

**Environmental Toxicity:**

No information found.

## 13. Disposal Considerations

Whatever cannot be saved for recovery or recycling should be managed in an appropriate and approved waste disposal facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

## 14. Transport Information

Not regulated.

## 15. Regulatory Information

```
-----\Chemical Inventory Status - Part 1\-----
Ingredient                                     TSCA  EC   Japan  Australia
-----
Propylene Glycol (57-55-6)                   Yes  Yes  Yes    Yes
```

```
-----\Chemical Inventory Status - Part 2\-----
Ingredient                                     Korea  --Canada--
                                     DSL   NDSL   Phil.
-----
Propylene Glycol (57-55-6)                   Yes   Yes   No     Yes
```

```
-----\Federal, State & International Regulations - Part 1\-----
Ingredient                                     -SARA 302-  -SARA 313-
                                     RQ   TPQ   List  Chemical Catg.
-----
Propylene Glycol (57-55-6)                   No   No    No     No
```

```
-----\Federal, State & International Regulations - Part 2\-----
Ingredient                                     -RCRA-  -TSCA-
                                     CERCLA  261.33  8(d)
-----
Propylene Glycol (57-55-6)                   No     No     No
```

Chemical Weapons Convention: No      TSCA 12(b): No      CDTA: No  
 SARA 311/312: Acute: Yes      Chronic: No      Fire: No      Pressure: No  
 Reactivity: No      (Pure / Liquid)

**Australian Hazchem Code:** None allocated.

**Poison Schedule:** None allocated.

**WHMIS:**

This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

## 16. Other Information

**NFPA Ratings:** Health: **0** Flammability: **1** Reactivity: **0**

**Label Hazard Warning:**

CAUTION! MAY CAUSE IRRITATION TO SKIN AND EYES.

**Label Precautions:**

Avoid contact with eyes, skin and clothing.

Wash thoroughly after handling.

**Label First Aid:**

In case of contact, immediately flush skin or eyes with plenty of water for at least 15 minutes. Call a physician if irritation develops or persists.

**Product Use:**

Laboratory Reagent.

**Revision Information:**

MSDS Section(s) changed since last revision of document include: 8.

**Disclaimer:**

\*\*\*\*\*

**Mallinckrodt Baker, Inc. provides the information contained herein in good faith but makes no representation as to its comprehensiveness or accuracy. This document is intended only as a guide to the appropriate precautionary handling of the material by a properly trained person using this product. Individuals receiving the information must exercise their independent judgment in determining its appropriateness for a particular purpose. MALLINCKRODT BAKER, INC. MAKES NO REPRESENTATIONS OR WARRANTIES, EITHER EXPRESS OR IMPLIED, INCLUDING WITHOUT LIMITATION ANY WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE WITH RESPECT TO THE INFORMATION SET FORTH HEREIN OR THE PRODUCT TO WHICH THE INFORMATION REFERS. ACCORDINGLY, MALLINCKRODT BAKER, INC. WILL NOT BE RESPONSIBLE FOR DAMAGES RESULTING FROM USE OF OR RELIANCE UPON THIS INFORMATION.**

\*\*\*\*\*

**Prepared by:** Environmental Health & Safety  
Phone Number: (314) 654-1600 (U.S.A.)

## **MATERIAL SAFETY DATA SHEET**

RINGER SOLUTION, AMPHIBIAN  
CAROLINA BIOLOGICAL

Revised: 16/07/04  
Replaces: 09/05/00  
Printed: 20/05/08

---

### **1. PRODUCT DESCRIPTION**

Product Name: Ringer Solution, Amphibian  
Product Code(s): 88-6501, 88-6503  
Size: 500 mL, 1 L  
Chemical Name: No data available  
CAS Number: See section 2  
Formula: See section 2  
Synonyms: None  
Distributor: Carolina Biological Supply Company  
2700 York Road  
Burlington, NC 27215

Chemical Information: 800-227-1150 (8am-5pm (ET) M-F)  
Chemtrec (Transportation Spill Response 24 hours): 800-424-9300

### **2. COMPOSITION/INFORMATION ON INGREDIENTS**

Principle Hazardous Components: Sodium Chloride(cas#7647-14-5)0.65%  
Potassium Chloride(cas#7447-40-7)0.014%, Calcium Chloride, Dihydrate  
(cas#10035-04-8)0.016%, Sodium Phosphate(cas#7558-80-7)0.0012%,  
Sodium Bicarbonate(cas#144-55-8)0.02%  
TLV and PEL units: None established

### **3. HAZARD IDENTIFICATION**

Emergency Overview: This product is not expected to be a hazard under normal conditions of use with adequate ventilation.

Potential Health Effects:

Eyes: May cause irritation.

Skin: May cause irritation.

Ingestion: May cause gastrointestinal discomfort.

Inhalation: May cause irritation to respiratory tract.

### **4. FIRST AID MEASURES**

Emergency and First Aid Procedures:

Eyes - Flush with water for at least 15 minutes, raising and lowering eyelids occasionally. Get medical attention if irritation persists.

Skin - Thoroughly wash exposed area for at least 15 minutes. Remove contaminated clothing. Launder contaminated clothing before reuse. Get medical attention if irritation persists.

Ingestion - If swallowed, if conscious, give plenty of water.

Immediately call a physician or poison control center. Never give anything by mouth to an unconscious person.

Inhalation - Remove to fresh air. Give oxygen if breathing is difficult; give artificial respiration if breathing has stopped. Keep person warm and quiet, and get medical attention.

### **5. FIREFIGHTING PROCEDURES**

Flash Point(Method Used): N/A

NFPA Rating: None established

Extinguisher Media:

Use media suitable to extinguish surrounding fire.

Flammable Limits in Air % by Volume: N/A

Autoignition Temperature: N/A

Special Firefighting Procedures:

Firefighters should wear full protective equipment and NIOSH approved self-contained breathing apparatus.

Unusual Fire and Explosion Hazards: None



## **MATERIAL SAFETY DATA SHEET**

RINGER SOLUTION, AMPHIBIAN  
CAROLINA BIOLOGICAL

Revised: 16/07/04  
Replaces: 09/05/00  
Printed: 20/05/08

---

### **6. SPILL OR LEAK PROCEDURES**

Steps to be Taken in Case Material is Released or Spilled:

Ventilate area of spill. Eliminate all sources of ignition. Remove all non-essential personnel from area. Clean-up personnel should wear proper protective equipment and clothing. Absorb material with suitable absorbent and containerize for disposal.

### **7. SPECIAL PRECAUTIONS**

Precautions to be Taken in Handling or Storing: Store tightly closed in an area suitable for general chemical.

### **8. SPECIAL PROTECTION INFORMATION**

Respiratory Protection(Specify Type):

A NIOSH/MSHA chemical cartridge respirator should be worn if PEL or TLV is exceeded.

Ventilation:

Local Exhaust: Yes  
Mechanical(General): Yes  
Special: No  
Other: No

Protective Gloves:

Rubber, neoprene, PVC, or equivalent.

Eye Protection:

Splash proof chemical safety goggles should be worn at all times.

Other Protective Clothing or Equipment:

Lab apron, eye wash, and safety shower.

### **9. PHYSICAL DATA**

Molecular Weight: N/A  
Melting Point: Approximately 0 C  
Boiling Point: Approximately 100 C  
Vapor Pressure: Approximately 17.535 at 20 C  
Vapor Density(Air=1): N/A  
Specific Gravity(H2O=1): Approximately 1  
Percent Volatile by Volume: Approximately 99%  
Evaporation Rate(H2O=1): 1  
Solubility in Water: Completely soluble, product is an aqueous solution.  
Appearance and Odor: Clear, colorless solution with no odor.

### **10. REACTIVITY DATA**

Stability: Stable  
Conditions to Avoid: None  
Incompatibility(Materials to Avoid): Water reactive materials  
Hazardous Decomposition Products: None  
Hazardous Polymerization: Will not occur

### **11. TOXICITY DATA**

Toxicity Data:

Sodium chloride- LD50(oral-rat)- 3000 mg/kg, LD50 (ipr-mouse)-6614 mg/kg  
Potassium chloride-LD50(oral-rat)-2600 mg/kg, LD50(ivn-rat)-39 mg/kg  
Calcium chloride, Dihydrate-LD50(ipr-mouse)20500 mg/kg  
Sodium Phosphate, Monobasic-LDLo(oral-rat)-8290 mg/kg  
Sodium Bicarbonate-LD50(oral-rat)4220 mg/kg

# MATERIAL SAFETY DATA SHEET

RINGER SOLUTION, AMPHIBIAN  
CAROLINA BIOLOGICAL

Revised: 16/07/04  
Replaces: 09/05/00  
Printed: 20/05/08

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## Effects of Overexposure:

Acute: See section 3

Chronic:

Sodium chloride: Mutation data cited. Reproductive data cited. Not listed as cancer causing IARC, NTP or OSHA.

Potassium chloride: Mutation data cited. Not listed as cancer causing IARC, NTP, or OSHA.

Calcium Chloride, Dihydrate: No chronic effects data found. Not listed as

causing cancer by IARC, NTP or OSHA.

Sodium phosphate, Monobasic; No chronic effects data found. Not listed as causing cancer by IARC, NTP or OSHA.

Sodium Bicarbonate: Reproductive effects data cited. Not listed as causing

cancer by IARC, NTP or OSHA.

Conditions Aggravated by Overexposure: No data available

Target Organs: No data available

Primary Route(s) of Entry: No data available

## **12. ECOLOGICAL DATA**

EPA Waste Numbers: None

## **13. DISPOSAL INFORMATION**

Waste Disposal Methods: Dispose in accordance with all applicable Federal,

State and Local regulations.

Always contact a permitted waste disposer (TSD) to assure compliance.

## **14. TRANSPORT INFORMATION**

Non-regulated

## **15. REGULATORY INFORMATION**

EPA TSCA Status: On TSCA Inventory

Hazard Category for SARA Section 311/312 Reporting: Acute

Product or Components 261.33	SARA EHS Sec. 302 TPQ	SARA Sec. 313		CERCLA Sec. 103 RQ lbs.	RCRA Sec.
		Chemicals Name List	Chemical Category		

---

Sodium Chloride	No	No	No	No	No
Potassium- Chloride	No	No	No	No	No
Calcium- Chloride, Dihydrate	No	No	No	No	No
Sodium- Phosphate, Monobasic	No	No	No	No	No
Sodium- Bicarbonate	No	No	No	No	No

## **16. ADDITIONAL INFORMATION**

The information provided in this Material Safety Data Sheet represents a compilation of data drawn directly from various sources available to us. Carolina Biological Supply makes no representation or guarantee as to

## **MATERIAL SAFETY DATA SHEET**

RINGER SOLUTION, AMPHIBIAN  
CAROLINA BIOLOGICAL

Revised: 16/07/04  
Replaces: 09/05/00  
Printed: 20/05/08

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the suitability of this information to a particular application of the substance covered in the Material Safety Data Sheet. Any employer must carefully assess the applicability of any information contained herein in regards to the particular use to which the employer puts the material.

### Glossary

ACGIH.....American Conference of Governmental Industrial Hygienists  
CAS Number..Chemical Abstracts Service Number  
CERCLA.....Comprehensive Environmental Response, Compensation, and Liability Act  
DOT.....U.S. Department of Transportation  
IARC.....International Agency of Research on Cancer  
mppcf.....million particles per cubic foot  
N/A.....Not Available  
NTP.....National Toxicology Program  
OSHA.....Occupational Safety and Health Administration  
PEL.....Permissible Exposure Limit  
ppm.....parts per million  
RCRA.....Resource Conservation and Recovery Act  
SARA.....Superfund Amendments and Reauthorization Act  
TLV.....Threshold Limit Value  
TSCA.....Toxic Substances Control Act

## **MATERIAL SAFETY DATA SHEET**

RINGER SOLUTION, MAMMALIAN  
CAROLINA BIOLOGICAL

Revised: 05/15/08  
Replaces: 11/28/07  
Printed: 05/20/08

---

### **1. PRODUCT DESCRIPTION**

Product Name: Ringer Solution, Mammalian  
Product Code(s): 88-6521, 88-6523  
Size: 500 mL, 1 L  
Chemical Name: No data available  
CAS Number: See section 2  
Formula: See section 2  
Synonyms: None  
Distributor: Carolina Biological Supply Company  
2700 York Road  
Burlington, NC 27215

Chemical Information: 800-227-1150 (8am-5pm (ET) M-F)  
Chemtrec (Transportation Spill Response 24 hours): 800-424-9300

### **2. COMPOSITION/INFORMATION ON INGREDIENTS**

Principal Hazardous Components: Sodium Chloride(CAS#7647-14-5)0.684%  
Potassium Chloride(CAS#7447-40-7)0.035%, Calcium Chloride, Dihydrate  
(CAS#10035-04-8)0.037%, Magnesium Chloride(CAS#7791-18-6)0.120%,  
Sodium Bicarbonate(CAS#144-55-8)0.208%  
TLV and PEL units: None established

### **3. HAZARD IDENTIFICATION**

Emergency Overview: This product is not expected to be a hazard under normal condition of use.

Potential Health Effects:

Eyes: May cause irritation.

Skin: May cause irritation.

Ingestion: May cause gastrointestinal discomfort.

Inhalation: May cause irritation to respiratory tract.

### **4. FIRST AID MEASURES**

Emergency and First Aid Procedures:

Eyes - Flush thoroughly with water. Seek medical attention if irritation persists.

Skin - Wash exposed area with soap and water. Seek medical attention if irritation persists.

Ingestion - In quantities normally handled, symptoms would not be expected. If swallowed, if conscious, give water. Seek medical attention if gastrointestinal irritation or other unexpected symptoms develop.

Inhalation - Not expected to present a problem. However, if the exposed person is having trouble breathing, remove to fresh air. Give oxygen if breathing is difficult; give artificial respiration if breathing has stopped. Keep person warm and quiet, and get medical attention.

### **5. FIREFIGHTING PROCEDURES**

Flash Point(Method Used): N/A

NFPA Rating: None established

Extinguisher Media:

Use media suitable to extinguish surrounding fire.

Flammable Limits in Air % by Volume: N/A

Autoignition Temperature: N/A

Special Firefighting Procedures:

Firefighters should wear full protective equipment and NIOSH approved self-contained breathing apparatus.

## **MATERIAL SAFETY DATA SHEET**

RINGER SOLUTION, MAMMALIAN  
CAROLINA BIOLOGICAL

Revised: 05/15/08  
Replaces: 11/28/07  
Printed: 05/20/08

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Unusual Fire and Explosion Hazards: None

### **6. SPILL OR LEAK PROCEDURES**

Steps to be Taken in Case Material is Released or Spilled:

Ventilate area of spill. Eliminate all sources of ignition.  
Remove all non-essential personnel from area. Clean-up personnel should wear proper protective equipment and clothing. Absorb material with suitable absorbent and containerize for disposal.

### **7. SPECIAL PRECAUTIONS**

Precautions to be Taken in Handling or Storing: Store tightly closed in an area suitable for general chemical storage.

### **8. SPECIAL PROTECTION INFORMATION**

Respiratory Protection(Specify Type):

A NIOSH/MSHA chemical cartridge respirator should be worn if PEL or TLV is exceeded.

Ventilation:

Local Exhaust: No  
Mechanical(General): No  
Special: No  
Other: No

Protective Gloves:

Rubber, neoprene, PVC, or equivalent.

Eye Protection:

Splash proof chemical safety goggles should be worn at all times.

Other Protective Clothing or Equipment:

Lab apron, eye wash, and safety shower.

### **9. PHYSICAL DATA**

Molecular Weight: N/A  
Melting Point: Approximately 0 C  
Boiling Point: Approximately 100 C  
Vapor Pressure: Approximately 17.535 at 20 C  
Vapor Density(Air=1): N/A  
Specific Gravity(H2O=1): Approximately 1  
Percent Volatile by Volume: Approximately 98%  
Evaporation Rate(H2O=1): 1  
Solubility in Water: Completely soluble, product is an aqueous solution  
Appearance and Odor: Clear, colorless solution with no odor.

### **10. REACTIVITY DATA**

Stability: Stable

Conditions to Avoid: None

Incompatibility(Materials to Avoid): Water reactive materials.

Hazardous Decomposition Products: None

Hazardous Polymerization: Will not occur

### **11. TOXICITY DATA**

Toxicity Data:

Sodium chloride- LD50(oral-rat) - 3000 mg/kg  
Potassium chloride-LD50(oral-rat) - 2600 mg/kg  
Calcium chloride, Dihydrate-LD50(oral-rat) - 1000 mg/kg  
Magnesium chloride-LD50(oral-rat) - 8100 mg/kg  
Sodium Bicarbonate-LD50(oral-rat) - 4220 mg/kg

# **MATERIAL SAFETY DATA SHEET**

RINGER SOLUTION, MAMMALIAN  
CAROLINA BIOLOGICAL

Revised: 05/15/08  
Replaces: 11/28/07  
Printed: 05/20/08

---

## Effects of Overexposure:

Acute: See section 3

Chronic: Components are not listed as causing cancer by IARC, NTP, or OSHA.

## Effects of Overexposure:

Acute: See section 3

Chronic: Components are not listed as causing cancer by IARC, NTP, or OSHA.

## **12. ECOLOGICAL DATA**

EPA Waste Numbers: None

## **13. DISPOSAL INFORMATION**

Waste Disposal Methods: Dispose in accordance with all applicable Federal, State and Local regulations.

Always contact a permitted waste disposer (TSD) to assure compliance.

## **14. TRANSPORT INFORMATION**

Non-regulated

## **15. REGULATORY INFORMATION**

EPA TSCA Status: On TSCA Inventory

Hazard Category for SARA Section 311/312 Reporting: Acute

Product or Components	SARA EHS Sec. 302 TPQ	SARA Sec. 313 Chemicals		CERCLA Sec. 103 RQ lbs.	RCRA Sec. 261.33
		Name List	Chemical Category		
Sodium Chloride	No	No	No	No	No
Potassium- Chloride	No	No	No	No	No
Calcium- Chloride, Dihydrate	No	No	No	No	No
Magnesium- Chloride	No	No	No	No	No
Sodium- Bicarbonate	No	No	No	No	No

## **16. ADDITIONAL INFORMATION**

The information provided in this Material Safety Data Sheet represents a compilation of data drawn directly from various sources available to us. Carolina Biological Supply makes no representation or guarantee as to the suitability of this information to a particular application of the substance covered in the Material Safety Data Sheet. Any employer must carefully assess the applicability of any information contained herein in regards to the particular use to which the employer puts the material.

### Glossary

ACGIH.....American Conference of Governmental Industrial Hygienists

CAS Number..Chemical Abstracts Service Number

CERCLA.....Comprehensive Environmental Response, Compensation, and Liability Act

DOT.....U.S. Department of Transportation

IARC.....International Agency of Research on Cancer

mppcf.....million particles per cubic foot

## **MATERIAL SAFETY DATA SHEET**

RINGER SOLUTION, MAMMALIAN  
CAROLINA BIOLOGICAL

Revised: 05/15/08  
Replaces: 11/28/07  
Printed: 05/20/08

---

N/A.....Not Available  
NTP.....National Toxicology Program  
OSHA.....Occupational Safety and Health Administration  
PEL.....Permissible Exposure Limit  
ppm.....parts per million  
RCRA.....Resource Conservation and Recovery Act  
SARA.....Superfund Amendments and Reauthorization Act  
TLV.....Threshold Limit Value  
TSCA.....Toxic Substances Control Act

# FLINN SCIENTIFIC INC.

"Your Safer Source for Science Supplies"

## Material Safety Data Sheet (MSDS)

MSDS #: 672.00

Revision Date: November 25, 2002

---

### Section 1 — Chemical Product and Company Identification

---

#### Rose Bengal

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### Section 2 — Composition, Information on Ingredients

---

Rose Bengal

Synonyms: acid red 94, C.I. 45440

CAS#: 632-69-9

---

### Section 3 — Hazards Identification

---

Bluish-pink powder. Odorless.

Substance not considered hazardous. However, not all health aspects of this substance have been thoroughly investigated.

#### FLINN AT-A-GLANCE

Health-0

Flammability-0

Reactivity-0

Exposure-0

Storage-0

0 is low hazard, 3 is high hazard

---

### Section 4 — First Aid Measures

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash continuously with fresh water for 15 minutes.

Internal: Give large quantities of water. Call a physician or poison control at once.

---

### Section 5 — Fire Fighting Measures

---

Non flammable solid.

When heated to decomposition, emits toxic fumes of HCl, and Hydrogen Iodide gas.

**Fire Fighting Instructions:** Use triclass, dry chemical fire extinguisher. Firefighters should wear PPE and SCBA with full facepiece operated in positive mode.

#### NFPA CODE

None Established

---

### Section 6 — Accidental Release Measures

---

Restrict unprotected personnel from area. Sweep up, place in sealed bag or container and dispose. Ventilate area and wash spill site after material pickup is complete. See Sections 8 and 13 for further information.

---

### Section 7 — Handling and Storage

---

Flinn Suggested Chemical Storage Pattern: Organic #9. Store with dyes, stains, and indicators.

---

### Section 8 — Exposure Controls, Personal Protection

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron.



---

### Section 9 — Physical and Chemical Properties

---

Bluish-pink powder. Odorless.

Solubility: Soluble in water.

Formula: C<sub>20</sub>H<sub>4</sub>Cl<sub>4</sub>I<sub>4</sub>O<sub>5</sub>

Formula Weight: 1049.84

---

### Section 10 — Stability and Reactivity

---

Avoid strong acids, strong bases and strong oxidizing agents.

Shelf Life: Indefinite.

---

### Section 11 — Toxicological Information

---

Acute effects: N.A.

Chronic effects: N.A.

Target organs: N.A.

ORL-RAT LD50: N.A.

IHL-RAT LC50: N.A.

SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

---

### Section 12 — Ecological Information

---

Data not yet available.

---

### Section 13 — Disposal Considerations

---

Please consult with state and local regulations.

Flinn Suggested Disposal Method #26a is one option.

---

### Section 14 — Transport Information

---

Shipping Name: Not regulated

Hazard Class: N/A

UN Number: N/A

N/A = Not applicable

---

### Section 15 — Regulatory Information

---

Not listed.

---

### Section 16 — Other Information

---

Consult your copy of the Flinn Scientific Catalog/Reference Manual for additional information about laboratory chemicals. This Material Safety Data Sheet (MSDS) is for guidance and is based upon information and tests believed to be reliable. Flinn Scientific Inc. makes no guarantee of the accuracy or completeness of the data and shall not be liable for any damages relating thereto. The data is offered solely for your consideration, investigation, and verification. Flinn Scientific Inc. assumes no legal responsibility for use or reliance upon this data.

**FLINN SCIENTIFIC INC.**

"Your Safer Source for Science Supplies"

*Count on Flinn To Be  
"Your Safer Source for Chemicals"*

flinn@flinnsci.com www.flinnsci.com  
P.O. Box 219 Batavia IL 60510  
(800) 452-1261 Fax (866) 452-1436

# FLINN SCIENTIFIC, INC.

## Material Safety Data Sheet (MSDS)

MSDS #: 677.00

Revision Date: May 4, 2006

---

### SECTION 1 — CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

---

#### Salicylic Acid

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### SECTION 2 — COMPOSITION, INFORMATION ON INGREDIENTS

---

Salicylic Acid

CAS#: 69-72-7

---

### SECTION 3 — HAZARDS IDENTIFICATION

---

White crystalline powder. Odorless.

Moderately toxic by ingestion. Irritating to body tissues. Avoid all body tissue contact.

Combustible; only as dust.

#### FLINN AT-A-GLANCE

Health-2

Flammability-1

Reactivity-1

Exposure-1

Storage-0

0 is low hazard, 3 is high hazard

---

### SECTION 4 — FIRST AID MEASURES

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash continuously with fresh water for 15 minutes.

Internal: Give large quantities of water. Call a physician or poison control at once.

---

### SECTION 5 — FIRE FIGHTING MEASURES

---

Combustible solid.

**Fire Fighting Instructions:** Use triclass, dry chemical fire extinguisher. Firefighters should wear PPE and SCBA with full facepiece operated in positive mode.

#### NFPA CODE

H-0

F-1

R-0

---

### SECTION 6 — ACCIDENTAL RELEASE MEASURES

---

Restrict unprotected personnel from area. Sweep up, place in sealed bag or container and dispose. Ventilate area and wash spill site after material pickup is complete. See Sections 8 and 13 for further information.

---

### SECTION 7 — HANDLING AND STORAGE

---

Flinn Suggested Chemical Storage Pattern: Organic #1. Store with acids, anhydrides and peracids.

Store in a cool dry place. Moisture sensitive material. Protect from light. Use and dispense in a hood.

---

### SECTION 8 — EXPOSURE CONTROLS, PERSONAL PROTECTION

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron. Use exhaust ventilation to keep airborne concentrations low.

---

**SECTION 9 — PHYSICAL AND CHEMICAL PROPERTIES**

---

White crystalline powder. Odorless.  
Solubility: Slightly soluble in water; soluble in many organic solvents.  
Formula: 2-HOC<sub>6</sub>H<sub>4</sub>COOH  
Formula Weight: 138.13

Specific Gravity: 1.443  
Melting Point: 158-161 C  
Boiling Point: 211 C @ 20 mm  
Vapor Pressure: 1 mm (114 C)  
Vapor Density: 4.8

---

**SECTION 10 — STABILITY AND REACTIVITY**

---

Avoid strong oxidizers and strong bases.  
Shelf life: Indefinite.

---

**SECTION 11 — TOXICOLOGICAL INFORMATION**

---

Acute effects: Toxic, irritant  
Chronic effects: Possible mutagen  
Target organs: Central nervous system

ORL-RAT LD50: 891 mg/kg  
IHL-RAT LC50: N.A.  
SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

---

**SECTION 12 — ECOLOGICAL INFORMATION**

---

Data not yet available.

---

**SECTION 13 — DISPOSAL CONSIDERATIONS**

---

Please consult with state and local regulations.  
Flinn Suggested Disposal Method #24a is one option.

---

**SECTION 14 — TRANSPORT INFORMATION**

---

Shipping Name: Not regulated  
Hazard Class: N/A  
UN Number: N/A  
N/A = Not applicable

---

**SECTION 15 — REGULATORY INFORMATION**

---

TSCA-listed, EINECS-listed (200-712-3).

---

**SECTION 16 — OTHER INFORMATION**

---

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**Consult your copy of the Flinn Chemical Catalog/Reference Manual  
for additional information about laboratory chemicals**

# FLINN SCIENTIFIC INC.

"Your Safer Source for Science Supplies"

## Material Safety Data Sheet (MSDS)

MSDS #: 685.00

Revision Date: November 25, 2002

---

### Section 1 — Chemical Product and Company Identification

---

#### Silica Gel

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### Section 2 — Composition, Information on Ingredients

---

Silica Gel

Synonyms: amorphous hydrated silica

CAS#: 7631-86-9

---

### Section 3 — Hazards Identification

---

White, off-white, or blue odorless granules.

Substance not considered hazardous. However, not all health aspects of this substance have been thoroughly investigated.

#### FLINN AT-A-GLANCE

Health-0

Flammability-0

Reactivity-0

Exposure-0

Storage-0

0 is low hazard, 3 is high hazard

---

### Section 4 — First Aid Measures

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash continuously with fresh water for 15 minutes.

Internal: Rinse out mouth, give 1 to 2 cups of water or milk, induce vomiting. Call a physician or poison control at once.

---

### Section 5 — Fire Fighting Measures

---

Non-flammable solid.

#### NFPA CODE

None Established

---

### Section 6 — Accidental Release Measures

---

Restrict unprotected personnel from area. Sweep up, place in sealed bag or container and dispose. Ventilate area and wash spill site after material pickup is complete. See Sections 8 and 13 for further information.

---

### Section 7 — Handling and Storage

---

Flinn Suggested Chemical Storage Pattern: Inorganic #4. Store with hydroxides, oxides, silicates and carbonates.

Keep container tightly closed. Moisture sensitive material. Store in a cool dry place.

---

### Section 8 — Exposure Controls, Personal Protection

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron.

### Section 9 — Physical and Chemical Properties

Dry, white or blue granules, fine sized. Odorless.  
Solubility: Generally insoluble.  
Formula: SiO<sub>2</sub> x H<sub>2</sub>O  
Formula Weight: Varies

Specific Gravity: 2.1  
Melting Point: 1710 C  
Boiling Point: 2230 C

### Section 10 — Stability and Reactivity

Avoid contact with hydrogen fluoride or hydrofluoric acid.  
Blue indicating silica gel will turn white upon absorption of water.  
Shelf Life: Good, if kept dry.

### Section 11 — Toxicological Information

Acute effects: Possible irritant  
Chronic effects: N.A.  
Target organs: N.A.

ORL-RAT LD50: >30,000 mg/kg  
IHL-RAT LC50: N.A.  
SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

### Section 12 — Ecological Information

Data not yet available.

### Section 13 — Disposal Considerations

Please consult with state and local regulations.  
Flinn Suggested Disposal Method #26a is one option.

### Section 14 — Transport Information

Shipping Name: Not regulated  
Hazard Class: N/A  
UN Number: N/A

N/A = Not applicable

### Section 15 — Regulatory Information

Not listed.

### Section 16 — Other Information

Consult your copy of the Flinn Scientific Catalog/Reference Manual for additional information about laboratory chemicals. This Material Safety Data Sheet (MSDS) is for guidance and is based upon information and tests believed to be reliable. Flinn Scientific Inc. makes no guarantee of the accuracy or completeness of the data and shall not be liable for any damages relating thereto. The data is offered solely for your consideration, investigation, and verification. Flinn Scientific Inc. assumes no legal responsibility for use or reliance upon this data.

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# FLINN SCIENTIFIC INC.

"Your Safer Source for Science Supplies"

## Material Safety Data Sheet (MSDS)

MSDS #: 691.00

Revision Date: November 25, 2002

---

### Section 1 — Chemical Product and Company Identification

---

#### Silver Nitrate

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### Section 2 — Composition, Information on Ingredients

---

Silver Nitrate

CAS#: 7761-88-8

---

### Section 3 — Hazards Identification

---

Colorless, transparent, rhombic crystals; turns color on exposure to light in presence of organic materials. Faint nitric acid odor.  
Highly toxic by ingestion and inhalation. Corrosive to body tissues. Ingestion may be fatal, as little as 2 grams can be fatal to humans.

#### FLINN AT-A-GLANCE

Health-3  
Flammability-0  
Reactivity-3  
Exposure-3  
Storage-3

0 is low hazard, 3 is high hazard

---

### Section 4 — First Aid Measures

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.  
Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.  
Eye: Immediately flush with fresh water for 15 minutes.  
External: Wash continuously with fresh water for 15 minutes.  
Internal: Give large quantities of water. Call a physician or poison control at once.

---

### Section 5 — Fire Fighting Measures

---

Non-flammable solid.  
When heated to decomposition, emits toxic fumes of NO<sub>x</sub>.  
**Fire Fighting Instructions:** Use triclass, dry chemical fire extinguisher. Firefighters should wear PPE and SCBA with full facepiece operated in positive mode.

#### NFPA CODE

None Established

---

### Section 6 — Accidental Release Measures

---

Restrict unprotected personnel from area. Sweep up, place in sealed bag or container and dispose. Ventilate area and wash spill site after material pickup is complete. See Sections 8 and 13 for further information.

---

### Section 7 — Handling and Storage

---

Flinn Suggested Chemical Storage Pattern: Inorganic #3. Store with amides, nitrates and nitrites.  
Store in a cool dry place. Light sensitive. Store in a Flinn Chem-Saf bag, and lock up in a poison cabinet.  
Use and dispense in a hood.

---

### Section 8 — Exposure Controls, Personal Protection

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron. Use ventilation to keep airborne concentrations below exposure limits. Always wear a NIOSH-approved respirator with proper cartridges or a positive pressure, air-supplied respirator when handling this material in emergency situations (spill or fire).

### Section 9 — Physical and Chemical Properties

Colorless, transparent, rhombic crystals; turns color on exposure to light in presence of organic materials.  
Faint nitric acid odor.  
Solubility: Soluble in cold water--more so in hot water.  
Formula: AgNO<sub>3</sub>  
Formula Weight: 169.88

Specific Gravity: 4.352  
Melting Point: 212 C  
Boiling Point: 444 C (dec.)

### Section 10 — Stability and Reactivity

Avoid contact with strong reducers, ammonia, strong bases, alcohols, magnesium.  
Shelf Life: Indefinite.

### Section 11 — Toxicological Information

Acute effects: Highly toxic, corrosive, abdominal pain  
Chronic effects: Possible mutagen  
Target organs: N.A.

ORL-RAT LD50: 50 mg/kg  
ORL-MAN LDLO: 2 gm/150 lb human  
SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

### Section 12 — Ecological Information

Data not yet available.

### Section 13 — Disposal Considerations

Please consult with state and local regulations.  
Flinn Suggested Disposal Method #11 is one option.

### Section 14 — Transport Information

Shipping Name: Silver nitrate  
Hazard Class: 5.1, Oxidizer  
UN Number: UN1493

N/A = Not applicable

### Section 15 — Regulatory Information

TSCA-listed, EINECS-listed (231-853-9), RCRA code D001, D011.

### Section 16 — Other Information

Consult your copy of the Flinn Scientific Catalog/Reference Manual for additional information about laboratory chemicals. This Material Safety Data Sheet (MSDS) is for guidance and is based upon information and tests believed to be reliable. Flinn Scientific Inc. makes no guarantee of the accuracy or completeness of the data and shall not be liable for any damages relating thereto. The data is offered solely for your consideration, investigation, and verification. Flinn Scientific Inc. assumes no legal responsibility for use or reliance upon this data.

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# FLINN SCIENTIFIC INC.

"Your Safer Source for Science Supplies"

## Material Safety Data Sheet (MSDS)

MSDS #: 697.00

Revision Date: November 25, 2002

---

### Section 1 — Chemical Product and Company Identification

---

#### Soda Lime

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### Section 2 — Composition, Information on Ingredients

---

Soda Lime

CAS#: 8006-28-8

---

### Section 3 — Hazards Identification

---

White or grayish-white granules. Odorless.

Corrosive to body tissues. Slightly toxic by ingestion. Avoid all body tissue contact.

#### FLINN AT-A-GLANCE

Health-1

Flammability-0

Reactivity-1

Exposure-2

Storage-1

0 is low hazard, 3 is high hazard

---

### Section 4 — First Aid Measures

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash continuously with fresh water for 15 minutes.

Internal: Give no more than 1-2 cups of water for dilution. Do not induce vomiting. Call a physician or poison control at once.

---

### Section 5 — Fire Fighting Measures

---

Non flammable solid.

#### NFPA CODE

None Established

---

### Section 6 — Accidental Release Measures

---

Restrict unprotected personnel from area. Sweep up, place in sealed bag or container and dispose. Ventilate area and wash spill site after material pickup is complete. See Sections 8 and 13 for further information.

---

### Section 7 — Handling and Storage

---

Flinn Suggested Chemical Storage Pattern: Inorganic #4. Store with hydroxides, oxides, silicates and carbonates.

Moisture sensitive material. Store in a cool dry place. Must be stored in an airtight container. Store in a Flinn Chem-Saf bag.

Use and dispense in a hood.

---

### Section 8 — Exposure Controls, Personal Protection

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron.

Use exhaust ventilation to keep airborne concentrations low.



### Section 9 — Physical and Chemical Properties

White or grayish-white granules. Odorless.  
Mixture of sodium hydroxide and lime (calcium oxide).  
Solubility: Soluble in water.

### Section 10 — Stability and Reactivity

Avoid contact with strong acids.  
Shelf life: Poor, unless kept tightly capped.

### Section 11 — Toxicological Information

Acute effects: Corrosive	ORL-RAT LD50: 3530 mg/kg
Chronic effects: N.A.	IHL-RAT LC50: N.A.
Target organs: N.A.	SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

### Section 12 — Ecological Information

Data not yet available.

### Section 13 — Disposal Considerations

Please consult with state and local regulations.  
Flinn Suggested Disposal Method #10 is one option.

### Section 14 — Transport Information

Shipping Name: Not regulated  
Hazard Class: N/A  
UN Number: N/A

N/A = Not applicable

### Section 15 — Regulatory Information

RCRA code D002.

### Section 16 — Other Information

Consult your copy of the Flinn Scientific Catalog/Reference Manual for additional information about laboratory chemicals. This Material Safety Data Sheet (MSDS) is for guidance and is based upon information and tests believed to be reliable. Flinn Scientific Inc. makes no guarantee of the accuracy or completeness of the data and shall not be liable for any damages relating thereto. The data is offered solely for your consideration, investigation, and verification. Flinn Scientific Inc. assumes no legal responsibility for use or reliance upon this data.

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# FLINN SCIENTIFIC INC.

"Your Safer Source for Science Supplies"

## Material Safety Data Sheet (MSDS)

MSDS #: 700.00

Revision Date: March 12, 2001

---

### Section 1 — Chemical Product and Company Identification

---

#### Sodium Acetate

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### Section 2 — Composition, Information on Ingredients

---

Sodium Acetate

CAS#: 6131-90-4 (trihydrate); 127-09-3 (anhydrous)

---

### Section 3 — Hazards Identification

---

Colorless, crystals; efflorescent. Faint vinegar odor.

Slightly toxic by ingestion. Skin, eye and respiratory irritant. Avoid all body tissue contact.

#### FLINN AT-A-GLANCE

Health-1

Flammability-0

Reactivity-0

Exposure-1

Storage-0

0 is low hazard, 3 is high hazard

---

### Section 4 — First Aid Measures

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash continuously with fresh water for 15 minutes.

Internal: Rinse out mouth, give 1 to 2 cups of water or milk, induce vomiting. Call a physician or poison control at once.

---

### Section 5 — Fire Fighting Measures

---

Non flammable solid.

When heated to decomposition, emits acrid fumes.

**Fire Fighting Instructions:** Use triclass, dry chemical fire extinguisher. Firefighters should wear PPE and SCBA with full facepiece operated in positive pressure mode.

#### NFPA CODE

None established

---

### Section 6 — Accidental Release Measures

---

Restrict unprotected personnel from area. Sweep up, place in sealed bag or container and dispose. Ventilate area and wash spill site after material pickup is complete. See Sections 8 and 13 for further information.

---

### Section 7 — Handling and Storage

---

Flinn Suggested Chemical Storage Pattern: Inorganic #2. Store with acetates, halides, sulfates, sulfites, thiosulfates and phosphates.

---

### Section 8 — Exposure Controls, Personal Protection

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron.

### Section 9 — Physical and Chemical Properties

Colorless crystals, efflorescent. Faint vinegar odor.  
Formula: NaC<sub>2</sub>H<sub>3</sub>O<sub>2</sub>  
Formula Weight: 82.03

Specific Gravity: 1.45  
Melting Point: 58 C

### Section 10 — Stability and Reactivity

Avoid strong oxidizers.  
Shelf Life: Fair to poor, substance efflorescent.

### Section 11 — Toxicological Information

Acute effects: Irritant  
Chronic effects: N.A.  
Target organs: G.I. system

ORL-RAT LD50: 3530 mg/kg  
IHL-RAT LC50: N.A.  
SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

### Section 12 — Ecological Information

Data not yet available.

### Section 13 — Disposal Considerations

Please consult with state and local regulations.  
Flinn Suggested Disposal Method #26a is one option.

### Section 14 — Transport Information

Shipping Name: Not regulated  
Hazard Class: N/A  
UN Number: N/A

N/A = Not applicable

### Section 15 — Regulatory Information

TSCA-listed, EINECS-listed (204-823-8).

### Section 16 — Other Information

Consult your copy of the Flinn Scientific Catalog/Reference Manual for additional information about laboratory chemicals. This Material Safety Data Sheet (MSDS) is for guidance and is based upon information and tests believed to be reliable. Flinn Scientific Inc. makes no guarantee of the accuracy or completeness of the data and shall not be liable for any damages relating thereto. The data is offered solely for your consideration, investigation, and verification. Flinn Scientific Inc. assumes no legal responsibility for use or reliance upon this data.

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# FLINN SCIENTIFIC INC.

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## Material Safety Data Sheet (MSDS)

MSDS #: 706.00

Revision Date: November 25, 2002

---

### Section 1 — Chemical Product and Company Identification

---

#### Sodium Benzoate

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### Section 2 — Composition, Information on Ingredients

---

Sodium Benzoate

Synonym: benzoic acid, sodium salt

CAS#: 532-32-1

---

### Section 3 — Hazards Identification

---

White, odorless, crystalline or granular powder.

Slightly toxic by ingestion.

Combustible solid.

#### FLINN AT-A-GLANCE

Health-1

Flammability-1

Reactivity-0

Exposure-0

Storage-0

0 is low hazard, 3 is high hazard

---

### Section 4 — First Aid Measures

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash continuously with fresh water for 15 minutes.

Internal: Give large quantities of water. Call a physician or poison control at once.

---

### Section 5 — Fire Fighting Measures

---

Combustible solid.

When heated to decomposition, emits toxic fumes of Na<sub>2</sub>O.

**Fire Fighting Instructions:** Use triclass, dry chemical fire extinguisher. Firefighters should wear PPE and SCBA with full facepiece operated in positive mode.

#### NFPA CODE

None Established

---

### Section 6 — Accidental Release Measures

---

Restrict unprotected personnel from area. Sweep up, place in sealed bag or container and dispose. Ventilate area and wash spill site after material pickup is complete. See Sections 8 and 13 for further information.

---

### Section 7 — Handling and Storage

---

Flinn Suggested Chemical Storage Pattern: Inorganic #2. Store with acetates, halides, sulfates, sulfites, thiosulfates and phosphates. Store in a cool dry place.

---

### Section 8 — Exposure Controls, Personal Protection

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron.

### Section 9 — Physical and Chemical Properties

White, odorless crystalline or granular powder.  
Solubility: Soluble in water and alcohol.  
Formula: C<sub>6</sub>H<sub>5</sub>CO<sub>2</sub>Na  
Formula Weight: 144.11

### Section 10 — Stability and Reactivity

Avoid contact with strong oxidizers and heat.  
Shelf Life: Indefinite.

### Section 11 — Toxicological Information

Acute effects: N.A.	ORL-RAT LD50: 4070 mg/kg
Chronic effects: N.A.	IHL-RAT LC50: N.A.
Target organs: N.A.	SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

### Section 12 — Ecological Information

Data not yet available.

### Section 13 — Disposal Considerations

Please consult with state and local regulations.  
Flinn Suggested Disposal Method #26a is one option.

### Section 14 — Transport Information

Shipping Name: Not regulated  
Hazard Class: N/A  
UN Number: N/A

N/A = Not applicable

### Section 15 — Regulatory Information

TSCA-listed, EINECS-listed (208-534-8).

### Section 16 — Other Information

Consult your copy of the Flinn Scientific Catalog/Reference Manual for additional information about laboratory chemicals. This Material Safety Data Sheet (MSDS) is for guidance and is based upon information and tests believed to be reliable. Flinn Scientific Inc. makes no guarantee of the accuracy or completeness of the data and shall not be liable for any damages relating thereto. The data is offered solely for your consideration, investigation, and verification. Flinn Scientific Inc. assumes no legal responsibility for use or reliance upon this data.

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# FLINN SCIENTIFIC INC.

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## Material Safety Data Sheet (MSDS)

MSDS #: 707.00

Revision Date: November 25, 2002

---

### Section 1 — Chemical Product and Company Identification

---

#### Sodium Bicarbonate

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### Section 2 — Composition, Information on Ingredients

---

Sodium Bicarbonate

CAS#: 144-55-8

---

### Section 3 — Hazards Identification

---

White powder or crystals (frequently in lumps). Odorless.  
Slightly toxic by ingestion. Dust may be irritating to respiratory system.

#### FLINN AT-A-GLANCE

Health-1  
Flammability-0  
Reactivity-0  
Exposure-1  
Storage-1

0 is low hazard, 3 is high hazard

---

### Section 4 — First Aid Measures

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash continuously with fresh water for 15 minutes.

Internal: Rinse out mouth, give 1 to 2 cups of water or milk, induce vomiting. After vomiting, give mixture of 2 Tbs. of activated charcoal mixed with one cup of water. Call a physician or poison control at once.

---

### Section 5 — Fire Fighting Measures

---

Non combustible solid.

#### NFPA CODE

None Established

---

### Section 6 — Accidental Release Measures

---

Restrict unprotected personnel from area. Sweep up, place in sealed bag or container and dispose. Ventilate area and wash spill site after material pickup is complete. See Sections 8 and 13 for further information.

---

### Section 7 — Handling and Storage

---

Flinn Suggested Chemical Storage Pattern: Inorganic #4. Store with hydroxides, oxides, silicates and carbonates.

Store in a cool dry place. Store in a Flinn Chem-Saf bag.

---

### Section 8 — Exposure Controls, Personal Protection

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron. Use exhaust ventilation to keep airborne concentrations low.

### Section 9 — Physical and Chemical Properties

White powder or crystals (frequently in lumps). Odorless.  
Solubility: Soluble in water, not alcohol.  
Formula: NaHCO<sub>3</sub>  
Formula Weight: 84.01

Specific Gravity: 2.159  
Melting Point: loses carbon dioxide at 270 C

### Section 10 — Stability and Reactivity

Avoid contact with strong oxidizers and strong acids.  
Shelf Life: Stable under dry storage conditions; slowly decomposes in moist air.

### Section 11 — Toxicological Information

Acute effects: Gastrointestinal disturbances, irritating dust  
Chronic effects: N.A.  
Target organs: N.A.

ORL-RAT LD50: 4220 mg/kg  
IHL-RAT LC50: N.A.  
SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

### Section 12 — Ecological Information

Data not yet available.

### Section 13 — Disposal Considerations

Please consult with state and local regulations.  
Flinn Suggested Disposal Method #26a is one option.

### Section 14 — Transport Information

Shipping Name: Not regulated  
Hazard Class: N/A  
UN Number: N/A

N/A = Not applicable

### Section 15 — Regulatory Information

TSCA-listed, EINECS-listed (205-633-8).

### Section 16 — Other Information

Consult your copy of the Flinn Scientific Catalog/Reference Manual for additional information about laboratory chemicals. This Material Safety Data Sheet (MSDS) is for guidance and is based upon information and tests believed to be reliable. Flinn Scientific Inc. makes no guarantee of the accuracy or completeness of the data and shall not be liable for any damages relating thereto. The data is offered solely for your consideration, investigation, and verification. Flinn Scientific Inc. assumes no legal responsibility for use or reliance upon this data.

**FLINN SCIENTIFIC INC.**

"Your Safer Source for Science Supplies"

*Flinn MSDS Prevent Chemical Accidents*

flinn@flinnsci.com www.flinnsci.com  
P.O. Box 219 Batavia IL 60510  
(800) 452-1261 Fax (866) 452-1436

# FLINN SCIENTIFIC INC.

"Your Safer Source for Science Supplies"

## Material Safety Data Sheet (MSDS)

MSDS #: 710.00

Revision Date: November 25, 2002

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### Section 1 — Chemical Product and Company Identification

---

#### Sodium Bisulfate

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### Section 2 — Composition, Information on Ingredients

---

Sodium Bisulfate

Synonym: sodium hydrogen sulfate

CAS#: 10034-88-5

---

### Section 3 — Hazards Identification

---

Moist, white, odorless crystals.

Slightly toxic by ingestion. Corrosive to body tissues. Avoid all body tissue contact.

When heated to decomposition, emits toxic fumes of SO<sub>x</sub>.

#### FLINN AT-A-GLANCE

Health-1

Flammability-0

Reactivity-1

Exposure-2

Storage-1

0 is low hazard, 3 is high hazard

---

### Section 4 — First Aid Measures

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash continuously with fresh water for 15 minutes.

Internal: Give large quantities of water. Call a physician or poison control at once.

---

### Section 5 — Fire Fighting Measures

---

Non flammable solid.

When heated to decomposition, emits toxic fumes of SO<sub>x</sub>.

**Fire Fighting Instructions:** Use triclass, dry chemical fire extinguisher. Firefighters should wear PPE and SCBA with full facepiece operated in positive mode.

#### NFPA CODE

None Established

---

### Section 6 — Accidental Release Measures

---

Restrict unprotected personnel from area. Sweep up, place in sealed bag or container and dispose. Ventilate area and wash spill site after material pickup is complete. See Sections 8 and 13 for further information.

---

### Section 7 — Handling and Storage

---

Flinn Suggested Chemical Storage Pattern: Inorganic #2. Store with acetates, halides, sulfates, sulfites, thiosulfates and phosphates. Keep container tightly closed. Moisture sensitive material, store in a Flinn Chem-Saf bag. Store in a cool dry place.

---

### Section 8 — Exposure Controls, Personal Protection

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron. Use exhaust ventilation to keep airborne concentrations low.



### Section 9 — Physical and Chemical Properties

Moist, white, odorless crystals.  
Solubility: Soluble in water. Aqueous solution is strongly acid. Hygroscopic.  
Formula: NaHSO<sub>4</sub> H<sub>2</sub>O  
Formula Weight: 138.08

Specific Gravity: 2.103  
Melting Point: 58.5 C

### Section 10 — Stability and Reactivity

Avoid contact with strong bases, strong oxidizers.  
Shelf Life: Hygroscopic; keep tightly closed.

### Section 11 — Toxicological Information

Acute effects: Corrosive  
Chronic effects: N.A.  
Target organs: N.A.

ORL-RAT LD50: N.A.  
IHL-RAT LC50: N.A.  
SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

### Section 12 — Ecological Information

Data not yet available.

### Section 13 — Disposal Considerations

Please consult with state and local regulations.  
Flinn Suggested Disposal Method #26a is one option.

### Section 14 — Transport Information

Shipping Name: Not regulated  
Hazard Class: N/A  
UN Number: N/A

N/A = Not applicable

### Section 15 — Regulatory Information

TSCA-listed, EINECS-listed (231-665-7).

### Section 16 — Other Information

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# FLINN SCIENTIFIC INC.

"Your Safer Source for Science Supplies"

## Material Safety Data Sheet (MSDS)

MSDS #: 711.00

Revision Date: November 25, 2002

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### Section 1 — Chemical Product and Company Identification

---

#### Sodium Bisulfite

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### Section 2 — Composition, Information on Ingredients

---

Sodium Bisulfite

CAS#: 7631-90-5

---

### Section 3 — Hazards Identification

---

White crystals or powder; slight sulfurous odor.  
Slightly toxic by ingestion. Severe body tissue irritant. Possible sensitizer.  
Avoid all body tissue contact.

#### FLINN AT-A-GLANCE

Health-2  
Flammability-0  
Reactivity-0  
Exposure-1  
Storage-1

0 is low hazard, 3 is high hazard

---

### Section 4 — First Aid Measures

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.  
Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.  
Eye: Immediately flush with fresh water for 15 minutes.  
External: Wash continuously with fresh water for 15 minutes.  
Internal: Rinse out mouth, give 1 to 2 cups of water or milk, induce vomiting. Call a physician or poison control at once.

---

### Section 5 — Fire Fighting Measures

---

Non flammable solid.  
When heated to decomposition, emits toxic fumes of SO<sub>x</sub>.  
**Fire Fighting Instructions:** Use triclass, dry chemical fire extinguisher. Firefighters should wear PPE and SCBA with full facepiece operated in positive mode.

#### NFPA CODE

None Established

---

### Section 6 — Accidental Release Measures

---

Restrict unprotected personnel from area. Sweep up, place in sealed bag or container and dispose. Ventilate area and wash spill site after material pickup is complete. See Sections 8 and 13 for further information.

---

### Section 7 — Handling and Storage

---

Flinn Suggested Chemical Storage Pattern: Inorganic #2. Store with acetates, halides, sulfates, sulfites, thiosulfates and phosphates. Keep container tightly closed. Deliquescent, store in a Flinn Chem-Saf bag. Store in a cool dry place. Use and dispense in a hood.

---

### Section 8 — Exposure Controls, Personal Protection

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron. Use ventilation to keep airborne concentrations below exposure limits. Always wear a NIOSH-approved respirator with proper cartridges or a positive pressure, air-supplied respirator when handling this material in emergency situations (spill or fire).  
Exposure guidelines: TWA 5 mg/m<sup>3</sup> (NIOSH)

### Section 9 — Physical and Chemical Properties

White crystals or powder; slight sulfurous odor.  
Solubility: Soluble in water; not alcohol.  
Formula: NaHSO<sub>3</sub>  
Formula Weight: 104.07

Specific Gravity: 1.48  
Melting Point: decomposes.

### Section 10 — Stability and Reactivity

Avoid contact with acids and oxidizing agents.  
Shelf Life: Fair to poor; substance very hygroscopic. Store in a Flinn Chem-Saf bag.

### Section 11 — Toxicological Information

Acute effects: Severe irritant, possible sensitizer, coughing, chest pains, difficulty breathing, stomach pains, vomiting, diarrhea.  
Chronic effects: N.A.  
Target organs: N.A.

ORL-RAT LD50: 2 gm/kg  
IHL-RAT LC50: N.A.  
SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

### Section 12 — Ecological Information

Data not yet available.

### Section 13 — Disposal Considerations

Please consult with state and local regulations.  
Flinn Suggested Disposal Method #26a is one option.

### Section 14 — Transport Information

Shipping Name: Not regulated  
Hazard Class: N/A  
UN Number: N/A

N/A = Not applicable

### Section 15 — Regulatory Information

TSCA-listed, EINECS-listed (231-548-0).

### Section 16 — Other Information

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(800) 452-1261 Fax (866) 452-1436

MSDS Number: **S3122** \* \* \* \* \* *Effective Date: 02/15/08* \* \* \* \* \* *Supersedes: 05/06/05*

	<b>24 Hour Emergency Telephone: 908-859-2151</b> <b>CHEMTREC: 1-800-424-9300</b>
	<b>National Response in Canada</b> <b>CANUTEC: 613-996-6565</b>
<b>From: Mallinckrodt Baker, Inc.</b> <b>222 Red School Lane</b> <b>Phillipsburg, NJ 08865</b>	<b>Outside U.S. and Canada</b> <b>Chemtrec: 703-527-3887</b>
	<b>NOTE: CHEMTREC, CANUTEC and National Response Center emergency numbers to be used only in the event of chemical emergencies involving a spill, leak, fire, exposure or accident involving chemicals.</b>

All non-emergency questions should be directed to Customer Service (1-800-582-2537) for assistance.

# SODIUM BORATE

## 1. Product Identification

**Synonyms:** Sodium borate decahydrate; borax; sodium pyroborate

**CAS No.:** 1330-43-4 (Anhydrous) 1303-96-4 (Decahydrate)

**Molecular Weight:** 381.37

**Chemical Formula:** Na<sub>2</sub>B<sub>4</sub>O<sub>7</sub> · 10H<sub>2</sub>O

**Product Codes:**

J.T. Baker: 3568, 3570, 3574, 3575

Mallinckrodt: 7418, 7457, 7460, 7792

## 2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
Borates, Tetra, Sodium Salts (Anhydrous)	1330-43-4	99 - 100%	Yes

## 3. Hazards Identification

### Emergency Overview

**WARNING! HARMFUL IF SWALLOWED, INHALED OR ABSORBED THROUGH SKIN. CAUSES IRRITATION TO SKIN, EYES AND RESPIRATORY TRACT.**

**SAF-T-DATA<sup>(tm)</sup>** Ratings (Provided here for your convenience)

Health Rating: 2 - Moderate (Life)

Flammability Rating: 0 - None

Reactivity Rating: 1 - Slight

Contact Rating: 2 - Moderate (Life)

Lab Protective Equip: GOGGLES; LAB COAT; VENT HOOD; PROPER GLOVES

Storage Color Code: Green (General Storage)

---

### Potential Health Effects

---

**Inhalation:**

Causes irritation to the respiratory tract. Symptoms may include coughing, shortness of breath.

**Ingestion:**

May cause nausea, vomiting, diarrhea, muscular spasms, dullness, lethargy, circulatory depression, central nervous system depression, shock, kidney damage, coma, and death. Estimated lethal dose 15 to 20 grams.

**Skin Contact:**

Causes irritation to skin. Symptoms include redness, itching, and pain. May be absorbed through the skin with possible systemic effects.

**Eye Contact:**

Causes irritation, redness, and pain.

**Chronic Exposure:**

Prolonged or repeated ingestion or skin absorption may cause anorexia, weight loss, vomiting, mild diarrhea, skin rash, convulsions, and anemia.

**Aggravation of Pre-existing Conditions:**

No information found.

---

## 4. First Aid Measures

**Inhalation:**

Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

**Ingestion:**

Induce vomiting immediately as directed by medical personnel. Never give anything by mouth to an unconscious person. Get medical attention.

**Skin Contact:**

Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention. Wash clothing before reuse. Thoroughly clean shoes before reuse.

**Eye Contact:**

Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention immediately.

---

## 5. Fire Fighting Measures

**Fire:**

Not considered to be a fire hazard.

**Explosion:**

Not considered to be an explosion hazard.

**Fire Extinguishing Media:**

Use any means suitable for extinguishing surrounding fire.

**Special Information:**

In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode.

---

## 6. Accidental Release Measures

Ventilate area of leak or spill. Wear appropriate personal protective equipment as specified in Section 8. Spills: Sweep up and containerize for reclamation or disposal. Vacuuming or wet sweeping may be used to avoid dust dispersal.

---

## 7. Handling and Storage

Keep in a tightly closed container, stored in a cool, dry, ventilated area. Protect against physical damage. Containers of this material may be hazardous when empty since they retain product residues (dust, solids); observe all warnings and precautions listed for the product.

---

## 8. Exposure Controls/Personal Protection

### Airborne Exposure Limits:

- NIOSH Recommended Exposure Limit (REL): 1 mg/m<sup>3</sup> (TWA)

- ACGIH Threshold Limit Value (TLV): 5 mg/m<sup>3</sup> (TWA)

### Ventilation System:

A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, *Industrial Ventilation, A Manual of Recommended Practices*, most recent edition, for details.

### Personal Respirators (NIOSH Approved):

If the exposure limit is exceeded and engineering controls are not feasible, a full facepiece particulate respirator (NIOSH type N100 filters) may be worn for up to 50 times the exposure limit or the maximum use concentration specified by the appropriate regulatory agency or respirator supplier, whichever is lowest. If oil particles (e.g. lubricants, cutting fluids, glycerine, etc.) are present, use a NIOSH type R or P filter. For emergencies or instances where the exposure levels are not known, use a full-facepiece positive-pressure, air-supplied respirator. WARNING: Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.

### Skin Protection:

Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact.

### Eye Protection:

Use chemical safety goggles and/or full face shield where dusting or splashing of solutions is possible. Maintain eye wash fountain and quick-drench facilities in work area.

---

## 9. Physical and Chemical Properties

### Appearance:

White, Gray, Bluish or Greenish White Streaked Crystals.

### Odor:

Odorless.

### Solubility:

6g/100g water.

### Density:

1.73

### pH:

Alkaline

### % Volatiles by volume @ 21C (70F):

0

### Boiling Point:

320C (608F) Loses water

### Melting Point:

75C (167F)

### Vapor Density (Air=1):

No information found.

### Vapor Pressure (mm Hg):

No information found.

**Evaporation Rate (BuAc=1):**

No information found.

## 10. Stability and Reactivity

**Stability:**

Stable under ordinary conditions of use and storage.

**Hazardous Decomposition Products:**

Toxic gases and vapors may be released if involved in a fire.

**Hazardous Polymerization:**

Will not occur.

**Incompatibilities:**

Acids, alkaloids, and metallic salts.

**Conditions to Avoid:**

Incompatibles.

## 11. Toxicological Information

Hydrate: Oral rat LD50: 2660 mg/kg. Investigated as a mutagen, reproductive effector. Anhydrous: Investigated as a reproductive effector.

-----\Cancer Lists\-----			
Ingredient	---NTP Carcinogen---		IARC Category
	Known	Anticipated	
Borates, Tetra, Sodium Salts (Anhydrous) (1330-43-4)	No	No	None

## 12. Ecological Information

**Environmental Fate:**

When released into the soil, this material may leach into groundwater.

**Environmental Toxicity:**

No information found.

## 13. Disposal Considerations

Whatever cannot be saved for recovery or recycling should be managed in an appropriate and approved waste disposal facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

## 14. Transport Information

Not regulated.

## 15. Regulatory Information

```

-----\Chemical Inventory Status - Part 1\-----
Ingredient                                     TSCA  EC   Japan  Australia
-----
Borates, Tetra, Sodium Salts (Anhydrous)      Yes  Yes   Yes    Yes
(1330-43-4)

```

```

-----\Chemical Inventory Status - Part 2\-----
Ingredient                                     Korea  --Canada--  Phil.
-----
Borates, Tetra, Sodium Salts (Anhydrous)      Yes   Yes   No     Yes
(1330-43-4)

```

```

-----\Federal, State & International Regulations - Part 1\-----
Ingredient                                     -SARA 302-  -SARA 313-
RQ   TPQ   List  Chemical Catg.
-----
Borates, Tetra, Sodium Salts (Anhydrous)      No    No     No     No
(1330-43-4)

```

```

-----\Federal, State & International Regulations - Part 2\-----
Ingredient                                     CERCLA  -RCRA-  -TSCA-
-----
Borates, Tetra, Sodium Salts (Anhydrous)      No      261.33  8 (d)
(1330-43-4)

```

Chemical Weapons Convention: No      TSCA 12(b): No      CDTA: No  
SARA 311/312: Acute: Yes      Chronic: Yes      Fire: No      Pressure: No  
Reactivity: No      (Mixture / Solid)

**Australian Hazchem Code:** None allocated.

**Poison Schedule:** S5

**WHMIS:**

This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

## 16. Other Information

**NFPA Ratings:** Health: **1** Flammability: **0** Reactivity: **0**

**Label Hazard Warning:**

WARNING! HARMFUL IF SWALLOWED, INHALED OR ABSORBED THROUGH SKIN. CAUSES IRRITATION TO SKIN, EYES AND RESPIRATORY TRACT.

**Label Precautions:**

Avoid contact with eyes, skin and clothing.

Avoid breathing dust.

Keep container closed.

Use only with adequate ventilation.

Wash thoroughly after handling.

**Label First Aid:**

If swallowed, induce vomiting immediately as directed by medical personnel. Never give anything by mouth to an unconscious person. If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. In all cases, get medical attention.

**Product Use:**

Laboratory Reagent.

**Revision Information:**

No Changes.

**Disclaimer:**

\*\*\*\*\*



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\*\*\*\*\*

**Prepared by:** Environmental Health & Safety  
Phone Number: (314) 654-1600 (U.S.A.)

# FLINN SCIENTIFIC INC.

"Your Safer Source for Science Supplies"

## Material Safety Data Sheet (MSDS)

MSDS #: 714.00

Revision Date: November 25, 2002

---

### Section 1 — Chemical Product and Company Identification

---

#### Sodium Bromide

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### Section 2 — Composition, Information on Ingredients

---

Sodium Bromide

CAS#: 7647-15-6

---

### Section 3 — Hazards Identification

---

White, odorless crystalline solid; absorbs air moisture becoming almost rock hard.  
Slightly toxic by ingestion and skin absorption. Irritating to body tissues. Avoid all body tissue contact.

#### FLINN AT-A-GLANCE

Health-1  
Flammability-0  
Reactivity-0  
Exposure-1  
Storage-1

0 is low hazard, 3 is high hazard

---

### Section 4 — First Aid Measures

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.  
Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.  
Eye: Immediately flush with fresh water for 15 minutes.  
External: Wash continuously with fresh water for 15 minutes.  
Internal: Give large quantities of water. Call a physician or poison control at once.

---

### Section 5 — Fire Fighting Measures

---

Non flammable solid. Non combustible solid.  
When heated to decomposition, emits toxic fumes of Br and Na<sub>2</sub>O.  
**Fire Fighting Instructions:** Use triclass, dry chemical fire extinguisher. Firefighters should wear PPE and SCBA with full facepiece operated in positive mode.

#### NFPA CODE

None Established

---

### Section 6 — Accidental Release Measures

---

Restrict unprotected personnel from area. Sweep up, place in sealed bag or container and dispose. Ventilate area and wash spill site after material pickup is complete. See Sections 8 and 13 for further information.

---

### Section 7 — Handling and Storage

---

Flinn Suggested Chemical Storage Pattern: Inorganic #2. Store with acetates, halides, sulfates, sulfites, thiosulfates and phosphates. Keep container tightly closed. Store in a cool dry place. Deliquescent, store in Flinn Chem-Saf Bag.

---

### Section 8 — Exposure Controls, Personal Protection

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron. Use exhaust ventilation to keep airborne concentrations low.

### Section 9 — Physical and Chemical Properties

White, odorless crystalline solid; absorbs air moisture becoming almost rock hard.

Solubility: Soluble in water; slightly in alcohol.

Formula: NaBr

Formula Weight: 102.89

Specific Gravity: 3.208

Melting Point: 757.7 C

Boiling Point: 1390 C

### Section 10 — Stability and Reactivity

Avoid contact with acids.

Shelf Life: Product absorbs moisture from air; keep tightly closed.

### Section 11 — Toxicological Information

Acute effects: Irritant

Chronic effects: N.A.

Target organs: Central nervous system

ORL-RAT LD50: 3500 mg/kg

IHL-RAT LC50: N.A.

SKN-RBT LD50: 2000 mg/kg

N.A. = Not available, not all health aspects of this substance have been fully investigated.

### Section 12 — Ecological Information

Data not yet available.

### Section 13 — Disposal Considerations

Please consult with state and local regulations.

Flinn Suggested Disposal Method #26a is one option.

### Section 14 — Transport Information

Shipping Name: Not regulated

Hazard Class: N/A

UN Number: N/A

N/A = Not applicable

### Section 15 — Regulatory Information

TSCA-listed, EINECS-listed (231-599-9).

### Section 16 — Other Information

Consult your copy of the Flinn Scientific Catalog/Reference Manual for additional information about laboratory chemicals. This Material Safety Data Sheet (MSDS) is for guidance and is based upon information and tests believed to be reliable. Flinn Scientific Inc. makes no guarantee of the accuracy or completeness of the data and shall not be liable for any damages relating thereto. The data is offered solely for your consideration, investigation, and verification. Flinn Scientific Inc. assumes no legal responsibility for use or reliance upon this data.

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# FLINN SCIENTIFIC INC.

"Your Safer Source for Science Supplies"

## Material Safety Data Sheet (MSDS)

MSDS #: 716.00

Revision Date: March 12, 2001

---

### Section 1 — Chemical Product and Company Identification

---

## Sodium Carbonate

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### Section 2 — Composition, Information on Ingredients

---

Sodium carbonate, anhydrous

Synonym: soda ash

CAS#: 497-19-8

---

### Section 3 — Hazards Identification

---

White, odorless crystals or powder.

Slightly toxic by ingestion. Irritating to body tissues. Avoid all body tissue contact.

#### FLINN AT-A-GLANCE

Health-1

Flammability-0

Reactivity-0

Exposure-1

Storage-1

0 is low hazard, 3 is high hazard

---

### Section 4 — First Aid Measures

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash continuously with fresh water for 15 minutes.

Internal: Give no more than 1-2 cups of water for dilution. Do not induce vomiting. Call a physician or poison control at once.

---

### Section 5 — Fire Fighting Measures

---

Non flammable solid.

When heated to decomposition, emits toxic fumes of Na<sub>2</sub>O.

**Fire Fighting Instructions:** Use triclass, dry chemical fire extinguisher. Firefighters should wear PPE and SCBA with full facepiece operated in positive mode.

#### NFPA CODE

None established

---

### Section 6 — Accidental Release Measures

---

Restrict unprotected personnel from area. Sweep up, place in sealed bag or container and dispose. Ventilate area and wash spill site after material pickup is complete. See Sections 8 and 13 for further information.

---

### Section 7 — Handling and Storage

---

Flinn Suggested Chemical Storage Pattern: Inorganic #4. Store with hydroxides, oxides, silicates and carbonates.

Store in a cool dry place. Deliquescent, store in Flinn Chem-Saf Bag. Keep container tightly closed.

---

### Section 8 — Exposure Controls, Personal Protection

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron.

Use exhaust ventilation to keep airborne concentrations low.

### Section 9 — Physical and Chemical Properties

White, odorless crystals or powder.  
Soluble in water and glycerol; not in alcohol. Hygroscopic.  
Formula: Na<sub>2</sub>CO<sub>3</sub>  
Formula Weight: 105.99

Specific Gravity: 2.53  
Melting Point: 851 C

### Section 10 — Stability and Reactivity

Avoid contact with acids, aluminum. Reacts vigorously with fluorine.  
Shelf Life: Hygroscopic, keep tightly closed.

### Section 11 — Toxicological Information

Acute effects: Irritant  
Chronic effects: N.A.  
Target organs: N.A.

ORL-RAT LD50: 4090 mg/kg  
IHL-RAT LC50: 2300 mg/m<sup>3</sup>/2H  
SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

### Section 12 — Ecological Information

Data not yet available.

### Section 13 — Disposal Considerations

Please consult with state and local regulations.  
Flinn Suggested Disposal Method #26a is one option.

### Section 14 — Transport Information

Shipping Name: Not regulated  
Hazard Class: N/A  
UN Number: N/A

N/A = Not applicable

### Section 15 — Regulatory Information

TSCA-listed, EINECS-listed (207-838-8).

### Section 16 — Other Information

Consult your copy of the Flinn Scientific Catalog/Reference Manual for additional information about laboratory chemicals. This Material Safety Data Sheet (MSDS) is for guidance and is based upon information and tests believed to be reliable. Flinn Scientific Inc. makes no guarantee of the accuracy or completeness of the data and shall not be liable for any damages relating thereto. The data is offered solely for your consideration, investigation, and verification. Flinn Scientific Inc. assumes no legal responsibility for use or reliance upon this data.

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# FLINN SCIENTIFIC INC.

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## Material Safety Data Sheet (MSDS)

MSDS #: 721.00

Revision Date: March 1, 2004

---

### Section 1 — Chemical Product and Company Identification

---

## Sodium Chloride

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### Section 2 — Composition, Information on Ingredients

---

Sodium Chloride

Synonym: table salt

CAS#: 7647-14-5

---

### Section 3 — Hazards Identification

---

White, odorless, crystals.

Very slightly toxic by ingestion. Dust may cause minor irritation to mucous membranes upon inhalation.

#### FLINN AT-A-GLANCE

Health-0

Flammability-0

Reactivity-0

Exposure-0

Storage-0

0 is low hazard, 3 is high hazard

---

### Section 4 — First Aid Measures

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash with soap and water.

Internal: Give large quantities of water. Call a physician or poison control at once.

---

### Section 5 — Fire Fighting Measures

---

Non combustible.

When heated to decomposition, emits toxic fumes of Cl and Na<sub>2</sub>O.

**Fire Fighting Instructions:** Use triclass, dry chemical fire extinguisher. Firefighters should wear PPE and SCBA with full facepiece operated in positive mode.

#### NFPA CODE

None

Established

---

### Section 6 — Accidental Release Measures

---

Restrict unprotected personnel from area. Sweep up, place in sealed bag or container and dispose. Ventilate area and wash spill site after material pickup is complete. See Sections 8 and 13 for further information.

---

### Section 7 — Handling and Storage

---

Flinn Suggested Chemical Storage Pattern: Inorganic #2. Store with acetates, halides, sulfates, sulfites, thiosulfates and phosphates. Store in a cool dry place. Keep container tightly closed.

---

### Section 8 — Exposure Controls, Personal Protection

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron.

# FLINN SCIENTIFIC INC.

"Your Safer Source for Science Supplies"

## Material Safety Data Sheet (MSDS)

Sodium Chloride

MSDS #: 721.00

Revision Date: March 1, 2004

### Section 9 — Physical and Chemical Properties

White crystalline powder. Odorless.  
Solubility: Soluble in water and glycerol; slightly in alcohol.  
Formula: NaCl  
Formula Weight: 58.44

Specific Gravity: 2.165  
Melting Point: 801 C  
Boiling Point: 1413 C

### Section 10 — Stability and Reactivity

Reacts violently with bromine trifluoride and lithium. Avoid contact with strong oxidizers, acids, bromine.  
Shelf life: Fair, somewhat hygroscopic.

### Section 11 — Toxicological Information

Acute effects: Irritant	ORL-RAT LD50: 3000 mg/kg
Chronic effects: N.A.	IHL-RAT LC50: N.A.
Target organs: N.A.	SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

### Section 12 — Ecological Information

Data not yet available.

### Section 13 — Disposal Considerations

Please consult with state and local regulations.  
Flinn Suggested Disposal Method #26a is one option.

### Section 14 — Transport Information

Shipping Name: Not regulated  
Hazard Class: N/A  
UN Number: N/A

N/A = Not applicable

### Section 15 — Regulatory Information

TSCA-listed, EINECS-listed (231-598-3).

### Section 16 — Other Information

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# FLINN SCIENTIFIC INC.

"Your Safer Source for Science Supplies"

## Material Safety Data Sheet (MSDS)

MSDS #: 725.00

Revision Date: November 25, 2002

---

### Section 1 — Chemical Product and Company Identification

---

#### Sodium Citrate

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### Section 2 — Composition, Information on Ingredients

---

Sodium Citrate

Synonym: citric acid, trisodium salt

CAS#: 6132-04-3

---

### Section 3 — Hazards Identification

---

White, odorless crystals or granular powder.  
Body tissue irritant. Avoid body tissue contact.

#### FLINN AT-A-GLANCE

Health-0  
Flammability-1  
Reactivity-0  
Exposure-1  
Storage-0

0 is low hazard, 3 is high hazard

---

### Section 4 — First Aid Measures

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.  
Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.  
Eye: Immediately flush with fresh water for 15 minutes.  
External: Wash continuously with fresh water for 15 minutes.  
Internal: Induce vomiting. Call a physician or poison control at once.

---

### Section 5 — Fire Fighting Measures

---

Combustible solid.

**Fire Fighting Instructions:** Use triclass, dry chemical fire extinguisher. Firefighters should wear PPE and SCBA with full facepiece operated in positive pressure mode.

#### NFPA CODE

None Established

---

### Section 6 — Accidental Release Measures

---

Restrict unprotected personnel from area. Sweep up, place in sealed bag or container and dispose. Ventilate area and wash spill site after material pickup is complete. See Sections 8 and 13 for further information.

---

### Section 7 — Handling and Storage

---

Flinn Suggested Chemical Storage Pattern: Inorganic #2. Store with acetates, halides, iodides, sulfates, sulfites, thiosulfates, phosphates, and halogens.

---

### Section 8 — Exposure Controls, Personal Protection

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron.



---

### Section 9 — Physical and Chemical Properties

---

White, odorless crystals or granular powder.  
Solubility: Soluble in water; not alcohol.  
Formula:  $\text{Na}_3\text{C}_6\text{H}_5\text{O}_7 \cdot 2\text{H}_2\text{O}$   
Formula Weight: 294.10

---

### Section 10 — Stability and Reactivity

---

Shelf life: Indefinite.

---

### Section 11 — Toxicological Information

---

Acute effects: Irritant	ORL-RAT LD50: N.A.
Chronic effects: N.A.	IHL-RAT LC50: N.A.
Target organs: N.A.	SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

---

### Section 12 — Ecological Information

---

Data not yet available.

---

### Section 13 — Disposal Considerations

---

Please consult with state and local regulations.  
Flinn Suggested Disposal Method #26a is one option.

---

### Section 14 — Transport Information

---

Shipping Name: Not regulated.  
Hazard Class: N/A  
UN Number: N/A  
N/A = Not applicable

---

### Section 15 — Regulatory Information

---

Not listed.

---

### Section 16 — Other Information

---

Consult your copy of the Flinn Scientific Catalog/Reference Manual for additional information about laboratory chemicals. This Material Safety Data Sheet (MSDS) is for guidance and is based upon information and tests believed to be reliable. Flinn Scientific Inc. makes no guarantee of the accuracy or completeness of the data and shall not be liable for any damages relating thereto. The data is offered solely for your consideration, investigation, and verification. Flinn Scientific Inc. assumes no legal responsibility for use or reliance upon this data.

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# FLINN SCIENTIFIC INC.

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## Material Safety Data Sheet (MSDS)

MSDS #: 734.00

Revision Date: March 15, 2001

---

### Section 1 — Chemical Product and Company Identification

---

## Sodium Hydroxide

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### Section 2 — Composition, Information on Ingredients

---

Sodium Hydroxide

CAS#: 1310-73-2

---

### Section 3 — Hazards Identification

---

White pellets or flakes. Odorless.

Highly toxic by ingestion, inhalation, or skin absorption. Extremely corrosive to body tissues.

Causes severe eye burns. Avoid all body tissue contact.

#### FLINN AT-A-GLANCE

Health-3

Flammability-0

Reactivity-2

Exposure-3

Storage-0

0 is low hazard, 3 is high hazard

---

### Section 4 — First Aid Measures

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash continuously with fresh water for 15 minutes.

Internal: Give no more than 1-2 cups of water for dilution. Do not induce vomiting. Call a physician or poison control at once.

---

### Section 5 — Fire Fighting Measures

---

Non flammable solid.

Hot molten sodium hydroxide can react violently with water. Contact with aluminum, tin, and zinc liberates hydrogen gas. When heated to decomposition, emits toxic fumes of Na<sub>2</sub>O.

**Fire Fighting Instructions:** Use triclass, dry chemical fire extinguisher. Firefighters should wear PPE and SCBA with full facepiece operated in positive mode.

#### NFPA CODE

H-3

F-0

R-1

---

### Section 6 — Accidental Release Measures

---

Restrict unprotected personnel from area. Sweep up, place in sealed bag or container and dispose. Ventilate area and wash spill site after material pickup is complete. See Sections 8 and 13 for further information.

---

### Section 7 — Handling and Storage

---

Flinn Suggested Chemical Storage Pattern: Inorganic #4. Store with hydroxides, oxides, silicates and carbonates.

Store in a cool dry place. Absorbs CO<sub>2</sub> and water from air, keep container tightly closed. Use and dispense in a hood.

---

### Section 8 — Exposure Controls, Personal Protection

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron.

Use ventilation to keep airborne concentrations below exposure limits. Always wear a NIOSH-approved respirator with proper cartridges or a positive pressure, air-supplied respirator when handling this material in emergency situations (spill or fire).

Exposure guidelines: TWA 2 mg/m<sup>3</sup> Ceiling 2 mg/m<sup>3</sup> (OSHA, ACGIH)

### Section 9 — Physical and Chemical Properties

White pellets or flakes. Absorbs CO<sub>2</sub> and water from air.  
Odorless.  
Solubility: Soluble in water, alcohol and glycerol.  
Formula: NaOH  
Formula Weight: 40.00

Specific Gravity: 2.13  
Melting Point: 318 C

### Section 10 — Stability and Reactivity

Contact with aluminum, tin, and zinc liberates, hydrogen gas. Avoid contact with strong oxidizers, strong acids, organic material, chlorinated solvents.  
Shelf life: Good.

### Section 11 — Toxicological Information

Acute effects: Toxic, corrosive  
Chronic effects: N.A.  
Target organs: N.A.

ORL-RAT LD50: N.A.  
IHL-RAT LC50: N.A.  
SKN-RBT LD50: 50 mg/24H

N.A. = Not available, not all health aspects of this substance have been fully investigated.

### Section 12 — Ecological Information

Data not yet available.

### Section 13 — Disposal Considerations

Please consult with state and local regulations.  
Flinn Suggested Disposal Method #10 is one option.

### Section 14 — Transport Information

Shipping Name: Sodium hydroxide, solid  
Hazard Class: 8, Corrosive  
UN Number: UN1823

N/A = Not applicable

### Section 15 — Regulatory Information

TSCA-listed, EINECS-listed (215-185-5), RCRA code D002, D003.

### Section 16 — Other Information

Consult your copy of the Flinn Scientific Catalog/Reference Manual for additional information about laboratory chemicals. This Material Safety Data Sheet (MSDS) is for guidance and is based upon information and tests believed to be reliable. Flinn Scientific Inc. makes no guarantee of the accuracy or completeness of the data and shall not be liable for any damages relating thereto. The data is offered solely for your consideration, investigation, and verification. Flinn Scientific Inc. assumes no legal responsibility for use or reliance upon this data.

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---

### Section 1 — Chemical Product and Company Identification

---

## Sodium Hypochlorite Solution

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### Section 2 — Composition, Information on Ingredients

---

Sodium Hypochlorite (7681-52-9) 5-12.5%, and Water (7732-18-5) 87.5-95%

Synonym: bleach solution

CAS#: None Established

---

### Section 3 — Hazards Identification

---

Colorless, lightly cloudy liquid. Bleach odor.

Moderately toxic by ingestion and inhalation. Corrosive to body tissues. Avoid all body tissue contact.

Strong oxidizer.

#### FLINN AT-A-GLANCE

Health-2

Flammability-0

Reactivity-1

Exposure-2

Storage-0

0 is low hazard, 3 is high hazard

---

### Section 4 — First Aid Measures

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash continuously with fresh water for 15 minutes.

Internal: Give large quantities of water. Call a physician or poison control at once.

---

### Section 5 — Fire Fighting Measures

---

Use a triclass, dry chemical fire extinguisher.

Strong oxidizer. Fire risk in contact with organic materials.

When heated to decomposition, emits toxic fumes of Na<sub>2</sub>O and Cl.

**Fire Fighting Instructions:** Use triclass, dry chemical fire extinguisher. Firefighters should wear PPE and SCBA with full facepiece operated in positive mode.

#### NFPA CODE

None

Established

---

### Section 6 — Accidental Release Measures

---

Restrict unprotected personnel from area and ventilate area. Contain spill with sand or absorbent material; deposit in sealed bag or container. See Sections 8 and 13 for further information.

---

### Section 7 — Handling and Storage

---

Flinn Suggested Chemical Storage Pattern: Inorganic #6. Store with bromates and chlorates.

Keep container tightly closed.

---

### Section 8 — Exposure Controls, Personal Protection

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron.

## Material Safety Data Sheet (MSDS)

---

### Section 9 — Physical and Chemical Properties

---

Colorless, lightly cloudy liquid. Bleach odor.

---

### Section 10 — Stability and Reactivity

---

Avoid contact with excessive heat, reducers, strong mineral acids.  
Shelf life: Good.

---

### Section 11 — Toxicological Information

---

Acute effects: Corrosive	ORL-RAT LD50: N.A.
Chronic effects: N.A.	IHL-RAT LC50: N.A.
Target organs: N.A.	SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

---

### Section 12 — Ecological Information

---

Data not yet available.

---

### Section 13 — Disposal Considerations

---

Please consult with state and local regulations.  
Flinn Suggested Disposal Method #26b is one option.

---

### Section 14 — Transport Information

---

Shipping Name: Not regulated.  
Hazard Class: N/A  
UN Number: N/A

N/A = Not applicable

---

### Section 15 — Regulatory Information

---

Not listed.

---

### Section 16 — Other Information

---

Consult your copy of the Flinn Scientific Catalog/Reference Manual for additional information about laboratory chemicals. This Material Safety Data Sheet (MSDS) is for guidance and is based upon information and tests believed to be reliable. Flinn Scientific Inc. makes no guarantee of the accuracy or completeness of the data and shall not be liable for any damages relating thereto. The data is offered solely for your consideration, investigation, and verification. Flinn Scientific Inc. assumes no legal responsibility for use or reliance upon this data.

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# FLINN SCIENTIFIC INC.

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## Material Safety Data Sheet (MSDS)

MSDS #: 738.00

Revision Date: March 15, 2001

---

### Section 1 — Chemical Product and Company Identification

---

#### Sodium Iodide

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### Section 2 — Composition, Information on Ingredients

---

Sodium Iodide

CAS#: 7681-82-5

---

### Section 3 — Hazards Identification

---

White, odorless crystals or powder; slowly turns brown in air; deliquescent.  
Slightly toxic by ingestion. Body tissue irritant. Avoid all body tissue contact.

#### FLINN AT-A-GLANCE

Health-1  
Flammability-0  
Reactivity-1  
Exposure-1  
Storage-1

0 is low hazard, 3 is high hazard

---

### Section 4 — First Aid Measures

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash continuously with fresh water for 15 minutes.

Internal: Rinse out mouth, give 1 to 2 cups of water or milk, induce vomiting. Call a physician or poison control at once.

---

### Section 5 — Fire Fighting Measures

---

Non flammable solid.

When heated to decomposition, emits toxic fumes of Na<sub>2</sub>O and iodine.

**Fire Fighting Instructions:** Use triclass, dry chemical fire extinguisher. Firefighters should wear PPE and SCBA with full facepiece operated in positive mode.

#### NFPA CODE

None established

---

### Section 6 — Accidental Release Measures

---

Restrict unprotected personnel from area. Sweep up, place in sealed bag or container and dispose. Ventilate area and wash spill site after material pickup is complete. See Sections 8 and 13 for further information.

---

### Section 7 — Handling and Storage

---

Flinn Suggested Chemical Storage Pattern: Inorganic #2. Store with acetates, halides, sulfates, sulfites, thiosulfates and phosphates. Light sensitive material. Store in a cool, dry place. Deliquescent, store in a Flinn Chem-Saf bag.

Use and dispense in a hood.

---

### Section 8 — Exposure Controls, Personal Protection

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron. Use exhaust ventilation to keep airborne concentrations low.

### Section 9 — Physical and Chemical Properties

White, odorless crystals or powder; slowly turns brown in air; deliquescent.

Solubility: Water, alcohol and glycerol.

Formula: NaI

Formula Weight: 149.92

Specific Gravity: 3.665

Melting Point: 653 C

### Section 10 — Stability and Reactivity

Avoid contact with strong acids.

Shelf life: Fair to poor; deliquescent.

### Section 11 — Toxicological Information

Acute effects: N.A.

Chronic effects: N.A.

Target organs: Thyroid

ORL-RAT LD50: 4340 mg/kg

IHL-RAT LC50: N.A.

SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

### Section 12 — Ecological Information

Data not yet available.

### Section 13 — Disposal Considerations

Please consult with state and local regulations.

Flinn Suggested Disposal Method #26a is one option.

### Section 14 — Transport Information

Shipping Name: Not regulated.

Hazard Class: N/A

UN Number: N/A

N/A = Not applicable

### Section 15 — Regulatory Information

TSCA-listed, EINECS-listed (231-674-3).

### Section 16 — Other Information

Consult your copy of the Flinn Scientific Catalog/Reference Manual for additional information about laboratory chemicals. This Material Safety Data Sheet (MSDS) is for guidance and is based upon information and tests believed to be reliable. Flinn Scientific Inc. makes no guarantee of the accuracy or completeness of the data and shall not be liable for any damages relating thereto. The data is offered solely for your consideration, investigation, and verification. Flinn Scientific Inc. assumes no legal responsibility for use or reliance upon this data.

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# FLINN SCIENTIFIC INC.

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## Material Safety Data Sheet (MSDS)

MSDS #: 743.00

Revision Date: November 25, 2002

---

### Section 1 — Chemical Product and Company Identification

---

#### Sodium Nitrate

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### Section 2 — Composition, Information on Ingredients

---

Sodium Nitrate

Synonym: Chile saltpeter

CAS#: 7631-99-4

---

### Section 3 — Hazards Identification

---

Colorless, odorless, transparent crystals or white prills.

Slightly toxic by ingestion. Body tissue irritant. Avoid all body tissue contact.

Strong oxidizer.

#### FLINN AT-A-GLANCE

Health-1

Flammability-0

Reactivity-3

Exposure-1

Storage-0

0 is low hazard, 3 is high hazard

---

### Section 4 — First Aid Measures

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash continuously with fresh water for 15 minutes.

Internal: Rinse out mouth, give 1 to 2 cups of water or milk, induce vomiting. Call a physician or poison control at once.

---

### Section 5 — Fire Fighting Measures

---

Non flammable solid.

Strong oxidizer. Fire and explosion risk when in contact with combustible materials.

When heated to decomposition, emits toxic fumes of NO<sub>x</sub> and Na<sub>2</sub>O.

**Fire Fighting Instructions:** Use triclass, dry chemical fire extinguisher. Firefighters should wear PPE and SCBA with full facepiece operated in positive mode.

#### NFPA CODE

None Established

---

### Section 6 — Accidental Release Measures

---

Restrict unprotected personnel from area. Sweep up, place in sealed bag or container and dispose. Ventilate area and wash spill site after material pickup is complete. See Sections 8 and 13 for further information.

---

### Section 7 — Handling and Storage

---

Flinn Suggested Chemical Storage Pattern: Inorganic #3. Store with amides, nitrates and nitrites.

Store in a cool dry place. Use and dispense in a hood.

---

### Section 8 — Exposure Controls, Personal Protection

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron.

Use exhaust ventilation to keep airborne concentrations low.



### Section 9 — Physical and Chemical Properties

Colorless, odorless, transparent crystals.  
Solubility: Soluble in water and glycerol; slightly in alcohol.  
Formula: NaNO<sub>3</sub>  
Formula Weight: 85.00

Specific Gravity: 2.267  
Melting Point: 308 C  
Boiling Point: 380 C (dec.)

### Section 10 — Stability and Reactivity

Avoid contact with strong reducers, strong acids, combustible materials, finely powdered metals, friction and shock.  
Shelf life: Indefinite.

### Section 11 — Toxicological Information

Acute effects: Toxic, irritant  
Chronic effects: Anemia, methemoglobinemia, nephritis.  
Target organs: Blood, central nervous system

ORL-RAT LD50: 3236 mg/kg  
IHL-RAT LC50: N.A.  
SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

### Section 12 — Ecological Information

Data not yet available.

### Section 13 — Disposal Considerations

Please consult with state and local regulations.  
Flinn Suggested Disposal Method #26a is one option.

### Section 14 — Transport Information

Shipping Name: Sodium nitrate  
Hazard Class: 5.1, Oxidizer  
UN Number: UN1498

N/A = Not applicable

### Section 15 — Regulatory Information

TSCA-listed, EINECS-listed (231-554-3), RCRA code D001.

### Section 16 — Other Information

Consult your copy of the Flinn Scientific Catalog/Reference Manual for additional information about laboratory chemicals. This Material Safety Data Sheet (MSDS) is for guidance and is based upon information and tests believed to be reliable. Flinn Scientific Inc. makes no guarantee of the accuracy or completeness of the data and shall not be liable for any damages relating thereto. The data is offered solely for your consideration, investigation, and verification. Flinn Scientific Inc. assumes no legal responsibility for use or reliance upon this data.

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# FLINN SCIENTIFIC INC.

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## Material Safety Data Sheet (MSDS)

MSDS #: 752.00

Revision Date: November 25, 2002

---

### Section 1 — Chemical Product and Company Identification

---

#### Sodium Phosphate, Monobasic

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### Section 2 — Composition, Information on Ingredients

---

Sodium Phosphate, monobasic, monohydrate

Synonym: sodium dihydrogen phosphate, monohydrate

CAS#: 10049-21-5

---

### Section 3 — Hazards Identification

---

Large transparent crystals. Odorless.

Body tissue irritant. Avoid all body tissue contact.

#### FLINN AT-A-GLANCE

Health-0

Flammability-0

Reactivity-0

Exposure-1

Storage-0

0 is low hazard, 3 is high hazard

---

### Section 4 — First Aid Measures

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash continuously with fresh water for 15 minutes.

Internal: Give large quantities of water. Call a physician or poison control at once.

---

### Section 5 — Fire Fighting Measures

---

Non flammable solid.

When heated to decomposition, emits toxic fumes of POx and Na2O.

**Fire Fighting Instructions:** Use triclass, dry chemical fire extinguisher. Firefighters should wear PPE and SCBA with full facepiece operated in positive mode.

#### NFPA CODE

None Established

---

### Section 6 — Accidental Release Measures

---

Restrict unprotected personnel from area. Sweep up, place in sealed bag or container and dispose. Ventilate area and wash spill site after material pickup is complete. See Sections 8 and 13 for further information.

---

### Section 7 — Handling and Storage

---

Flinn Suggested Chemical Storage Pattern: Inorganic #2. Store with acetates, halides, sulfates, sulfites, thiosulfates and phosphates. Store in a cool dry place.

---

### Section 8 — Exposure Controls, Personal Protection

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron. Use exhaust ventilation to keep airborne concentrations low.

### Section 9 — Physical and Chemical Properties

Large transparent crystals. Odorless.  
Solubility: Very soluble in water. Insoluble in alcohol.  
Formula:  $\text{NaH}_2\text{PO}_4 \cdot \text{H}_2\text{O}$   
Formula Weight: 137.99

Specific Gravity: 2.040  
Melting Point: loses water at 100 C.

### Section 10 — Stability and Reactivity

Avoid contact with strong acids.  
Shelf Life: Fair, slightly hygroscopic.

### Section 11 — Toxicological Information

Acute effects: Irritant  
Chronic effects: N.A.  
Target organs: N.A.

ORL-RAT LD50: 8290 mg/kg  
IHL-RAT LC50: N.A.  
SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

### Section 12 — Ecological Information

Data not yet available.

### Section 13 — Disposal Considerations

Please consult with state and local regulations.  
Flinn Suggested Disposal Method #26a is one option.

### Section 14 — Transport Information

Shipping Name: Not regulated.  
Hazard Class: N/A  
UN Number: N/A

N/A = Not applicable

### Section 15 — Regulatory Information

TSCA-listed, EINECS-listed (231-449-2).

### Section 16 — Other Information

Consult your copy of the Flinn Scientific Catalog/Reference Manual for additional information about laboratory chemicals. This Material Safety Data Sheet (MSDS) is for guidance and is based upon information and tests believed to be reliable. Flinn Scientific Inc. makes no guarantee of the accuracy or completeness of the data and shall not be liable for any damages relating thereto. The data is offered solely for your consideration, investigation, and verification. Flinn Scientific Inc. assumes no legal responsibility for use or reliance upon this data.

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# FLINN SCIENTIFIC INC.

"Your Safer Source for Science Supplies"

## Material Safety Data Sheet (MSDS)

MSDS #: 754.00

Revision Date: November 25, 2002

---

### Section 1 — Chemical Product and Company Identification

---

#### Sodium Phosphate, Tribasic

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### Section 2 — Composition, Information on Ingredients

---

Sodium Phosphate, tribasic

Synonym: TSP, trisodium phosphate

CAS#: 10101-89-0

---

### Section 3 — Hazards Identification

---

Colorless, odorless crystals.

Mildly toxic by ingestion. Corrosive to body tissues. Avoid all body tissue contact.

#### FLINN AT-A-GLANCE

Health-1

Flammability-0

Reactivity-0

Exposure-2

Storage-0

0 is low hazard, 3 is high hazard

---

### Section 4 — First Aid Measures

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash continuously with fresh water for 15 minutes.

Internal: Give no more than 1-2 cups of water for dilution. Do not induce vomiting. Call a physician or poison control at once.

---

### Section 5 — Fire Fighting Measures

---

Non flammable solid.

When heated to decomposition, emits toxic fumes of POx and Na2O.

**Fire Fighting Instructions:** Use triclass, dry chemical fire extinguisher. Firefighters should wear PPE and SCBA with full facepiece operated in positive mode.

#### NFPA CODE

None Established

---

### Section 6 — Accidental Release Measures

---

Restrict unprotected personnel from area. Sweep up, place in sealed bag or container and dispose. Ventilate area and wash spill site after material pickup is complete. See Sections 8 and 13 for further information.

---

### Section 7 — Handling and Storage

---

Flinn Suggested Chemical Storage Pattern: Inorganic #2. Store with acetates, halides, sulfates, sulfites, thiosulfates and phosphates. Store in a cool dry place.

---

### Section 8 — Exposure Controls, Personal Protection

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron. Use exhaust ventilation to keep airborne concentrations low.

### Section 9 — Physical and Chemical Properties

Colorless, odorless crystals.  
Solubility: Water.  
Formula: Na<sub>3</sub>PO<sub>4</sub> 12H<sub>2</sub>O  
Formula Weight: 380.12

Specific Gravity: 1.62  
Melting Point: 75 C (decomposes).

### Section 10 — Stability and Reactivity

Avoid contact with strong acids.  
Shelf Life: Indefinite.

### Section 11 — Toxicological Information

Acute effects: Corrosive  
Chronic effects: N.A.  
Target organs: N.A.

ORL-RAT LD50: 6500 mg/kg  
IHL-RAT LC50: N.A.  
SKN-RBT LD50: >7940 mg/kg

N.A. = Not available, not all health aspects of this substance have been fully investigated.

### Section 12 — Ecological Information

Data not yet available.

### Section 13 — Disposal Considerations

Please consult with state and local regulations.  
Flinn Suggested Disposal Method #26a is one option.

### Section 14 — Transport Information

Shipping Name: Not regulated.  
Hazard Class: N/A  
UN Number: N/A

N/A = Not applicable

### Section 15 — Regulatory Information

TSCA-listed, EINECS-listed (231-509-8).

### Section 16 — Other Information

Consult your copy of the Flinn Scientific Catalog/Reference Manual for additional information about laboratory chemicals. This Material Safety Data Sheet (MSDS) is for guidance and is based upon information and tests believed to be reliable. Flinn Scientific Inc. makes no guarantee of the accuracy or completeness of the data and shall not be liable for any damages relating thereto. The data is offered solely for your consideration, investigation, and verification. Flinn Scientific Inc. assumes no legal responsibility for use or reliance upon this data.

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# FLINN SCIENTIFIC INC.

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## Material Safety Data Sheet (MSDS)

MSDS #: 751.10

Revision Date: November 25, 2002

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### Section 1 — Chemical Product and Company Identification

---

#### Sodium Phosphate, Dibasic

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### Section 2 — Composition, Information on Ingredients

---

Sodium Phosphate, dibasic, anhydrous

Synonym: DSP, disodium hydrogen phosphate

CAS#: 7558-79-4

---

### Section 3 — Hazards Identification

---

Colorless, translucent crystals or powder. Odorless.

Body tissue irritant. Avoid all body tissue contact.

#### FLINN AT-A-GLANCE

Health-0

Flammability-0

Reactivity-0

Exposure-1

Storage-1

0 is low hazard, 3 is high hazard

---

### Section 4 — First Aid Measures

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash continuously with fresh water for 15 minutes.

Internal: Give large quantities of water. Call a physician or poison control at once.

---

### Section 5 — Fire Fighting Measures

---

Non flammable solid.

When heated to decomposition, emits toxic fumes of POx and Na<sub>2</sub>O.

**Fire Fighting Instructions:** Use triclass, dry chemical fire extinguisher. Firefighters should wear PPE and SCBA with full facepiece operated in positive mode.

#### NFPA CODE

None Established

---

### Section 6 — Accidental Release Measures

---

Restrict unprotected personnel from area. Sweep up, place in sealed bag or container and dispose. Ventilate area and wash spill site after material pickup is complete. See Sections 8 and 13 for further information.

---

### Section 7 — Handling and Storage

---

Flinn Suggested Chemical Storage Pattern: Inorganic #2. Store with acetates, halides, sulfates, sulfites, thiosulfates and phosphates. Store in a cool dry place. Deliquescent, store in Flinn Chem-Saf Bag.

---

### Section 8 — Exposure Controls, Personal Protection

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron. Use exhaust ventilation to keep airborne concentrations low.

### Section 9 — Physical and Chemical Properties

Colorless, translucent crystals or powder. Odorless.  
Solubility: Soluble in water; very soluble in alcohol.  
Formula: Na<sub>2</sub>HPO<sub>4</sub>  
Formula Weight: 141.96

### Section 10 — Stability and Reactivity

Avoid contact with strong acids.  
Shelf life: Hygroscopic, keep tightly closed.

### Section 11 — Toxicological Information

Acute effects: Irritant  
Chronic effects: N.A.  
Target organs: N.A.

ORL-RAT LD50: 17 gm/kg  
IHL-RAT LC50: N.A.  
SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

### Section 12 — Ecological Information

Data not yet available.

### Section 13 — Disposal Considerations

Please consult with state and local regulations.  
Flinn Suggested Disposal Method #26a is one option.

### Section 14 — Transport Information

Shipping Name: Not regulated.  
Hazard Class: N/A  
UN Number: N/A

N/A = Not applicable

### Section 15 — Regulatory Information

TSCA-listed, EINECS-listed (231-448-7).

### Section 16 — Other Information

Consult your copy of the Flinn Scientific Catalog/Reference Manual for additional information about laboratory chemicals. This Material Safety Data Sheet (MSDS) is for guidance and is based upon information and tests believed to be reliable. Flinn Scientific Inc. makes no guarantee of the accuracy or completeness of the data and shall not be liable for any damages relating thereto. The data is offered solely for your consideration, investigation, and verification. Flinn Scientific Inc. assumes no legal responsibility for use or reliance upon this data.

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# FLINN SCIENTIFIC INC.

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## Material Safety Data Sheet (MSDS)

MSDS #: 756.00

Revision Date: November 25, 2002

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### Section 1 — Chemical Product and Company Identification

---

## Sodium Salicylate

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### Section 2 — Composition, Information on Ingredients

---

Sodium Salicylate

CAS#: 54-21-7

---

### Section 3 — Hazards Identification

---

Fine, white powder. Odorless.

Slightly toxic by ingestion. A body tissue irritant which may affect the central nervous system. Avoid all body tissue contact.

#### FLINN AT-A-GLANCE

Health-1  
Flammability-0  
Reactivity-0  
Exposure-1  
Storage-0

0 is low hazard, 3 is high hazard

---

### Section 4 — First Aid Measures

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash continuously with fresh water for 15 minutes.

Internal: Give large quantities of water. Call a physician or poison control at once.

---

### Section 5 — Fire Fighting Measures

---

Non flammable solid.

When heated to decomposition, emits toxic fumes of Na<sub>2</sub>O.

**Fire Fighting Instructions:** Use triclass, dry chemical fire extinguisher. Firefighters should wear PPE and SCBA with full facepiece operated in positive mode.

#### NFPA CODE

None Established

---

### Section 6 — Accidental Release Measures

---

Restrict unprotected personnel from area. Sweep up, place in sealed bag or container and dispose. Ventilate area and wash spill site after material pickup is complete. See Sections 8 and 13 for further information.

---

### Section 7 — Handling and Storage

---

Flinn Suggested Chemical Storage Pattern: Organic #1. Store with acids, amino acids, anhydrides, peracids. Light sensitive. Store in a cool dry place.

---

### Section 8 — Exposure Controls, Personal Protection

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron. Use exhaust ventilation to keep airborne concentrations low.



### Section 9 — Physical and Chemical Properties

Fine, white powder. Odorless.  
Solubility: Water, alcohol and glycerol.  
Formula: 2-(HO)C<sub>6</sub>H<sub>4</sub>CO<sub>2</sub>Na  
Formula Weight: 160.04

### Section 10 — Stability and Reactivity

Avoid contact with strong oxidizers, strong acids.  
Shelf Life: Indefinite.

### Section 11 — Toxicological Information

Acute effects: Irritant	ORL-RAT LD50: 1200 mg/kg
Chronic effects: N.A.	IHL-RAT LC50: N.A.
Target organs: N.A.	SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

### Section 12 — Ecological Information

Data not yet available.

### Section 13 — Disposal Considerations

Please consult with state and local regulations.  
Flinn Suggested Disposal Method #26a is one option.

### Section 14 — Transport Information

Shipping Name: Not regulated.  
Hazard Class: N/A  
UN Number: N/A

N/A = Not applicable

### Section 15 — Regulatory Information

TSCA-listed, EINECS-listed (200-198-0).

### Section 16 — Other Information

Consult your copy of the Flinn Scientific Catalog/Reference Manual for additional information about laboratory chemicals. This Material Safety Data Sheet (MSDS) is for guidance and is based upon information and tests believed to be reliable. Flinn Scientific Inc. makes no guarantee of the accuracy or completeness of the data and shall not be liable for any damages relating thereto. The data is offered solely for your consideration, investigation, and verification. Flinn Scientific Inc. assumes no legal responsibility for use or reliance upon this data.

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# FLINN SCIENTIFIC INC.

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## Material Safety Data Sheet (MSDS)

MSDS #: 758.00

Revision Date: November 25, 2002

---

### Section 1 — Chemical Product and Company Identification

---

#### Sodium Silicate Solution

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### Section 2 — Composition, Information on Ingredients

---

Sodium Silicate Solution, 40-42 Be

Synonym: water glass

CAS#: None established

---

### Section 3 — Hazards Identification

---

Slightly cloudy liquid; rather viscous. Odorless.

Slightly toxic by ingestion. Body tissue irritant. Avoid all body tissue contact.

#### FLINN AT-A-GLANCE

Health-1

Flammability-0

Reactivity-1

Exposure-1

Storage-0

0 is low hazard, 3 is high hazard

---

### Section 4 — First Aid Measures

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash continuously with fresh water for 15 minutes.

Internal: Give 1 to 2 cups of water or milk, followed by a gastric antacid, such as milk of magnesia. Do not induce vomiting. Call a physician or poison control at once.

---

### Section 5 — Fire Fighting Measures

---

Non flammable liquid.

#### NFPA CODE

None Established

---

### Section 6 — Accidental Release Measures

---

Restrict unprotected personnel from area and ventilate area. Contain spill with sand or absorbent material; deposit in sealed bag or container. See Sections 8 and 13 for further information.

---

### Section 7 — Handling and Storage

---

Flinn Suggested Chemical Storage Pattern: Inorganic #2. Store with acetates, halides, sulfates, sulfites, thiosulfates and phosphates.

---

### Section 8 — Exposure Controls, Personal Protection

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron.

---

### Section 9 — Physical and Chemical Properties

---

Slightly cloudy liquid; rather viscous. Odorless.  
Specific Gravity: 1.3-1.5

---

### Section 10 — Stability and Reactivity

---

Avoid contact with strong mineral acids, strong organic acids, aluminum, magnesium, and zinc.  
Shelf Life: Indefinite.

---

### Section 11 — Toxicological Information

---

Acute effects: Irritant  
Chronic effects: N.A.  
Target organs: N.A.

ORL-RAT LD50: 2000-3000 mg/kg  
IHL-RAT LC50: N.A.  
SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

---

### Section 12 — Ecological Information

---

Data not yet available.

---

### Section 13 — Disposal Considerations

---

Please consult with state and local regulations.  
Flinn Suggested Disposal Method #26b is one option.

---

### Section 14 — Transport Information

---

Shipping Name: Not regulated.  
Hazard Class: N/A  
UN Number: N/A

N/A = Not applicable

---

### Section 15 — Regulatory Information

---

Not listed.

---

### Section 16 — Other Information

---

Consult your copy of the Flinn Scientific Catalog/Reference Manual for additional information about laboratory chemicals. This Material Safety Data Sheet (MSDS) is for guidance and is based upon information and tests believed to be reliable. Flinn Scientific Inc. makes no guarantee of the accuracy or completeness of the data and shall not be liable for any damages relating thereto. The data is offered solely for your consideration, investigation, and verification. Flinn Scientific Inc. assumes no legal responsibility for use or reliance upon this data.

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# FLINN SCIENTIFIC INC.

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## Material Safety Data Sheet (MSDS)

MSDS #: 760.00

Revision Date: November 25, 2002

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### Section 1 — Chemical Product and Company Identification

---

#### Sodium Sulfate, Anhydrous

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### Section 2 — Composition, Information on Ingredients

---

Sodium Sulfate, anhydrous

CAS#: 7757-82-6

---

### Section 3 — Hazards Identification

---

White, crystals or powder. Odorless.  
Body tissue irritant. Avoid all body tissue contact.

#### FLINN AT-A-GLANCE

Health-0  
Flammability-0  
Reactivity-0  
Exposure-1  
Storage-0

0 is low hazard, 3 is high hazard

---

### Section 4 — First Aid Measures

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.  
Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.  
Eye: Immediately flush with fresh water for 15 minutes.  
External: Wash continuously with fresh water for 15 minutes.  
Internal: Give large quantities of water. Call a physician or poison control at once.

---

### Section 5 — Fire Fighting Measures

---

Non flammable.  
When heated to decomposition, emits toxic fumes of SO<sub>x</sub> and Na<sub>2</sub>O.  
**Fire Fighting Instructions:** Use triclass, dry chemical fire extinguisher. Firefighters should wear PPE and SCBA with full facepiece operated in positive mode.

#### NFPA CODE

None Established

---

### Section 6 — Accidental Release Measures

---

Restrict unprotected personnel from area. Sweep up, place in sealed bag or container and dispose. Ventilate area and wash spill site after material pickup is complete. See Sections 8 and 13 for further information.

---

### Section 7 — Handling and Storage

---

Flinn Suggested Chemical Storage Pattern: Inorganic #2. Store with acetates, halides, sulfates, sulfites, thiosulfates and phosphates. Store in a cool dry place.

---

### Section 8 — Exposure Controls, Personal Protection

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron.

### Section 9 — Physical and Chemical Properties

White, crystals or powder. Odorless.  
Solubility: Water and glycerol; not alcohol.  
Formula: Na<sub>2</sub>SO<sub>4</sub>  
Formula Weight: 142.02

Specific Gravity: 2.680  
Melting Point: 884 C

### Section 10 — Stability and Reactivity

Avoid contact with strong acids, aluminum, and magnesium.  
Shelf Life: Indefinite.

### Section 11 — Toxicological Information

Acute effects: Irritant  
Chronic effects: N.A.  
Target organs: N.A.

ORL-MUS LD50: 5989 mg/kg  
IHL-RAT LC50: N.A.  
SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

### Section 12 — Ecological Information

Data not yet available.

### Section 13 — Disposal Considerations

Please consult with state and local regulations.  
Flinn Suggested Disposal Method #26a is one option.

### Section 14 — Transport Information

Shipping Name: Not regulated.  
Hazard Class: N/A  
UN Number: N/A

N/A = Not applicable

### Section 15 — Regulatory Information

TSCA-listed, EINECS-listed (231-820-9).

### Section 16 — Other Information

Consult your copy of the Flinn Scientific Catalog/Reference Manual for additional information about laboratory chemicals. This Material Safety Data Sheet (MSDS) is for guidance and is based upon information and tests believed to be reliable. Flinn Scientific Inc. makes no guarantee of the accuracy or completeness of the data and shall not be liable for any damages relating thereto. The data is offered solely for your consideration, investigation, and verification. Flinn Scientific Inc. assumes no legal responsibility for use or reliance upon this data.

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# FLINN SCIENTIFIC INC.

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## Material Safety Data Sheet (MSDS)

MSDS #: 764.00

Revision Date: April 2, 2001

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### Section 1 — Chemical Product and Company Identification

---

#### Sodium Sulfite

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### Section 2 — Composition, Information on Ingredients

---

Sodium Sulfite

CAS#: 7757-83-7

---

### Section 3 — Hazards Identification

---

White crystals or powder. Odorless.

Moderately toxic by ingestion. Body tissue irritant. Avoid all body tissue contact. People who have allergies and/or asthma may find that they are exceptionally hypersensitive to sulfites.

#### FLINN AT-A-GLANCE

Health-2  
Flammability-0  
Reactivity-1  
Exposure-1  
Storage-0

0 is low hazard, 3 is high hazard

---

### Section 4 — First Aid Measures

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash continuously with fresh water for 15 minutes.

Internal: Rinse out mouth, give 1 to 2 cups of water or milk, induce vomiting. Call a physician or poison control at once.

---

### Section 5 — Fire Fighting Measures

---

Non flammable solid.

When heated to decomposition, emits toxic fumes of Na<sub>2</sub>O and SO<sub>x</sub>.

**Fire Fighting Instructions:** Use triclass, dry chemical fire extinguisher. Firefighters should wear PPE and SCBA with full facepiece operated in positive pressure mode.

#### NFPA CODE

None established

---

### Section 6 — Accidental Release Measures

---

Restrict unprotected personnel from area. Sweep up, place in sealed bag or container and dispose. Ventilate area and wash spill site after material pickup is complete. See Sections 8 and 13 for further information.

---

### Section 7 — Handling and Storage

---

Flinn Suggested Chemical Storage Pattern: Inorganic #2. Store with acetates, halides, sulfates, sulfites, thiosulfates and phosphates. Store in a cool dark place. Keep container tightly closed. Air and moisture sensitive.

---

### Section 8 — Exposure Controls, Personal Protection

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron. Use exhaust ventilation to keep airborne concentrations low.

### Section 9 — Physical and Chemical Properties

White crystals or powder. Odorless.  
Solubility: Water; sparingly in alcohol.  
Formula: Na<sub>2</sub>SO<sub>3</sub>  
Formula Weight: 126.05

Specific Gravity: 2.633

### Section 10 — Stability and Reactivity

Avoid contact with acids and strong oxidizers.  
Shelf Life: Fair, moisture sensitive.

### Section 11 — Toxicological Information

Acute effects: Irritant  
Chronic effects: Possible mutagen  
Target organs: N.A.

ORL-MUS LD50: 820 mg/kg  
IHL-RAT LC50: N.A.  
SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

### Section 12 — Ecological Information

Aquatic Toxicity: 2600 ppm / 24, 48, 96hr / mosquito fish / TLM / fresh water B.O.D.: 0.12 lb/lb instantaneous

### Section 13 — Disposal Considerations

Please consult with state and local regulations.  
Flinn Suggested Disposal Method #12b is one option.

### Section 14 — Transport Information

Shipping Name: Not regulated  
Hazard Class: N/A  
UN Number: N/A

N/A = Not applicable

### Section 15 — Regulatory Information

TSCA-listed, EINECS-listed (231-821-4), RCRA code D003.

### Section 16 — Other Information

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# FLINN SCIENTIFIC INC.

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## Material Safety Data Sheet (MSDS)

MSDS #: 767.00

Revision Date: March 12, 2001

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### Section 1 — Chemical Product and Company Identification

---

## Sodium Thiocyanate

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### Section 2 — Composition, Information on Ingredients

---

Sodium Thiocyanate

CAS#: 540-72-7

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### Section 3 — Hazards Identification

---

Colorless crystals or white powder; deliquescent.

Moderately toxic by ingestion. Body tissue irritant. Avoid all body tissue contact.

#### FLINN AT-A-GLANCE

Health-2

Flammability-0

Reactivity-1

Exposure-1

Storage-1

0 is low hazard, 3 is high hazard

---

### Section 4 — First Aid Measures

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash continuously with fresh water for 15 minutes.

Internal: Give large quantities of water. Call a physician or poison control at once.

---

### Section 5 — Fire Fighting Measures

---

Non flammable solid.

When heated to decomposition, emits toxic fumes of hydrogen sulfide, hydrogen cyanide, NO<sub>x</sub>, SO<sub>x</sub>, and Na<sub>2</sub>O.

**Fire Fighting Instructions:** Use triclass, dry chemical fire extinguisher. Firefighters should wear PPE and SCBA with full facepiece operated in positive pressure mode.

#### NFPA CODE

None established

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### Section 6 — Accidental Release Measures

---

Restrict unprotected personnel from area. Sweep up, place in sealed bag or container and dispose. Ventilate area and wash spill site after material pickup is complete. See Sections 8 and 13 for further information.

---

### Section 7 — Handling and Storage

---

Flinn Suggested Chemical Storage Pattern: Inorganic #7. Store with arsenates, cyanides and cyanates.

Store in a cool, dry place. Light sensitive. Deliquescent, store in a Flinn Chem-Saf bag. Use and dispense in a hood.

---

### Section 8 — Exposure Controls, Personal Protection

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron.

Use exhaust ventilation to keep airborne concentrations low.



### Section 9 — Physical and Chemical Properties

Colorless crystals or white powder; deliquescent.

Melting Point: 287 C

Solubility: Water and alcohol. Hygroscopic.

Formula: NaSCN

Formula Weight: 81.08

### Section 10 — Stability and Reactivity

Avoid contact with acids and strong bases. Contact with acids or heat may liberate poisonous hydrogen cyanide gas.

Shelf Life: Indefinite.

### Section 11 — Toxicological Information

Acute effects: Toxic, irritant

ORL-RAT LD50: 764 mg/kg

Chronic effects: Possible teratogen

IHL-RAT LC50: N.A.

Target organs: N.A.

SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

### Section 12 — Ecological Information

Data not yet available.

### Section 13 — Disposal Considerations

Please consult with state and local regulations.

Flinn Suggested Disposal Method #26a is one option.

### Section 14 — Transport Information

Shipping Name: Not regulated

Hazard Class: N/A

UN Number: N/A

N/A = Not applicable

### Section 15 — Regulatory Information

TSCA-listed, EINECS-listed (208-754-4).

### Section 16 — Other Information

Consult your copy of the Flinn Scientific Catalog/Reference Manual for additional information about laboratory chemicals. This Material Safety Data Sheet (MSDS) is for guidance and is based upon information and tests believed to be reliable. Flinn Scientific Inc. makes no guarantee of the accuracy or completeness of the data and shall not be liable for any damages relating thereto. The data is offered solely for your consideration, investigation, and verification. Flinn Scientific Inc. assumes no legal responsibility for use or reliance upon this data.

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*Flinn MSDS Prevent Chemical Accidents*

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P.O. Box 219 Batavia IL 60510  
(800) 452-1261 Fax (866) 452-1436

# FLINN SCIENTIFIC INC.

"Your Safer Source for Science Supplies"

## Material Safety Data Sheet (MSDS)

MSDS #: 769.00

Revision Date: April 2, 2001

---

### Section 1 — Chemical Product and Company Identification

---

## Sodium Thiosulfate, Anhydrous

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### Section 2 — Composition, Information on Ingredients

---

Sodium Thiosulfate, anhydrous

CAS#: 7772-98-7

---

### Section 3 — Hazards Identification

---

White granular powder. Odorless.  
Slightly toxic by ingestion. Body tissue irritant. Avoid all body tissue contact.

#### FLINN AT-A-GLANCE

Health-1  
Flammability-0  
Reactivity-0  
Exposure-1  
Storage-1

0 is low hazard, 3 is high hazard

---

### Section 4 — First Aid Measures

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.  
Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.  
Eye: Immediately flush with fresh water for 15 minutes.  
External: Wash continuously with fresh water for 15 minutes.  
Internal: Give large quantities of water. Call a physician or poison control at once.

---

### Section 5 — Fire Fighting Measures

---

Non flammable solid.  
When heated to decomposition, emits toxic fumes of Na<sub>2</sub>O and SO<sub>x</sub>.  
**Fire Fighting Instructions:** Use triclass, dry chemical fire extinguisher. Firefighters should wear PPE and SCBA with full facepiece operated in positive pressure mode.

#### NFPA CODE

None established

---

### Section 6 — Accidental Release Measures

---

Restrict unprotected personnel from area. Sweep up, place in sealed bag or container and dispose. Ventilate area and wash spill site after material pickup is complete. See Sections 8 and 13 for further information.

---

### Section 7 — Handling and Storage

---

Flinn Suggested Chemical Storage Pattern: Inorganic #2. Store with acetates, halides, sulfates, sulfites, thiosulfates and phosphates. Store in a cool, dry place. Deliquescent, store in a Flinn Chem-Saf bag.

---

### Section 8 — Exposure Controls, Personal Protection

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron.

### Section 9 — Physical and Chemical Properties

White granular powder. Odorless.

Solubility: Water. Insoluble in alcohol.

Formula: Na<sub>2</sub>S<sub>2</sub>O<sub>3</sub>

Formula Weight: 158.11

Specific Gravity: 1.667

### Section 10 — Stability and Reactivity

Avoid contact with strong acids, strong oxidizers, lead, silver, mercury salts and iodines.

Shelf Life: Fair to poor, deliquescent.

### Section 11 — Toxicological Information

Acute effects: Irritant

Chronic effects: N.A.

Target organs: N.A.

ORL-HUM LD50: 0.5-2.0 gm/kg

IHL-RAT LC50: N.A.

SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

### Section 12 — Ecological Information

Data not yet available.

### Section 13 — Disposal Considerations

Please consult with state and local regulations.

Flinn Suggested Disposal Method #12b is one option.

### Section 14 — Transport Information

Shipping Name: Not regulated

Hazard Class: N/A

UN Number: N/A

N/A = Not applicable

### Section 15 — Regulatory Information

TSCA-listed, EINECS-listed (231-867-5).

### Section 16 — Other Information

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P.O. Box 219 Batavia IL 60510  
(800) 452-1261 Fax (866) 452-1436

---

### Section 1 — Chemical Product and Company Identification

---

## Sodium Thiosulfate, Pentahydrate

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### Section 2 — Composition, Information on Ingredients

---

Sodium Thiosulfate, pentahydrate

Synonym: sodium hyposulfite

CAS#: 10102-17-7

---

### Section 3 — Hazards Identification

---

White, translucent crystals or powder; deliquescent. Odorless.  
Slightly toxic by ingestion. Body tissue irritant. Avoid all body tissue contact.

#### FLINN AT-A-GLANCE

Health-1  
Flammability-0  
Reactivity-0  
Exposure-1  
Storage-1

0 is low hazard, 3 is high hazard

---

### Section 4 — First Aid Measures

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.  
Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.  
Eye: Immediately flush with fresh water for 15 minutes.  
External: Wash continuously with fresh water for 15 minutes.  
Internal: Give large quantities of water. Call a physician or poison control at once.

---

### Section 5 — Fire Fighting Measures

---

Non flammable solid.

When heated to decomposition, emits toxic fumes of Na<sub>2</sub>O and SO<sub>x</sub>.

**Fire Fighting Instructions:** Use triclass, dry chemical fire extinguisher. Firefighters should wear PPE and SCBA with full facepiece operated in positive pressure mode.

#### NFPA CODE

None established

---

### Section 6 — Accidental Release Measures

---

Restrict unprotected personnel from area. Sweep up, place in sealed bag or container and dispose. Ventilate area and wash spill site after material pickup is complete. See Sections 8 and 13 for further information.

---

### Section 7 — Handling and Storage

---

Flinn Suggested Chemical Storage Pattern: Inorganic #2. Store with acetates, halides, sulfates, sulfites, thiosulfates and phosphates. Store in a cool, dry place. Deliquescent, store in a Flinn Chem-Saf bag.

---

### Section 8 — Exposure Controls, Personal Protection

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron.

# FLINN SCIENTIFIC INC.

"Your Safer Source for Science Supplies"

## Material Safety Data Sheet (MSDS)

Sodium Thiosulfate, Pentahydrate

MSDS #: 768.00

Revision Date: October 31, 2003

### Section 9 — Physical and Chemical Properties

White, translucent crystals or powder; deliquescent. Odorless.  
Solubility: Water; not alcohol.  
Formula: Na<sub>2</sub>S<sub>2</sub>O<sub>3</sub> · 5H<sub>2</sub>O  
Formula Weight: 248.19

Specific Gravity: 1.729 (5 hydrate)  
Melting Point: 48 C

### Section 10 — Stability and Reactivity

Avoid contact with strong acids, strong oxidizers, lead, silver, mercury salts and iodines.  
Shelf Life: Poor, deliquescent.

### Section 11 — Toxicological Information

Acute effects: Irritant  
Chronic effects: N.A.  
Target organs: N.A.

ORL-HUM LD50: 0.5-2 gm/kg  
IHL-RAT LC50: N.A.  
SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

### Section 12 — Ecological Information

Data not yet available.

### Section 13 — Disposal Considerations

Please consult with state and local regulations.  
Flinn Suggested Disposal Method #12b is one option.

### Section 14 — Transport Information

Shipping Name: Not regulated  
Hazard Class: N/A  
UN Number: N/A

N/A = Not applicable

### Section 15 — Regulatory Information

EINECS-listed (231-867-5).

### Section 16 — Other Information

Consult your copy of the Flinn Scientific Catalog/Reference Manual for additional information about laboratory chemicals. This Material Safety Data Sheet (MSDS) is for guidance and is based upon information and tests believed to be reliable. Flinn Scientific Inc. makes no guarantee of the accuracy or completeness of the data and shall not be liable for any damages relating thereto. The data is offered solely for your consideration, investigation, and verification. Flinn Scientific Inc. assumes no legal responsibility for use or reliance upon this data.

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P.O. Box 219 Batavia IL 60510  
(800) 452-1261 Fax (866) 452-1436

# FLINN SCIENTIFIC INC.

"Your Safer Source for Science Supplies"

## Material Safety Data Sheet (MSDS)

MSDS #: 776.00

Revision Date: May 22, 2001

---

### Section 1 — Chemical Product and Company Identification

---

## Stannous Chloride

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### Section 2 — Composition, Information on Ingredients

---

Stannous Chloride, dihydrate

Synonym: tin (II) chloride

CAS#: 10025-69-1

---

### Section 3 — Hazards Identification

---

White powder and chunks. Slight chlorine odor.

Moderately toxic by ingestion and inhalation. Corrosive to body tissues. Avoid all body tissue contact.

#### FLINN AT-A-GLANCE

Health-2

Flammability-0

Reactivity-1

Exposure-2

Storage-1

0 is low hazard, 3 is high hazard

---

### Section 4 — First Aid Measures

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash continuously with fresh water for 15 minutes.

Internal: Give 1 to 2 cups of water or milk, followed by a gastric antacid, such as milk of magnesia. Do not induce vomiting. Call a physician or poison control at once.

---

### Section 5 — Fire Fighting Measures

---

Non flammable solid.

When heated to decomposition, emits toxic fumes of hydrogen chloride and stannic oxide.

**Fire Fighting Instructions:** Use triclass, dry chemical fire extinguisher. Firefighters should wear PPE and SCBA with full facepiece operated in positive pressure mode.

#### NFPA CODE

None established

---

### Section 6 — Accidental Release Measures

---

Restrict unprotected personnel from area. Sweep up, place in sealed bag or container and dispose. Ventilate area and wash spill site after material pickup is complete. See Sections 8 and 13 for further information.

---

### Section 7 — Handling and Storage

---

Flinn Suggested Chemical Storage Pattern: Inorganic #2. Store with acetates, halides, sulfates, sulfites, thiosulfates and phosphates. Store in a cool, dry place. Deliquescent, store in Flinn Chem-Saf bag. Keep container tightly closed.

Use and dispense in a hood.

---

### Section 8 — Exposure Controls, Personal Protection

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron. Use ventilation to keep airborne concentrations below exposure limits. Always wear a NIOSH-approved respirator with proper cartridges or a positive pressure, air-supplied respirator when handling this material in emergency situations (spill or fire).

Exposure guidelines: TWA 2 mg/m<sup>3</sup> (Sn) (ACGIH)

### Section 9 — Physical and Chemical Properties

White powder and chunks. Slight chlorine odor.  
Solubility: Water, alkalis and alcohol.  
Formula:  $\text{SnCl}_2 \cdot 2\text{H}_2\text{O}$   
Formula Weight: 225.65

Specific Gravity: 2.71  
Melting Point: 37.7 C  
Boiling Point: 652 C

### Section 10 — Stability and Reactivity

Avoid contact with strong bases, strong oxidizers, sodium, potassium, hydrogen peroxide.  
Shelf life: Poor.

### Section 11 — Toxicological Information

Acute effects: Toxic, corrosive  
Chronic effects: N.A.  
Target organs: N.A.

ORL-RAT LD50: 700 mg/kg  
IHL-RAT LC50: N.A.  
SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

### Section 12 — Ecological Information

Data not yet available.

### Section 13 — Disposal Considerations

Please consult with state and local regulations.  
Flinn Suggested Disposal Method #26a is one option.

### Section 14 — Transport Information

Shipping Name: Not regulated  
Hazard Class: N/A  
UN Number: N/A

N/A = Not applicable

### Section 15 — Regulatory Information

TSCA-listed, EINECS-listed (231-868-0).

### Section 16 — Other Information

Consult your copy of the Flinn Scientific Catalog/Reference Manual for additional information about laboratory chemicals. This Material Safety Data Sheet (MSDS) is for guidance and is based upon information and tests believed to be reliable. Flinn Scientific Inc. makes no guarantee of the accuracy or completeness of the data and shall not be liable for any damages relating thereto. The data is offered solely for your consideration, investigation, and verification. Flinn Scientific Inc. assumes no legal responsibility for use or reliance upon this data.



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(800) 452-1261 Fax (866) 452-1436

MSDS Number: **S6506** \* \* \* \* \* *Effective Date: 04/23/07* \* \* \* \* \* *Supersedes: 08/10/04*

	24 Hour Emergency Telephone: 908-859-2151 CHEMTREC: 1-800-424-9300
	National Response in Canada CANUTEC: 613-996-6565
From: Mallinckrodt Baker, Inc. 222 Red School Lane Phillipsburg, NJ 08865	
All non-emergency questions should be directed to Customer Service (1-800-582-2537) for assistance.	

24 Hour Emergency Telephone: 908-859-2151  
CHEMTREC: 1-800-424-9300

National Response in Canada  
CANUTEC: 613-996-6565

Outside U.S. and Canada  
Chemtrec: 703-527-3887

**NOTE:** CHEMTREC, CANUTEC and National Response Center emergency numbers to be used only in the event of chemical emergencies involving a spill, leak, fire, exposure or accident involving chemicals.

# STARCH SOLUBLE

## 1. Product Identification

**Synonyms:** Amglogen; Amylodextrin; Potato starch

**CAS No.:** 9005-84-9

**Molecular Weight:** Not applicable to mixtures.

**Chemical Formula:** (C<sub>6</sub>H<sub>10</sub>O<sub>5</sub>)<sub>x</sub>

**Product Codes:**

J.T. Baker: 4006, 4010

Mallinckrodt: 8188

## 2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
Starch Soluble	9005-84-9	90 - 100%	Yes

## 3. Hazards Identification

### Emergency Overview

**As part of good industrial and personal hygiene and safety procedure, avoid all unnecessary exposure to the chemical substance and ensure prompt removal from skin, eyes and clothing.**

**SAF-T-DATA<sup>(tm)</sup>** Ratings (Provided here for your convenience)

Health Rating: 0 - None

Flammability Rating: 1 - Slight

Reactivity Rating: 0 - None

Contact Rating: 1 - Slight

Lab Protective Equip: GOGGLES; LAB COAT; PROPER GLOVES

Storage Color Code: Green (General Storage)



---

## Potential Health Effects

---

**Inhalation:**

Symptoms similar to those caused by nuisance dust; coughing, sneezing.

**Ingestion:**

Not expected to be a health hazard.

**Skin Contact:**

No adverse effects expected.

**Eye Contact:**

No adverse effects expected but dust may cause mechanical irritation.

**Chronic Exposure:**

No adverse effects expected.

**Aggravation of Pre-existing Conditions:**

Persons with respiratory impairment may be sensitive to starch dust.

---

## 4. First Aid Measures

**Inhalation:**

Remove to fresh air. Get medical attention for any breathing difficulty.

**Ingestion:**

If large amounts were swallowed, give water to drink and get medical advice.

**Skin Contact:**

Wash exposed area with soap and water. Get medical advice if irritation develops.

**Eye Contact:**

Wash thoroughly with running water. Get medical advice if irritation develops.

---

## 5. Fire Fighting Measures

**Fire:**

Autoignition temperature: > 380C (> 716F)

Combustible solid.

Minimum ignition energy > 30 m (Depends on particle size, moisture content, etc.) Contact with strong oxidizers may cause fire.

**Explosion:**

Fine dust dispersed in air in sufficient concentrations, and in the presence of an ignition source is a potential dust explosion hazard. Minimum ignition temperature, cloud: 430C (806F).

**Fire Extinguishing Media:**

If involved in a fire, use water spray.

**Special Information:**

In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode.

---

## 6. Accidental Release Measures

Remove all sources of ignition. Ventilate area of leak or spill. Wear appropriate personal protective equipment as specified in Section 8. Spills: Clean up spills in a manner that does not disperse dust into the air. Use non-sparking tools and equipment. Reduce airborne dust and prevent scattering by moistening with water. Pick up spill for recovery or disposal and place in a closed container.

---

## 7. Handling and Storage

Containers of this material may be hazardous when empty since they retain product residues (dust, solids); observe all warnings and precautions listed for the product. Keep in a tightly closed container. Protect from physical damage. Store in a cool, dry, ventilated area away from sources of heat, moisture and incompatibilities.

---

## 8. Exposure Controls/Personal Protection

### **Airborne Exposure Limits:**

-OSHA Permissible Exposure Limit (PEL):

15 mg/m<sup>3</sup> total dust, 5 mg/m<sup>3</sup> respirable fraction

-ACGIH Threshold Limit Value (TLV):

10 mg/m<sup>3</sup> (TWA) inhalable fraction

### **Ventilation System:**

A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, *Industrial Ventilation, A Manual of Recommended Practices*, most recent edition, for details.

### **Personal Respirators (NIOSH Approved):**

If the exposure limit is exceeded and engineering controls are not feasible, a half facepiece particulate respirator (NIOSH type N95 or better filters) may be worn for up to ten times the exposure limit or the maximum use concentration specified by the appropriate regulatory agency or respirator supplier, whichever is lowest. A full-face piece particulate respirator (NIOSH type N100 filters) may be worn up to 50 times the exposure limit, or the maximum use concentration specified by the appropriate regulatory agency, or respirator supplier, whichever is lowest. If oil particles (e.g. lubricants, cutting fluids, glycerine, etc.) are present, use a NIOSH type R or P filter. For emergencies or instances where the exposure levels are not known, use a full-facepiece positive-pressure, air-supplied respirator. **WARNING:** Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.

### **Skin Protection:**

Wear protective gloves and clean body-covering clothing.

### **Eye Protection:**

Use chemical safety goggles. Maintain eye wash fountain and quick-drench facilities in work area.

---

## 9. Physical and Chemical Properties

### **Appearance:**

White, amorphous powder or granules.

### **Odor:**

Slight characteristic odor.

### **Solubility:**

Dispersible in hot water.

### **Specific Gravity:**

ca. 1.5

### **pH:**

No information found.

### **% Volatiles by volume @ 21C (70F):**

0

### **Boiling Point:**

Not applicable.

### **Melting Point:**

No information found.

### **Vapor Density (Air=1):**

No information found.

### **Vapor Pressure (mm Hg):**

No information found.

**Evaporation Rate (BuAc=1):**

No information found.

## 10. Stability and Reactivity

**Stability:**

Stable under ordinary conditions of use and storage.

**Hazardous Decomposition Products:**

Heavy, black acrid smoke.

**Hazardous Polymerization:**

Will not occur.

**Incompatibilities:**

Strong oxidizers.

**Conditions to Avoid:**

Heat, flames, ignition sources and incompatibles.

## 11. Toxicological Information

No LD50/LC50 information found relating to normal routes of occupational exposure.

```

-----\Cancer Lists\-----
Ingredient                                ---NTP Carcinogen---
Known      Anticipated      IARC Category
-----
Starch Soluble (9005-84-9)                No           No           None
    
```

## 12. Ecological Information

**Environmental Fate:**

No information found.

**Environmental Toxicity:**

No information found.

## 13. Disposal Considerations

Whatever cannot be saved for recovery or recycling should be managed in an appropriate and approved waste disposal facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

## 14. Transport Information

Not regulated.

## 15. Regulatory Information

```

-----\Chemical Inventory Status - Part 1\-----
Ingredient                                TSCA   EC     Japan  Australia
-----
    
```

Starch Soluble (9005-84-9) Yes Yes No Yes

-----\Chemical Inventory Status - Part 2\-----

Ingredient	--Canada--			
	Korea	DSL	NDSL	Phil.
Starch Soluble (9005-84-9)	Yes	Yes	No	Yes

-----\Federal, State & International Regulations - Part 1\-----

Ingredient	-SARA 302-		-SARA 313-	
	RQ	TPQ	List	Chemical Catg.
Starch Soluble (9005-84-9)	No	No	No	No

-----\Federal, State & International Regulations - Part 2\-----

Ingredient	CERCLA	-RCRA-		-TSCA-	
		261.33	8 (d)		
Starch Soluble (9005-84-9)	No	No	No	No	No

Chemical Weapons Convention: No TSCA 12(b): No CDTA: No  
 SARA 311/312: Acute: Yes Chronic: No Fire: No Pressure: No  
 Reactivity: No (Pure / Solid)

**Australian Hazchem Code:** None allocated.

**Poison Schedule:** None allocated.

**WHMIS:**

This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

## 16. Other Information

**NFPA Ratings:** Health: 0 Flammability: 2 Reactivity: 0

**Label Hazard Warning:**

As part of good industrial and personal hygiene and safety procedure, avoid all unnecessary exposure to the chemical substance and ensure prompt removal from skin, eyes and clothing.

**Label Precautions:**

None.

**Label First Aid:**

Not applicable.

**Product Use:**

Laboratory Reagent.

**Revision Information:**

MSDS Section(s) changed since last revision of document include: 3.

**Disclaimer:**

\*\*\*\*\*

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\*\*\*\*\*

**Prepared by:** Environmental Health & Safety

Phone Number: (314) 654-1600 (U.S.A.)

# FLINN SCIENTIFIC INC.

"Your Safer Source for Science Supplies"

## Material Safety Data Sheet (MSDS)

MSDS #: 781.00

Revision Date: April 2, 2001

---

### Section 1 — Chemical Product and Company Identification

---

#### Stearic Acid

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### Section 2 — Composition, Information on Ingredients

---

Stearic Acid

Synonym: octadecanoic acid

CAS#: 57-11-4

---

### Section 3 — Hazards Identification

---

White, waxy solid. Fatty acid odor.

Body tissue irritant. Avoid all body tissue contact.

Combustible solid.

#### FLINN AT-A-GLANCE

Health-0

Flammability-1

Reactivity-1

Exposure-1

Storage-0

0 is low hazard, 3 is high hazard

---

### Section 4 — First Aid Measures

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash continuously with fresh water for 15 minutes.

Internal: Give large quantities of water. Call a physician or poison control at once.

---

### Section 5 — Fire Fighting Measures

---

Combustible solid.

Flash Point 383 F (196 C) Autoignition temp. 390 C.

**Fire Fighting Instructions:** Use triclass, dry chemical fire extinguisher. Firefighters should wear PPE and SCBA with full facepiece operated in positive pressure mode.

#### NFPA CODE

H-1

F-1

R-0

---

### Section 6 — Accidental Release Measures

---

Restrict unprotected personnel from area. Sweep up, place in sealed bag or container and dispose. Ventilate area and wash spill site after material pickup is complete. See Sections 8 and 13 for further information.

---

### Section 7 — Handling and Storage

---

Flinn suggested chemical storage pattern: Organic #1. Store with acids, anhydrides and peracids.

Store in a cool, dry place.

---

### Section 8 — Exposure Controls, Personal Protection

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron.

### Section 9 — Physical and Chemical Properties

White, waxy solid. Fatty acid odor.  
Solubility: Many common organic solvents. Insoluble in water.  
Formula: CH<sub>3</sub>(CH<sub>2</sub>)<sub>16</sub>COOH  
Formula Weight: 284.54

Specific Gravity: 0.8390  
Melting Point: 67 C  
Boiling Point: 183-184 C @ 1mm

### Section 10 — Stability and Reactivity

Avoid contact with strong oxidizers, bases and reducing agents.  
Shelf Life: Indefinite.

### Section 11 — Toxicological Information

Acute effects: Irritant  
Chronic effects: N.A.  
Target organs: N.A.

ORL-RAT LD50: >10 gm/kg  
IHL-RAT LC50: N.A.  
SKN-RBT LD50: >5 gm/kg

N.A. = Not available, not all health aspects of this substance have been fully investigated.

### Section 12 — Ecological Information

Data not yet available.

### Section 13 — Disposal Considerations

Please consult with state and local regulations.  
Flinn Suggested Disposal Method #26a is one option.

### Section 14 — Transport Information

Shipping Name: Not regulated  
Hazard Class: N/A  
UN Number: N/A

N/A = Not applicable

### Section 15 — Regulatory Information

TSCA-listed, EINECS-listed (200-313-4).

### Section 16 — Other Information

Consult your copy of the Flinn Scientific Catalog/Reference Manual for additional information about laboratory chemicals. This Material Safety Data Sheet (MSDS) is for guidance and is based upon information and tests believed to be reliable. Flinn Scientific Inc. makes no guarantee of the accuracy or completeness of the data and shall not be liable for any damages relating thereto. The data is offered solely for your consideration, investigation, and verification. Flinn Scientific Inc. assumes no legal responsibility for use or reliance upon this data.

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(800) 452-1261 Fax (866) 452-1436

# FLINN SCIENTIFIC INC.

"Your Safer Source for Science Supplies"

## Material Safety Data Sheet (MSDS)

MSDS #: 784.00

Revision Date: March 12, 2001

---

### Section 1 — Chemical Product and Company Identification

---

## Strontium Chloride

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### Section 2 — Composition, Information on Ingredients

---

Strontium Chloride

CAS#: 10025-70-4

---

### Section 3 — Hazards Identification

---

Odorless, white crystalline needles.

Substance not considered hazardous. However, not all health aspects of this substance have been thoroughly investigated.

#### FLINN AT-A-GLANCE

Health-0  
Flammability-0  
Reactivity-0  
Exposure-0  
Storage-1

0 is low hazard, 3 is high hazard

---

### Section 4 — First Aid Measures

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash continuously with fresh water for 15 minutes.

Internal: Give large quantities of water. Call a physician or poison control at once.

---

### Section 5 — Fire Fighting Measures

---

Non flammable solid.

#### NFPA CODE

None established

---

### Section 6 — Accidental Release Measures

---

Restrict unprotected personnel from area. Sweep up, place in sealed bag or container and dispose. Ventilate area and wash spill site after material pickup is complete. See Sections 8 and 13 for further information.

---

### Section 7 — Handling and Storage

---

Flinn Suggested Chemical Storage Pattern: Inorganic #2. Store with acetates, halides, sulfates, sulfites, thiosulfates and phosphates. Store in a cool, dry place. Deliquescent, store in a Flinn Chem-Saf bag.

---

### Section 8 — Exposure Controls, Personal Protection

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron.



### Section 9 — Physical and Chemical Properties

Odorless, white crystalline needles.  
Solubility: Water and alcohol.  
Formula: SrCl<sub>2</sub> 6H<sub>2</sub>O  
Formula Weight: 266.64

Specific Gravity: 1.930  
Melting Point: 115 C

### Section 10 — Stability and Reactivity

Avoid contact with strong oxidizers.  
Shelf Life: Fair to poor.

### Section 11 — Toxicological Information

Acute effects: Stomach pains, vomiting, diarrhea  
Chronic effects: N.A.  
Target organs: N.A.

ORL-RAT LD50: N.A.  
IHL-RAT LC50: N.A.  
SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

### Section 12 — Ecological Information

Data not yet available.

### Section 13 — Disposal Considerations

Please consult with state and local regulations.  
Flinn Suggested Disposal Method #26a is one option.

### Section 14 — Transport Information

Shipping Name: Not regulated  
Hazard Class: N/A  
UN Number: N/A

N/A = Not applicable

### Section 15 — Regulatory Information

TSCA-listed, EINECS-listed (233-971-6).

### Section 16 — Other Information

Consult your copy of the Flinn Scientific Catalog/Reference Manual for additional information about laboratory chemicals. This Material Safety Data Sheet (MSDS) is for guidance and is based upon information and tests believed to be reliable. Flinn Scientific Inc. makes no guarantee of the accuracy or completeness of the data and shall not be liable for any damages relating thereto. The data is offered solely for your consideration, investigation, and verification. Flinn Scientific Inc. assumes no legal responsibility for use or reliance upon this data.

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# FLINN SCIENTIFIC INC.

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## Material Safety Data Sheet (MSDS)

MSDS #: 786.00

Revision Date: March 12, 2001

---

### Section 1 — Chemical Product and Company Identification

---

#### Strontium Nitrate

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### Section 2 — Composition, Information on Ingredients

---

Strontium Nitrate

CAS#: 10042-76-9

---

### Section 3 — Hazards Identification

---

Odorless, white powder.

Slightly toxic by ingestion. Body tissue irritant. Avoid all body tissue contact.

#### FLINN AT-A-GLANCE

Health-1

Flammability-0

Reactivity-3

Exposure-1

Storage-0

0 is low hazard, 3 is high hazard

---

### Section 4 — First Aid Measures

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash continuously with fresh water for 15 minutes.

Internal: Give large quantities of water. Call a physician or poison control at once.

---

### Section 5 — Fire Fighting Measures

---

Non flammable solid.

Strong oxidizer. Fire and explosion risk when in contact with combustible materials.

When heated to decomposition, emits toxic fumes of NO<sub>x</sub>.

**Fire Fighting Instructions:** Use triclass, dry chemical fire extinguisher. Firefighters should wear PPE and SCBA with full facepiece operated in positive pressure mode.

#### NFPA CODE

None established

---

### Section 6 — Accidental Release Measures

---

Restrict unprotected personnel from area. Sweep up, place in sealed bag or container and dispose. Ventilate area and wash spill site after material pickup is complete. See Sections 8 and 13 for further information.

---

### Section 7 — Handling and Storage

---

Flinn Suggested Chemical Storage Pattern: Inorganic #3. Store with amides, nitrates and nitrites.

Store in a cool, dry place. Use and dispense in a hood.

---

### Section 8 — Exposure Controls, Personal Protection

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron.

Use exhaust ventilation to keep airborne concentrations low.

### Section 9 — Physical and Chemical Properties

Odorless, white powder.  
Solubility: Water; slightly in absolute alcohol.  
Formula: Sr(NO<sub>3</sub>)<sub>2</sub>  
Formula Weight: 211.63

Specific Gravity: 2.98  
Melting Point: 570 C

### Section 10 — Stability and Reactivity

Avoid contact with reducing agents, strong acids, and combustible materials.  
Shelf Life: Indefinite.

### Section 11 — Toxicological Information

Acute effects: Irritant  
Chronic effects: N.A.  
Target organs: N.A.

ORL-RAT LD50: 2750 mg/kg  
IHL-RAT LC50: N.A.  
SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

### Section 12 — Ecological Information

Data not yet available.

### Section 13 — Disposal Considerations

Please consult with state and local regulations.  
Flinn Suggested Disposal Method #26a is one option.

### Section 14 — Transport Information

Shipping Name: Strontium Nitrate  
Hazard Class: 5.1, Oxidizer  
UN Number: UN1507

N/A = Not applicable

### Section 15 — Regulatory Information

TSCA-listed, EINECS-listed (233-131-9). RCRA code D001.

### Section 16 — Other Information

Consult your copy of the Flinn Scientific Catalog/Reference Manual for additional information about laboratory chemicals. This Material Safety Data Sheet (MSDS) is for guidance and is based upon information and tests believed to be reliable. Flinn Scientific Inc. makes no guarantee of the accuracy or completeness of the data and shall not be liable for any damages relating thereto. The data is offered solely for your consideration, investigation, and verification. Flinn Scientific Inc. assumes no legal responsibility for use or reliance upon this data.

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# FLINN SCIENTIFIC INC.

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## Material Safety Data Sheet (MSDS)

MSDS #: 789.00

Revision Date: March 12, 2001

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### Section 1 — Chemical Product and Company Identification

---

#### Sucrose

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### Section 2 — Composition, Information on Ingredients

---

Sucrose

Synonym: table sugar

CAS#: 57-50-1

---

### Section 3 — Hazards Identification

---

Hard, white crystals. Malt-like odor.

Substance not considered hazardous. However, not all health aspects of this substance have been thoroughly investigated.

#### FLINN AT-A-GLANCE

Health-0

Flammability-0

Reactivity-0

Exposure-0

Storage-1

0 is low hazard, 3 is high hazard

---

### Section 4 — First Aid Measures

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash with mild soap and water.

Internal: Give large quantities of water. Call a physician or poison control at once.

---

### Section 5 — Fire Fighting Measures

---

Non flammable solid.

#### NFPA CODE

None established

---

### Section 6 — Accidental Release Measures

---

Restrict unprotected personnel from area. Sweep up, place in sealed bag or container and dispose. Ventilate area and wash spill site after material pickup is complete. See Sections 8 and 13 for further information.

---

### Section 7 — Handling and Storage

---

Flinn Suggested Chemical Storage Pattern: Organic #2. Store with alcohols, glycols, amines and amides.

Store in a cool, dry place. Store in a Flinn Chem-Saf bag.

---

### Section 8 — Exposure Controls, Personal Protection

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron.

### Section 9 — Physical and Chemical Properties

Hard, white crystals. Malt-like odor.  
Soluble in water; slightly in alcohol.  
Formula: C<sub>12</sub>H<sub>22</sub>O<sub>11</sub>  
Formula Weight: 342.21

Specific Gravity: 1.5877  
Melting Point: decomposes at 185-187 C

### Section 10 — Stability and Reactivity

Avoid contact with strong oxidizers.  
Shelf Life: Indefinite, if kept dry.

### Section 11 — Toxicological Information

Acute effects: N.A.  
Chronic effects: N.A.  
Target organs: N.A.

ORL-RAT LD50: 29700 mg/kg  
IHL-RAT LC50: N.A.  
SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

### Section 12 — Ecological Information

Data not yet available.

### Section 13 — Disposal Considerations

Please consult with state and local regulations.  
Flinn Suggested Disposal Method #26a is one option.

### Section 14 — Transport Information

Shipping Name: Not regulated  
Hazard Class: N/A  
UN Number: N/A

N/A = Not applicable

### Section 15 — Regulatory Information

TSCA-listed, EINECS-listed (200-334-9).

### Section 16 — Other Information

Consult your copy of the Flinn Scientific Catalog/Reference Manual for additional information about laboratory chemicals. This Material Safety Data Sheet (MSDS) is for guidance and is based upon information and tests believed to be reliable. Flinn Scientific Inc. makes no guarantee of the accuracy or completeness of the data and shall not be liable for any damages relating thereto. The data is offered solely for your consideration, investigation, and verification. Flinn Scientific Inc. assumes no legal responsibility for use or reliance upon this data.

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# FLINN SCIENTIFIC INC.

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## Material Safety Data Sheet (MSDS)

MSDS #: 790.00

Revision Date: February 24, 2003

---

### Section 1 — Chemical Product and Company Identification

---

#### Sudan III

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### Section 2 — Composition, Information on Ingredients

---

Sudan III

Synonym: solvent red 23, C.I. 26100

CAS#: 85-86-9

---

### Section 3 — Hazards Identification

---

Reddish-brown powder. Odorless.

Substance not considered hazardous. However, not all health aspects of this substance have been thoroughly investigated.

#### FLINN AT-A-GLANCE

Health-0

Flammability-0

Reactivity-0

Exposure-0

Storage-0

0 is low hazard, 3 is high hazard

---

### Section 4 — First Aid Measures

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash continuously with fresh water for 15 minutes.

Internal: Rinse out mouth, give 1 to 2 cups of water or milk, induce vomiting. Call a physician or poison control at once.

---

### Section 5 — Fire Fighting Measures

---

Non flammable solid.

#### NFPA CODE

None established

---

### Section 6 — Accidental Release Measures

---

Restrict unprotected personnel from area. Sweep up, place in sealed bag or container and dispose. Ventilate area and wash spill site after material pickup is complete. See Sections 8 and 13 for further information.

---

### Section 7 — Handling and Storage

---

Flinn Suggested Chemical Storage Pattern: Organic #9. Store with dyes, indicators, and stains.

Store in a cool, dry place.

---

### Section 8 — Exposure Controls, Personal Protection

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron.

# FLINN SCIENTIFIC INC.

"Your Safer Source for Science Supplies"

## Material Safety Data Sheet (MSDS)

Sudan III

MSDS #: 790.00

Revision Date: February 24, 2003

### Section 9 — Physical and Chemical Properties

Reddish-brown powder. Odorless.

Solubility: Chloroform, acetic acid, acetone, and, only slightly in alcohol. Not water.

Formula: C<sub>22</sub>H<sub>16</sub>N<sub>4</sub>O

Formula Weight: 352.40

Melting Point: 199 C (dec)

### Section 10 — Stability and Reactivity

Avoid contact with strong oxidizers and strong reducing agents.

Shelf Life: Indefinite.

### Section 11 — Toxicological Information

Acute effects: N.A.

Chronic effects: N.A.

Target organs: N.A.

ORL-RAT LD50: N.A.

IHL-RAT LC50: N.A.

SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

### Section 12 — Ecological Information

Data not yet available.

### Section 13 — Disposal Considerations

Please consult with state and local regulations.

Flinn Suggested Disposal Method #26a is one option.

### Section 14 — Transport Information

Shipping Name: Not regulated

Hazard Class: N/A

UN Number: N/A

N/A = Not applicable

### Section 15 — Regulatory Information

TSCA-listed, EINECS-listed (201-638-4).

### Section 16 — Other Information

Consult your copy of the Flinn Scientific Catalog/Reference Manual for additional information about laboratory chemicals. This Material Safety Data Sheet (MSDS) is for guidance and is based upon information and tests believed to be reliable. Flinn Scientific Inc. makes no guarantee of the accuracy or completeness of the data and shall not be liable for any damages relating thereto. The data is offered solely for your consideration, investigation, and verification. Flinn Scientific Inc. assumes no legal responsibility for use or reliance upon this data.

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# FLINN SCIENTIFIC INC.

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## Material Safety Data Sheet (MSDS)

MSDS #: 792.00

Revision Date: March 15, 2001

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### Section 1 — Chemical Product and Company Identification

---

#### Sudan IV

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### Section 2 — Composition, Information on Ingredients

---

Sudan IV

Synonym: solvent red 24, C.I. 26105

CAS#: 85-83-6

---

### Section 3 — Hazards Identification

---

Reddish-brown powder. Odorless.

Mildly toxic by ingestion. Body tissue irritant. Avoid all body tissue contact.

#### FLINN AT-A-GLANCE

Health-1

Flammability-0

Reactivity-0

Exposure-1

Storage-0

0 is low hazard, 3 is high hazard

---

### Section 4 — First Aid Measures

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash continuously with fresh water for 15 minutes.

Internal: Rinse out mouth, give 1 to 2 cups of water or milk, induce vomiting. Call a physician or poison control at once.

---

### Section 5 — Fire Fighting Measures

---

Non flammable solid.

When heated to decomposition, emits toxic fumes of NO<sub>x</sub>.

**Fire Fighting Instructions:** Use triclass, dry chemical fire extinguisher. Firefighters should wear PPE and SCBA with full facepiece operated in positive pressure mode.

#### NFPA CODE

None established

---

### Section 6 — Accidental Release Measures

---

Restrict unprotected personnel from area. Sweep up, place in sealed bag or container and dispose. Ventilate area and wash spill site after material pickup is complete. See Sections 8 and 13 for further information.

---

### Section 7 — Handling and Storage

---

Flinn Suggested Chemical Storage Pattern: Organic #9. Store with dyes, indicators, and stains.

Store in a cool, dry place.

---

### Section 8 — Exposure Controls, Personal Protection

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron.



### Section 9 — Physical and Chemical Properties

Reddish-brown powder. Odorless.  
Solubility: Chloroform, acetone acetic acid and, only slightly  
in alcohol. Insoluble in water.  
Melting Point: 199 C (dec)

### Section 10 — Stability and Reactivity

Avoid contact with strong oxidizers.  
Shelf Life: Indefinite.

### Section 11 — Toxicological Information

Acute effects: Irritant, stomach pains, vomiting, diarrhea	ORL-RAT LD50: N.A.
Chronic effects: Possible mutagen	IHL-RAT LC50: N.A.
Target organs: Liver	SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

### Section 12 — Ecological Information

Data not yet available.

### Section 13 — Disposal Considerations

Please consult with state and local regulations.  
Flinn Suggested Disposal Method #26a is one option.

### Section 14 — Transport Information

Shipping Name: Not regulated  
Hazard Class: N/A  
UN Number: N/A  
N/A = Not applicable

### Section 15 — Regulatory Information

TSCA-listed, EINECS-listed (201-635-8).

### Section 16 — Other Information

Consult your copy of the Flinn Scientific Catalog/Reference Manual for additional information about laboratory chemicals. This Material Safety Data Sheet (MSDS) is for guidance and is based upon information and tests believed to be reliable. Flinn Scientific Inc. makes no guarantee of the accuracy or completeness of the data and shall not be liable for any damages relating thereto. The data is offered solely for your consideration, investigation, and verification. Flinn Scientific Inc. assumes no legal responsibility for use or reliance upon this data.

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# FLINN SCIENTIFIC INC.

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## Material Safety Data Sheet (MSDS)

MSDS #: 800.00

Revision Date: March 15, 2001

---

### Section 1 — Chemical Product and Company Identification

---

#### Sulfur

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### Section 2 — Composition, Information on Ingredients

---

Sulfur

CAS#: 7704-34-9

---

### Section 3 — Hazards Identification

---

Yellow crystals or powder. Faint odor of rotten eggs.

Slightly toxic by ingestion and inhalation. Body tissue irritant. Avoid all body tissue contact.

#### FLINN AT-A-GLANCE

Health-1

Flammability-1

Reactivity-0

Exposure-1

Storage-0

0 is low hazard, 3 is high hazard

---

### Section 4 — First Aid Measures

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash continuously with fresh water for 15 minutes.

Internal: Induce vomiting. Call a physician or poison control at once.

---

### Section 5 — Fire Fighting Measures

---

Combustible solid.

Fire and explosion risk in finely divided form. When heated, it will burn and emit highly toxic SO<sub>x</sub> fumes. Flash Point: 405 F; Autoignition Temperature: 450 F.

**Fire Fighting Instructions:** Use triclass, dry chemical fire extinguisher. Firefighters should wear PPE and SCBA with full facepiece operated in positive pressure mode.

#### NFPA CODE

H-2

F-1

R-0

---

### Section 6 — Accidental Release Measures

---

Restrict unprotected personnel from area. Sweep up, place in sealed bag or container and dispose. Ventilate area and wash spill site after material pickup is complete. See Sections 8 and 13 for further information.

---

### Section 7 — Handling and Storage

---

Flinn Suggested Chemical Storage Pattern: Inorganic #10. Store with sulfur and phosphorus.

---

### Section 8 — Exposure Controls, Personal Protection

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron. Use exhaust ventilation to keep airborne concentrations low.

### Section 9 — Physical and Chemical Properties

Yellow crystals or powder. Faint odor of rotten eggs.  
Solubility: Slightly in alcohol and other organic solvents.  
Not in water.  
Formula: S  
Formula Weight: 32.06

Specific Gravity: 2.06  
Melting Point: 119 C  
Boiling Point: 444.6 C  
Vapor Pressure: 10 mm (246 C)  
Vapor Density: 8.9

### Section 10 — Stability and Reactivity

Avoid contact with oxidizers and moisture.  
Shelf Life: Indefinite.

### Section 11 — Toxicological Information

Acute effects: Irritant  
Chronic effects: N.A.  
Target organs: N.A.

ORL-RAT LD50: 5 gm/kg  
IHL-RAT LC50: N.A.  
EYE-HUM: 8 ppm

N.A. = Not available, not all health aspects of this substance have been fully investigated.

### Section 12 — Ecological Information

Aquatic toxicity: TLm96: 1000 ppm

### Section 13 — Disposal Considerations

Please consult with state and local regulations.  
Flinn Suggested Disposal Method #26a is one option.

### Section 14 — Transport Information

Shipping Name: Sulfur  
Hazard Class: 9, Miscellaneous Hazardous  
UN Number: NA1350

N/A = Not applicable

### Section 15 — Regulatory Information

TSCA-listed, EINECS-listed (231-722-6).

### Section 16 — Other Information

Consult your copy of the Flinn Scientific Catalog/Reference Manual for additional information about laboratory chemicals. This Material Safety Data Sheet (MSDS) is for guidance and is based upon information and tests believed to be reliable. Flinn Scientific Inc. makes no guarantee of the accuracy or completeness of the data and shall not be liable for any damages relating thereto. The data is offered solely for your consideration, investigation, and verification. Flinn Scientific Inc. assumes no legal responsibility for use or reliance upon this data.

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# FLINN SCIENTIFIC INC.

"Your Safer Source for Science Supplies"

## Material Safety Data Sheet (MSDS)

MSDS #: 801.00

Revision Date: May 22, 2001

---

### Section 1 — Chemical Product and Company Identification

---

#### Sulfuric Acid

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### Section 2 — Composition, Information on Ingredients

---

Sulfuric Acid (7664, 93-9) 48-96%, and water (7732-18-5) 4-52%

18M, 12.5M, 9M

CAS#: 7664-93-9

---

### Section 3 — Hazards Identification

---

Colorless, dense, oily liquid. Sulfurous odor.

Highly toxic by ingestion and inhalation. Severely corrosive to eye, skin, and all other body tissues.

Avoid all body tissue contact.

Very considerable heat generated when diluted with water.

#### FLINN AT-A-GLANCE

Health-3

Flammability-0

Reactivity-3

Exposure-3

Storage-3

0 is low hazard, 3 is high hazard

---

### Section 4 — First Aid Measures

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash continuously with fresh water for 15 minutes.

Internal: Give 1 to 2 cups of water or milk, followed by a gastric antacid, such as milk of magnesia. Do not induce vomiting. Call a physician or poison control at once.

---

### Section 5 — Fire Fighting Measures

---

Non flammable liquid.

When heated to decomposition, emits toxic fumes of SO<sub>x</sub>.

**Fire Fighting Instructions:** Use triclass, dry chemical fire extinguisher. Firefighters should wear PPE and SCBA with full facepiece operated in positive pressure mode.

#### NFPA CODE

H-3

F-0

R-2

No water

---

### Section 6 — Accidental Release Measures

---

Restrict unprotected personnel from area. Remove all ignition sources and ventilate area. Contain spill with sand and absorbent material, neutralize with sodium bicarbonate or calcium hydroxide and deposit in sealed bag or container. See Sections 8 and 13 for further information.

---

### Section 7 — Handling and Storage

---

Flinn Suggested Chemical Storage Pattern: Inorganic #9. Store with acids.

Store in a dedicated acid cabinet and away from any source of water; if an acid cabinet is not available, store in Flinn Saf-Cube.

Use and dispense in a hood.

---

### Section 8 — Exposure Controls, Personal Protection

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron. Use ventilation to keep airborne concentrations below exposure limits. Always wear a NIOSH-approved respirator with proper cartridges or a positive pressure, air-supplied respirator when handling this material in emergency situations (spill or fire).

Exposure guidelines: TWA 1 mg/m<sup>3</sup>, STEL 3 mg/m<sup>3</sup> (OSHA, ACGIH)

### Section 9 — Physical and Chemical Properties

Colorless, dense, oily liquid. Sulfurous odor.  
Solubility: Miscible with water evolving much heat.  
Formula: H<sub>2</sub>SO<sub>4</sub>  
Formula Weight: 98.08  
Concentration: 9-18 Molar

Specific Gravity: 1.84  
Melting Point: 10.4 C  
Boiling Point: 290 C

### Section 10 — Stability and Reactivity

Avoid contact with strong bases, reacts violently with water. Always add acid to water, never the reverse.  
Shelf Life: Good, if stored safely.

### Section 11 — Toxicological Information

Acute effects: Severely corrosive  
Chronic effects: N.A.  
Target organs: Eyes, skin

ORL-RAT LD50: 2140 mg/kg  
IHL-RAT LC50: 510 mg/m<sup>3</sup>/2H  
SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

### Section 12 — Ecological Information

Data not yet available.

### Section 13 — Disposal Considerations

Please consult with state and local regulations.  
Flinn Suggested Disposal Method #24b is one option.

### Section 14 — Transport Information

Shipping Name: Sulfuric Acid  
Hazard Class: 8, Corrosive  
UN Number: UN1830

N/A = Not applicable

### Section 15 — Regulatory Information

TSCA-listed, EINECS-listed (231-639-5), RCRA code D002, D003.

### Section 16 — Other Information

Consult your copy of the Flinn Scientific Catalog/Reference Manual for additional information about laboratory chemicals. This Material Safety Data Sheet (MSDS) is for guidance and is based upon information and tests believed to be reliable. Flinn Scientific Inc. makes no guarantee of the accuracy or completeness of the data and shall not be liable for any damages relating thereto. The data is offered solely for your consideration, investigation, and verification. Flinn Scientific Inc. assumes no legal responsibility for use or reliance upon this data.

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*Flinn MSDS Prevent Chemical Accidents*

flinn@flinnsci.com www.flinnsci.com  
P.O. Box 219 Batavia IL 60510  
(800) 452-1261 Fax (866) 452-1436

# FLINN SCIENTIFIC INC.

"Your Safer Source for Science Supplies"

## Material Safety Data Sheet (MSDS)

MSDS #: 802.00

Revision Date: May 22, 2001

---

### Section 1 — Chemical Product and Company Identification

---

#### Talc

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### Section 2 — Composition, Information on Ingredients

---

Talc

Synonym: hydrous magnesium silicate

CAS#: 14807-96-6

---

### Section 3 — Hazards Identification

---

White-gray powder. Odorless.

Dust is irritating to respiratory system. Avoid inhalation of dust.

#### FLINN AT-A-GLANCE

Health-0

Flammability-0

Reactivity-0

Exposure-1

Storage-0

0 is low hazard, 3 is high hazard

---

### Section 4 — First Aid Measures

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash continuously with fresh water for 15 minutes.

Internal: Rinse out mouth, give 1 to 2 cups of water or milk, induce vomiting. Call a physician or poison control at once.

---

### Section 5 — Fire Fighting Measures

---

Non flammable solid.

#### NFPA CODE

None established

---

### Section 6 — Accidental Release Measures

---

Restrict unprotected personnel from area. Sweep up, place in sealed bag or container and dispose. Ventilate area and wash spill site after material pickup is complete. See Sections 8 and 13 for further information.

---

### Section 7 — Handling and Storage

---

Flinn Suggested Chemical Storage Pattern: Inorganic #4. Store with hydroxides, oxides, silicates and carbonates.

Store in a cool, dry place.

---

### Section 8 — Exposure Controls, Personal Protection

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron. Use ventilation to keep airborne concentrations below exposure limits. Always wear a NIOSH-approved respirator with proper cartridges or a positive pressure, air-supplied respirator when handling this material in emergency situations (spill or fire).

Exposure guidelines: TWA 2 mg/m<sup>3</sup> (NIOSH)

### Section 9 — Physical and Chemical Properties

White-gray powder. Odorless.

Solubility: Not soluble in water or alcohol.

Hydrous magnesium silicate.

Formula:  $3\text{MgO} \cdot 4\text{SiO}_2 \cdot \text{H}_2\text{O}$

Formula Weight: Varies

Specific Gravity: 2.7-2.8

### Section 10 — Stability and Reactivity

Avoid contact with strong oxidizers.

Shelf Life: Indefinite, if kept dry.

### Section 11 — Toxicological Information

Acute effects: N.A.

Chronic effects: Lung irritation, chemical pneumonitis

Target organs: Lungs

ORL-RAT LD50: N.A.

IHL-RAT LC50: N.A.

SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

### Section 12 — Ecological Information

Data not yet available.

### Section 13 — Disposal Considerations

Please consult with state and local regulations.

Flinn Suggested Disposal Method #26a is one option.

### Section 14 — Transport Information

Shipping Name: Not regulated

Hazard Class: N/A

UN Number: N/A

N/A = Not applicable

### Section 15 — Regulatory Information

TSCA-listed, EINECS-listed (238-877-9).

### Section 16 — Other Information

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# FLINN SCIENTIFIC INC.

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## Material Safety Data Sheet (MSDS)

MSDS #: 804.00

Revision Date: March 15, 2001

---

### Section 1 — Chemical Product and Company Identification

---

#### I-Tartaric Acid

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### Section 2 — Composition, Information on Ingredients

---

I-Tartaric Acid

Synonym: 2,3-dihydrosuccinic acid

CAS#: 87-69-4

---

### Section 3 — Hazards Identification

---

White to colorless, transparent crystals or powder. Slight malt odor.

Body tissue irritant. Avoid all body tissue contact.

Combustible solid.

#### FLINN AT-A-GLANCE

Health-0

Flammability-1

Reactivity-0

Exposure-1

Storage-0

0 is low hazard, 3 is high hazard

---

### Section 4 — First Aid Measures

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash continuously with fresh water for 15 minutes.

Internal: Give large quantities of water. Call a physician or poison control at once.

---

### Section 5 — Fire Fighting Measures

---

Combustible solid.

Auto ignition temperature: 797 F

**Fire Fighting Instructions:** Use triclass, dry chemical fire extinguisher. Firefighters should wear PPE and SCBA with full facepiece operated in positive pressure mode.

#### NFPA CODE

H-0

F-1

R-0

---

### Section 6 — Accidental Release Measures

---

Restrict unprotected personnel from area. Remove all ignition sources and water. Sweep up, place in sealed bag or container and dispose. Ventilate area and wash spill site after material pickup is complete. See Sections 8 and 13 for further information.

---

### Section 7 — Handling and Storage

---

Flinn Suggested Chemical Storage Pattern: Organic #1. Store with acids, anhydrides and peracids.

Store in a cool, dry place.

---

### Section 8 — Exposure Controls, Personal Protection

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron.

Use exhaust ventilation to keep airborne concentrations below exposure limits.



### Section 9 — Physical and Chemical Properties

White to colorless, transparent crystals or powder.

Slight malt odor.

Solubility: Water and alcohol.

Formula: HO<sub>2</sub>CCH(OH)CH(OH)CO<sub>2</sub>H

Formula Weight: 150.09

Specific Gravity: 1.76

Melting Point: 170 C

### Section 10 — Stability and Reactivity

Avoid contact with strong bases, oxidizers and reducing agents.

Shelf Life: Indefinite.

### Section 11 — Toxicological Information

Acute effects: Irritant

Chronic effects: N.A.

Target organs: N.A.

ORL-RAT LD50: N.A.

IHL-RAT LC50: N.A.

SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

### Section 12 — Ecological Information

Data not yet available.

### Section 13 — Disposal Considerations

Please consult with state and local regulations.

Flinn Suggested Disposal Method #24a is one option.

### Section 14 — Transport Information

Shipping Name: Not regulated

Hazard Class: N/A

UN Number: N/A

N/A = Not applicable

### Section 15 — Regulatory Information

TSCA-listed, EINECS-listed (201-766-0).

### Section 16 — Other Information

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MSDS Number: T3341 \* \* \* \* Effective Date: 04/23/07 \* \* \* \* Supercedes: 02/16/06



From: Mallinckrodt Baker, Inc.  
222 Red School Lane  
Phillipsburg, NJ 08865



24 Hour Emergency Telephone: 908-859-2151  
CHEMTREC: 1-800-424-9300

National Response in Canada  
CANUTEC: 613-996-6666

Outside U.S. And Canada  
Chemtrec: 703-527-3887

NOTE: CHEMTREC, CANUTEC and National Response Center emergency numbers to be used only in the event of chemical emergencies involving a spill, leak, fire, exposure or accident involving chemicals.

All non-emergency questions should be directed to Customer Service (1-800-582-2537) for assistance.

# THYMOL BLUE FREE ACID

## 1. Product Identification

**Synonyms:** Phenol, 4,4'-(3H-2,1-benzoxathiol-3-ylidene)bis(5-methyl-2 (1-methylethyl)-, S,S-dioxide; Thymolsulfonphthalein  
**CAS No.:** 76-61-9  
**Molecular Weight:** 466.60  
**Chemical Formula:** C27H30O5S  
**Product Codes:** V856

## 2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
Thymol Blue Free Acid	76-61-9	99 - 100%	Yes

## 3. Hazards Identification

### Emergency Overview

**CAUTION! MAY CAUSE IRRITATION TO SKIN, EYES, AND RESPIRATORY TRACT.**

SAF-T-DATA<sup>(tm)</sup> Ratings (Provided here for your convenience)

Health Rating: 1 - Slight  
 Flammability Rating: 1 - Slight  
 Reactivity Rating: 1 - Slight  
 Contact Rating: 2 - Moderate  
 Lab Protective Equip: GOGGLES; LAB COAT; PROPER GLOVES  
 Storage Color Code: Green (General Storage)

### Potential Health Effects

-----

Specific hazard information about this compound was not found. However, composition and structure suggest that the compound can be harmful.

**Inhalation:**

May cause irritation to the respiratory tract. Symptoms may include coughing, sore throat, labored breathing, and chest pain.

**Ingestion:**

The toxic effects of this substance have not been thoroughly investigated. Oral doses may have toxic effects.

**Skin Contact:**

May cause irritation with redness and pain.

**Eye Contact:**

May cause irritation, redness and pain.

**Chronic Exposure:**

No information found.

**Aggravation of Pre-existing Conditions:**

No information found.

---

## 4. First Aid Measures

**Inhalation:**

Remove to fresh air. Get medical attention for any breathing difficulty.

**Ingestion:**

Give large amounts of water to drink. Never give anything by mouth to an unconscious person. Get medical attention.

**Skin Contact:**

Immediately flush skin with plenty of water for at least 15 minutes. Call a physician if irritation develops.

**Eye Contact:**

In case of contact, immediately flush eyes with plenty of water for at least 15 minutes, lifting upper and lower eyelids occasionally. Call a physician if irritation persists.

---

## 5. Fire Fighting Measures

**Fire:**

As with most organic solids, fire is possible at elevated temperatures or by contact with an ignition source.

**Explosion:**

Fine dust dispersed in air in sufficient concentrations, and in the presence of an ignition source is a potential dust explosion hazard.

**Fire Extinguishing Media:**

Water spray, dry chemical, alcohol foam, or carbon dioxide.

**Special Information:**

In the event of a fire, wear full protective clothing and NIOSH-approved self-contained breathing apparatus with full facepiece operated in the pressure demand or other positive pressure mode.

---

## 6. Accidental Release Measures

Remove all sources of ignition. Ventilate area of leak or spill. Wear appropriate personal protective equipment as specified in Section 8. Spills: Clean up spills in a manner that does not disperse dust into the air. Use non-sparking tools and equipment. Reduce airborne dust and prevent scattering by moistening with water. Pick up spill for recovery or disposal and place in a closed container.

---

## 7. Handling and Storage

Keep in a tightly closed container. Protect from physical damage. Store in a cool, dry, ventilated area away from sources of heat, moisture and incompatibilities. Containers of this material may be hazardous when empty since they retain product residues (dust, solids); observe all warnings and precautions listed for the product.

---

## 8. Exposure Controls/Personal Protection

### **Airborne Exposure Limits:**

- OSHA Permissible Exposure Limit (PEL):

15 mg/m<sup>3</sup> total dust, 5 mg/m<sup>3</sup> respirable fraction for nuisance dusts.

- ACGIH Threshold Limit Value (TLV)

for Particulates (insoluble or poorly soluble) Not Otherwise Specified (PNOS):

3 mg/m<sup>3</sup> respirable particles and 10 mg/m<sup>3</sup> inhalable particles.

### **Ventilation System:**

A system of local and/or general exhaust is recommended to keep employee exposures below the Airborne Exposure Limits. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area. Please refer to the ACGIH document, *Industrial Ventilation, A Manual of Recommended Practices*, most recent edition, for details.

### **Personal Respirators (NIOSH Approved):**

If the exposure limit is exceeded and engineering controls are not feasible, a half facepiece particulate respirator (NIOSH type N95 or better filters) may be worn for up to ten times the exposure limit or the maximum use concentration specified by the appropriate regulatory agency or respirator supplier, whichever is lowest. A full-face piece particulate respirator (NIOSH type N100 filters) may be worn up to 50 times the exposure limit, or the maximum use concentration specified by the appropriate regulatory agency, or respirator supplier, whichever is lowest. If oil particles (e.g. lubricants, cutting fluids, glycerine, etc.) are present, use a NIOSH type R or P filter. For emergencies or instances where the exposure levels are not known, use a full-facepiece positive-pressure, air-supplied respirator. **WARNING:** Air-purifying respirators do not protect workers in oxygen-deficient atmospheres.

### **Skin Protection:**

Wear protective gloves and clean body-covering clothing.

### **Eye Protection:**

Use chemical safety goggles. Maintain eye wash fountain and quick-drench facilities in work area.

---

## 9. Physical and Chemical Properties

### **Appearance:**

Brownish-green powder.

### **Odor:**

Characteristic odor.

### **Solubility:**

Insoluble in water.

### **Specific Gravity:**

No information found.

### **pH:**

No information found.

### **% Volatiles by volume @ 21C (70F):**

0

### **Boiling Point:**

Not applicable.

### **Melting Point:**

221 - 224C (430 - 435F)

### **Vapor Density (Air=1):**

No information found.

### **Vapor Pressure (mm Hg):**

No information found.

**Evaporation Rate (BuAc=1):**

No information found.

## 10. Stability and Reactivity

**Stability:**

Stable under ordinary conditions of use and storage.

**Hazardous Decomposition Products:**

Burning may produce carbon monoxide, carbon dioxide, sulfur oxides.

**Hazardous Polymerization:**

Will not occur.

**Incompatibilities:**

Strong oxidizers.

**Conditions to Avoid:**

Dusting and incompatibles.

## 11. Toxicological Information

No LD50/LC50 information found relating to normal routes of occupational exposure. Investigated as a mutagen.

-----\Cancer Lists\-----			
Ingredient	---NTP Carcinogen---		IARC Category
	Known	Anticipated	
Thymol Blue Free Acid (76-61-9)	No	No	None

## 12. Ecological Information

**Environmental Fate:**

No information found.

**Environmental Toxicity:**

No information found.

## 13. Disposal Considerations

Whatever cannot be saved for recovery or recycling should be managed in an appropriate and approved waste disposal facility. Processing, use or contamination of this product may change the waste management options. State and local disposal regulations may differ from federal disposal regulations. Dispose of container and unused contents in accordance with federal, state and local requirements.

## 14. Transport Information

Not regulated.

## 15. Regulatory Information

-----\Chemical Inventory Status - Part 1\-----

Ingredient	TSCA	EC	Japan	Australia
Thymol Blue Free Acid (76-61-9)	Yes	Yes	No	Yes

-----\Chemical Inventory Status - Part 2\-----

Ingredient	Korea	DSL	NDSL	Phil.
Thymol Blue Free Acid (76-61-9)	No	Yes	No	Yes

-----\Federal, State & International Regulations - Part 1\-----

Ingredient	-SARA 302-	TPQ	List	SARA 313	Chemical Catg.
Thymol Blue Free Acid (76-61-9)	No	No	No	No	No

-----\Federal, State & International Regulations - Part 2\-----

Ingredient	CERCLA	-RCRA-	261.33	-TSCA-	8 (d)
Thymol Blue Free Acid (76-61-9)	No	No	No	No	No

Chemical Weapons Convention: No TSCA 12(b): No CDTA: No  
 SARA 311/312: Acute: Yes Chronic: No Fire: No Pressure: No  
 Reactivity: No (Pure / Solid)

**Australian Hazchem Code:** None allocated.

**Poison Schedule:** None allocated.

**WHMIS:**

This MSDS has been prepared according to the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

## 16. Other Information

**NFPA Ratings:** Health: **1** Flammability: **0** Reactivity: **0**

**Label Hazard Warning:**

CAUTION! MAY CAUSE IRRITATION TO SKIN, EYES, AND RESPIRATORY TRACT.

**Label Precautions:**

- Wash thoroughly after handling.
- Avoid contact with eyes, skin and clothing.
- Avoid breathing dust.
- Keep container closed.
- Use with adequate ventilation.

**Label First Aid:**

In case of contact, immediately flush eyes or skin with plenty of water for at least 15 minutes. If inhaled, remove to fresh air. Get medical attention for any breathing difficulty.

**Product Use:**

Laboratory Reagent.

**Revision Information:**

MSDS Section(s) changed since last revision of document include: 3.

**Disclaimer:**

\*\*\*\*\*

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**Prepared by:** Environmental Health & Safety  
Phone Number: (314) 654-1600 (U.S.A.)

# FLINN SCIENTIFIC INC.

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## Material Safety Data Sheet (MSDS)

MSDS #: 818.00

Revision Date: March 15, 2001

---

### Section 1 — Chemical Product and Company Identification

---

## Thymol

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### Section 2 — Composition, Information on Ingredients

---

Thymol

Synonym: 3-hydroxy-1-methyl-4-isopropylbenzene

CAS#: 89-83-8

---

### Section 3 — Hazards Identification

---

White crystals. Aromatic odor - liniment like.

Moderately toxic by ingestion. Body tissue irritant and possible allergen. Avoid all body tissue contact.

Combustible solid.

#### FLINN AT-A-GLANCE

Health-2

Flammability-1

Reactivity-1

Exposure-1

Storage-0

0 is low hazard, 3 is high hazard

---

### Section 4 — First Aid Measures

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash continuously with fresh water for 15 minutes.

Internal: Give large quantities of water. Call a physician or poison control at once.

---

### Section 5 — Fire Fighting Measures

---

Combustible solid.

Flash Point: 216 F

**Fire Fighting Instructions:** Use triclass, dry chemical fire extinguisher. Firefighters should wear PPE and SCBA with full facepiece operated in positive pressure mode.

#### NFPA CODE

None established

---

### Section 6 — Accidental Release Measures

---

Restrict unprotected personnel from area. Remove all ignition sources and water. Sweep up, place in sealed bag or container and dispose. Ventilate area and wash spill site after material pickup is complete. See Sections 8 and 13 for further information.

---

### Section 7 — Handling and Storage

---

Flinn Suggested Chemical Storage Pattern: Organic #8. Store with phenols and cresols.

Store in a cool, dry place.

---

### Section 8 — Exposure Controls, Personal Protection

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron.



### Section 9 — Physical and Chemical Properties

White crystals. Aromatic odor - liniment like.  
Solubility: Soluble in many organic solvents; slightly in water.

Formula: CH<sub>3</sub>(C<sub>3</sub>H<sub>7</sub>)C<sub>6</sub>H<sub>3</sub>OH

Formula Weight: 150.11

Specific Gravity: 0.965

Melting Point: 50 C

Boiling Point: 232 C

### Section 10 — Stability and Reactivity

Avoid contact with heat, strong oxidizing agents and strong bases.

Shelf Life: Indefinite.

### Section 11 — Toxicological Information

Acute effects: Irritant, allergen

Chronic effects: N.A.

Target organs: Liver, kidneys, central nervous system, spleen

ORL-RAT LD50: 980 mg/kg

IHL-RAT LC50: N.A.

SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

### Section 12 — Ecological Information

Data not yet available.

### Section 13 — Disposal Considerations

Please consult with state and local regulations.

Flinn Suggested Disposal Method #24a is one option.

### Section 14 — Transport Information

Shipping Name: Not regulated

Hazard Class: N/A

UN Number: N/A

N/A = Not applicable

### Section 15 — Regulatory Information

TSCA-listed, EINECS-listed (201-944-8).

### Section 16 — Other Information

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# FLINN SCIENTIFIC INC.

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## Material Safety Data Sheet (MSDS)

MSDS #: 822.00

Revision Date: March 15, 2001

---

### Section 1 — Chemical Product and Company Identification

---

#### Tin

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### Section 2 — Composition, Information on Ingredients

---

Tin

CAS#: 7440-31-5

---

### Section 3 — Hazards Identification

---

Silver-white, ductile solid. Forms: granular, mossy, shot, and foil. Odorless. Substance not considered hazardous. However, not all health aspects of this substance have been thoroughly investigated.

#### FLINN AT-A-GLANCE

Health-0  
Flammability-0  
Reactivity-0  
Exposure-0  
Storage-0

0 is low hazard, 3 is high hazard

---

### Section 4 — First Aid Measures

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash continuously with fresh water for 15 minutes.

Internal: Give large quantities of water. Call a physician or poison control at once.

---

### Section 5 — Fire Fighting Measures

---

Non flammable solid.

Finely divided metal may be combustible.

**Fire Fighting Instructions:** Use triclass, dry chemical fire extinguisher. Firefighters should wear PPE and SCBA with full facepiece operated in positive pressure mode.

#### NFPA CODE

None established

---

### Section 6 — Accidental Release Measures

---

Restrict unprotected personnel from area. Sweep up, place in sealed bag or container and dispose. Ventilate area and wash spill site after material pickup is complete. See Sections 8 and 13 for further information.

---

### Section 7 — Handling and Storage

---

Flinn Suggested Chemical Storage Pattern: Inorganic #1. Store with metals and metal hydrides.

---

### Section 8 — Exposure Controls, Personal Protection

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron. Use ventilation to keep airborne concentrations below exposure limits. Always wear a NIOSH-approved respirator with proper cartridges or a positive pressure, air-supplied respirator when handling this material in emergency situations (spill or fire).

Exposure guidelines: TWA 2 mg/m<sup>3</sup> (OSHA)

### Section 9 — Physical and Chemical Properties

Silver-white, ductile solid. Forms: granular, mossy, shot, and foil. Odorless.  
Solubility: Acids, hot potassium hydroxide solution; not water.  
Formula: Sn  
Formula Weight: 118.71

Specific Gravity: 7.310  
Melting Point: 232 C  
Boiling Point: 2507 C

### Section 10 — Stability and Reactivity

Avoid contact with strong oxidizers, sulfur, strong bases, halogens.  
Shelf Life: Indefinite.

### Section 11 — Toxicological Information

Acute effects: N.A.  
Chronic effects: N.A.  
Target organs: N.A.

ORL-RAT LD50: N.A.  
IHL-RAT LC50: N.A.  
SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

### Section 12 — Ecological Information

Data not yet available.

### Section 13 — Disposal Considerations

Please consult with state and local regulations.  
Flinn Suggested Disposal Method #27a is one option.

### Section 14 — Transport Information

Shipping Name: Not regulated  
Hazard Class: N/A  
UN Number: N/A

N/A = Not applicable

### Section 15 — Regulatory Information

TSCA-listed, EINECS-listed (231-141-8), RCRA code D001.

### Section 16 — Other Information

Consult your copy of the Flinn Scientific Catalog/Reference Manual for additional information about laboratory chemicals. This Material Safety Data Sheet (MSDS) is for guidance and is based upon information and tests believed to be reliable. Flinn Scientific Inc. makes no guarantee of the accuracy or completeness of the data and shall not be liable for any damages relating thereto. The data is offered solely for your consideration, investigation, and verification. Flinn Scientific Inc. assumes no legal responsibility for use or reliance upon this data.

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P.O. Box 219 Batavia IL 60510  
(800) 452-1261 Fax (866) 452-1436

# FLINN SCIENTIFIC INC.

"Your Safer Source for Science Supplies"

## Material Safety Data Sheet (MSDS)

MSDS #: 839.00

Revision Date: February 24, 2003

---

### Section 1 — Chemical Product and Company Identification

---

## Universal Indicator Solution

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### Section 2 — Composition, Information on Ingredients

---

Methyl Red (845-10-3) <0.1%, Bromothymol Blue (34722-90-2) <0.1%, Phenolphthalein (77-09-8) <0.1%, Ethyl Alcohol (64-17-5) 55%, and Water (7732-18-5) 45%

CAS#: None Established

---

### Section 3 — Hazards Identification

---

The color of this solution depends entirely on the pH of the solution. Characteristic odor of ethyl alcohol. Contains denatured ethyl alcohol. Moderately toxic by ingestion and inhalation. Body tissue irritant. Avoid all body tissue contact. Flammable liquid.

#### FLINN AT-A-GLANCE

Health-2  
Flammability-1  
Reactivity-1  
Exposure-1  
Storage-0

0 is low hazard, 3 is high hazard

---

### Section 4 — First Aid Measures

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash continuously with fresh water for 15 minutes.

Internal: Rinse out mouth, give 1 to 2 cups of water or milk, induce vomiting. After vomiting, give mixture of 2 Tbs. of activated charcoal mixed with one cup of water. Call a physician or poison control at once.

---

### Section 5 — Fire Fighting Measures

---

Flammable liquid.

Contains ethyl alcohol. When heated, releases flammable fumes.

**Fire Fighting Instructions:** Use triclass, dry chemical fire extinguisher. Firefighters should wear PPE and SCBA with full facepiece operated in positive pressure mode.

#### NFPA CODE

None established

---

### Section 6 — Accidental Release Measures

---

Restrict unprotected personnel from area. Remove all ignition sources and ventilate area. Contain spill with sand and absorbent material; deposit in sealed bag or container. See Sections 8 and 13 for further information.

---

### Section 7 — Handling and Storage

---

Flinn Suggested Chemical Storage Pattern: Organic #9. Store with dyes, indicators, and stains.

---

### Section 8 — Exposure Controls, Personal Protection

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron.

Use ventilation to keep airborne concentrations below exposure limits. Always wear a NIOSH-approved respirator with proper cartridges or a positive pressure, air-supplied respirator when handling this material in emergency situations (spill or fire).

Exposure guidelines: TWA 1000 ppm as ethyl alcohol (OSHA)

# FLINN SCIENTIFIC INC.

"Your Safer Source for Science Supplies"

## Material Safety Data Sheet (MSDS)

Universal Indicator Solution

MSDS #: 839.00

Revision Date: February 24, 2003

### Section 9 — Physical and Chemical Properties

The color of this solution depends entirely on the pH of the solution. Characteristic odor of ethyl alcohol.

### Section 10 — Stability and Reactivity

Avoid contact with open flame, sparks or other sources of ignition.  
Shelf Life: Indefinite.

### Section 11 — Toxicological Information

Acute effects: Poison, irritant, nausea, dizziness, and headache  
Chronic effects: N.A.  
Target organs: Eyes, liver, kidneys, nerves

ORL-RAT LD50: 7060 mg/kg as ethyl alcohol  
IHL-RAT LC50: 20000 ppm/10H as ethyl alcohol  
SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

### Section 12 — Ecological Information

Data not yet available.

### Section 13 — Disposal Considerations

Please consult with state and local regulations.  
Flinn Suggested Disposal Method 26b is one option.

### Section 14 — Transport Information

Shipping Name: Not regulated  
Hazard Class: N/A  
UN Number: N/A

N/A = Not applicable

### Section 15 — Regulatory Information

Not listed.

### Section 16 — Other Information

Consult your copy of the Flinn Scientific Catalog/Reference Manual for additional information about laboratory chemicals. This Material Safety Data Sheet (MSDS) is for guidance and is based upon information and tests believed to be reliable. Flinn Scientific Inc. makes no guarantee of the accuracy or completeness of the data and shall not be liable for any damages relating thereto. The data is offered solely for your consideration, investigation, and verification. Flinn Scientific Inc. assumes no legal responsibility for use or reliance upon this data.

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(800) 452-1261 Fax (866) 452-1436

# FLINN SCIENTIFIC INC.

"Your Safer Source for Science Supplies"

## Material Safety Data Sheet (MSDS)

MSDS #: 840.00

Revision Date: March 14, 2001

---

### Section 1 — Chemical Product and Company Identification

---

#### Urea

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

---

### Section 2 — Composition, Information on Ingredients

---

Urea

Synonym: isourea, carbamide resin

CAS#: 57-13-6

---

### Section 3 — Hazards Identification

---

White crystals or powder. Slight ammonia odor.  
Body tissue irritant. Avoid all body tissue contact.

#### FLINN AT-A-GLANCE

Health-0  
Flammability-0  
Reactivity-0  
Exposure-1  
Storage-0

0 is low hazard, 3 is high hazard

---

### Section 4 — First Aid Measures

---

Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash continuously with fresh water for 15 minutes.

Internal: Give large quantities of water. Call a physician or poison control at once.

---

### Section 5 — Fire Fighting Measures

---

Non flammable, non combustible solid.

When heated to decomposition, emits toxic fumes of NO<sub>x</sub>.

**Fire Fighting Instructions:** Use triclass, dry chemical fire extinguisher. Firefighters should wear PPE and SCBA with full facepiece operated in positive pressure mode.

#### NFPA CODE

None established

---

### Section 6 — Accidental Release Measures

---

Restrict unprotected personnel from area. Sweep up, place in sealed bag or container and dispose. Ventilate area and wash spill site after material pickup is complete. See Sections 8 and 13 for further information.

---

### Section 7 — Handling and Storage

---

Flinn Suggested Chemical Storage Pattern: Organic #2. Store with alcohols, glycols, amines and amides.

Store in a cool, dry place.

---

### Section 8 — Exposure Controls, Personal Protection

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron.

### Section 9 — Physical and Chemical Properties

White crystals or powder. Slight ammonia odor.  
Solubility: Water and alcohol.  
Formula: NH<sub>2</sub>CONH<sub>2</sub>  
Formula Weight: 60.07

Specific Gravity: 1.335  
Melting Point: 132.7 C

### Section 10 — Stability and Reactivity

Avoid contact with strong oxidizers. Reacts with sodium hypochlorite or calcium hypochlorite to form the explosive nitrogen-trichloride.  
Shelf Life: Indefinite.

### Section 11 — Toxicological Information

Acute effects: Irritant  
Chronic effects: Possible mutagen  
Target organs: N.A.

ORL-RAT LD50: 8471 mg/kg  
IHL-RAT LC50: N.A.  
SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

### Section 12 — Ecological Information

Data not yet available.

### Section 13 — Disposal Considerations

Please consult with state and local regulations.  
Flinn Suggested Disposal Method #26a is one option.

### Section 14 — Transport Information

Shipping Name: Not regulated  
Hazard Class: N/A  
UN Number: N/A

N/A = Not applicable

### Section 15 — Regulatory Information

TSCA-listed, EINECS-listed (200-315-5).

### Section 16 — Other Information

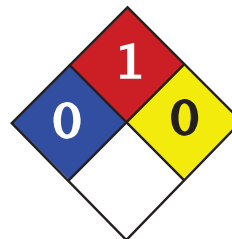
Consult your copy of the Flinn Scientific Catalog/Reference Manual for additional information about laboratory chemicals. This Material Safety Data Sheet (MSDS) is for guidance and is based upon information and tests believed to be reliable. Flinn Scientific Inc. makes no guarantee of the accuracy or completeness of the data and shall not be liable for any damages relating thereto. The data is offered solely for your consideration, investigation, and verification. Flinn Scientific Inc. assumes no legal responsibility for use or reliance upon this data.

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Health	1
Fire	1
Reactivity	0
Personal Protection	A

## Material Safety Data Sheet Olive oil MSDS

### Section 1: Chemical Product and Company Identification

**Product Name:** Olive oil

**Catalog Codes:** SLO1606

**CAS#:** 8001-25-0

**RTECS:** RK4300000

**TSCA:** TSCA 8(b) inventory: Olive oil

**CI#:** Not available.

**Synonym:** Olive Oil; Vegetable Oil

**Chemical Name:** Triglyceride of Fatty Acids.

**Chemical Formula:** Not available.

**Contact Information:**

**Sciencelab.com, Inc.**  
14025 Smith Rd.  
Houston, Texas 77396

US Sales: **1-800-901-7247**  
International Sales: **1-281-441-4400**

Order Online: [ScienceLab.com](http://ScienceLab.com)

**CHEMTREC (24HR Emergency Telephone), call:**  
1-800-424-9300

**International CHEMTREC, call:** 1-703-527-3887

**For non-emergency assistance, call:** 1-281-441-4400

### Section 2: Composition and Information on Ingredients

**Composition:**

Name	CAS #	% by Weight
Olive oil	8001-25-0	100

**Toxicological Data on Ingredients:** Not applicable.

### Section 3: Hazards Identification

**Potential Acute Health Effects:** Slightly hazardous in case of skin contact (irritant), of eye contact (irritant), of ingestion, of inhalation.

**Potential Chronic Health Effects:**

CARCINOGENIC EFFECTS: Not available.

MUTAGENIC EFFECTS: Not available.

TERATOGENIC EFFECTS: Not available.

DEVELOPMENTAL TOXICITY: Not available.

Repeated or prolonged exposure is not known to aggravate medical condition.

### Section 4: First Aid Measures

**Eye Contact:**

Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at



least 15 minutes. Get medical attention if irritation occurs.

**Skin Contact:** Wash with soap and water. Cover the irritated skin with an emollient. Get medical attention if irritation develops.

**Serious Skin Contact:** Not available.

**Inhalation:**

If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

**Serious Inhalation:** Not available.

**Ingestion:**

Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. If large quantities of this material are swallowed, call a physician immediately. Loosen tight clothing such as a collar, tie, belt or waistband.

**Serious Ingestion:** Not available.

### Section 5: Fire and Explosion Data

**Flammability of the Product:** May be combustible at high temperature.

**Auto-Ignition Temperature:** 343°C (649.4°F)

**Flash Points:** CLOSED CUP: 225°C (437°F).

**Flammable Limits:** Not available.

**Products of Combustion:** Not available.

**Fire Hazards in Presence of Various Substances:** Slightly flammable to flammable in presence of heat.

**Explosion Hazards in Presence of Various Substances:**

Risks of explosion of the product in presence of mechanical impact: Not available.

Risks of explosion of the product in presence of static discharge: Not available.

**Fire Fighting Media and Instructions:**

SMALL FIRE: Use DRY chemical powder.

LARGE FIRE: Use water spray, fog or foam. Do not use water jet.

**Special Remarks on Fire Hazards:** Not available.

**Special Remarks on Explosion Hazards:** Not available.

### Section 6: Accidental Release Measures

**Small Spill:** Absorb with an inert material and put the spilled material in an appropriate waste disposal.

**Large Spill:**

Absorb with an inert material and put the spilled material in an appropriate waste disposal. Finish cleaning by spreading water on the contaminated surface and allow to evacuate through the sanitary system. Be careful that the product is not present at a concentration level above TLV. Check TLV on the MSDS and with local authorities.

### Section 7: Handling and Storage

**Precautions:**

Keep away from heat. Keep away from sources of ignition. Empty containers pose a fire risk, evaporate the

residue under a fume hood. Ground all equipment containing material. Do not breathe gas/fumes/ vapor/spray. Keep away from incompatibles such as oxidizing agents, acids.

**Storage:** Keep container tightly closed. Keep container in a cool, well-ventilated area. Do not store above 23°C (73.4°F).

## Section 8: Exposure Controls/Personal Protection

### Engineering Controls:

Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value. Ensure that eyewash stations and safety showers are proximal to the work-station location.

**Personal Protection:** Safety glasses. Lab coat.

### Personal Protection in Case of a Large Spill:

Splash goggles. Full suit. Boots. Gloves. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

### Exposure Limits:

TWA: 10 (mg/m<sup>3</sup>) Total.

Consult local authorities for acceptable exposure limits.

## Section 9: Physical and Chemical Properties

**Physical state and appearance:** Liquid.

**Odor:** Not available.

### Taste:

Pleasant, delicate flavor; Faintly acrid aftertaste.  
(Slight.)

**Molecular Weight:** Not available.

**Color:** greenish-yellow

**pH (1% soln/water):** Not applicable.

**Boiling Point:** Not available.

**Melting Point:** Not available.

**Critical Temperature:** Not available.

**Specific Gravity:** 0.915 (Water = 1)

**Vapor Pressure:** Not available.

**Vapor Density:** >1 (Air = 1)

**Volatility:** Not available.

**Odor Threshold:** Not available.

**Water/Oil Dist. Coeff.:** Not available.

**Ionicity (in Water):** Not available.

**Dispersion Properties:** Not available.

**Solubility:**

Very slightly soluble in methanol, n-octanol.  
Insoluble in cold water.

**Section 10: Stability and Reactivity Data**

**Stability:** The product is stable.

**Instability Temperature:** Not available.

**Conditions of Instability:**

Becomes rancid on exposure to air  
Begins to get turbid at 5 to 10 C

**Incompatibility with various substances:** Reactive with oxidizing agents, acids.

**Corrosivity:** Non-corrosive in presence of glass.

**Special Remarks on Reactivity:** Not available.

**Special Remarks on Corrosivity:** Not available.

**Polymerization:** Will not occur.

**Section 11: Toxicological Information**

**Routes of Entry:** Absorbed through skin. Eye contact.

**Toxicity to Animals:**

LD50: Not available.

LC50: Not available.

**Chronic Effects on Humans:** Not available.

**Other Toxic Effects on Humans:** Slightly hazardous in case of skin contact (irritant), of ingestion, of inhalation.

**Special Remarks on Toxicity to Animals:** Not available.

**Special Remarks on Chronic Effects on Humans:** Not available.

**Special Remarks on other Toxic Effects on Humans:**

Acute Potential Health Effects:

Inhalation: Excessive inhalation of oil mist may affect respiratory system. Oil mist is classified as a nuisance particulate by ACGIH.

Ingestion: Generally non-hazardous unless ingested in large quantities. If ingested in large quantities, digestive tract discomfort may be encountered.

**Section 12: Ecological Information**

**Ecotoxicity:** Not available.

**BOD5 and COD:** Not available.

**Products of Biodegradation:**

Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

**Toxicity of the Products of Biodegradation:** Not available.

**Special Remarks on the Products of Biodegradation:** Not available.

### Section 13: Disposal Considerations

**Waste Disposal:**

### Section 14: Transport Information

**DOT Classification:** Not a DOT controlled material (United States).

**Identification:** Not applicable.

**Special Provisions for Transport:** Not applicable.

### Section 15: Other Regulatory Information

**Federal and State Regulations:**

Connecticut carcinogen reporting list.: Olive oil

TSCA 8(b) inventory: Olive oil

**Other Regulations:** EINECS: This product is on the European Inventory of Existing Commercial Chemical Substances.

**Other Classifications:**

**WHMIS (Canada):** Not controlled under WHMIS (Canada).

**DSCL (EEC):**

This product is not classified according to the EU regulations.

Not applicable.

**HMIS (U.S.A.):**

**Health Hazard:** 1

**Fire Hazard:** 1

**Reactivity:** 0

**Personal Protection:** A

**National Fire Protection Association (U.S.A.):**

**Health:** 0

**Flammability:** 1

**Reactivity:** 0

**Specific hazard:**

**Protective Equipment:**

Not applicable.

Lab coat.

Not applicable.

Safety glasses.

## Section 16: Other Information

**References:** Not available.

**Other Special Considerations:** Not available.

**Created:** 10/10/2005 08:43 PM

**Last Updated:** 11/06/2008 12:00 PM

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## **MATERIAL SAFETY DATA SHEET**

WRIGHT STAIN  
CAROLINA BIOLOGICAL

Revised: 16/07/04  
Replaces: 09/05/00  
Printed: 20/05/08

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### **1. PRODUCT DESCRIPTION**

Product Name: Wright Stain  
Product Code(s): 89-8498, 89-8500  
Size: 10g, 25g  
Chemical Name: Wright Stain  
CAS Number: 98988-92-1  
Formula: No data available  
Synonyms: None  
Distributor: Carolina Biological Supply Company  
2700 York Road  
Burlington, NC 27215

Chemical Information: 800-227-1150 (8am-5pm (ET) M-F)  
Chemtrec (Transportation Spill Response 24 hours): 800-424-9300

### **2. COMPOSITION/INFORMATION ON INGREDIENTS**

Principle Hazardous Components: Wright Stain(CAS#98988-92-1)100%  
TLV and PEL units: None established

### **3. HAZARD IDENTIFICATION**

Emergency Overview: May be harmful if inhaled, swallowed or absorbed through skin.

Potential Health Effects:

Eyes: May cause irritation.

Skin: May cause irritation.

Ingestion: May cause gastrointestinal discomfort.

Inhalation: May cause irritation to respiratory tract.

### **4. FIRST AID MEASURES**

Emergency and First Aid Procedures:

Eyes - Flush with water for at least 15 minutes, raising and lowering eyelids occasionally. Get medical attention if irritation persists.

Skin - Thoroughly wash exposed area for at least 15 minutes. Remove contaminated clothing. Launder contaminated clothing before reuse. Get medical attention if irritation persists.

Ingestion - If swallowed, if conscious, give plenty of water and induce vomiting immediately as directed by medical personnel. Immediately call a physician or poison control center. Never give anything by mouth to an unconscious person.

Inhalation - Remove to fresh air. Give oxygen if breathing is difficult; give artificial respiration if breathing has stopped. Keep person warm, quiet, and get medical attention.

### **5. FIREFIGHTING PROCEDURES**

Flash Point(Method Used): None

NFPA Rating: Health: 2

Fire: 1

Reactivity: 0

Extinguisher Media:

Use media suitable to extinguish surrounding fire.

Flammable Limits in Air % by Volume: N/A

Autoignition Temperature: N/A

Special Firefighting Procedures:

Firefighters should wear full protective equipment and NIOSH approved self-contained breathing apparatus.

## **MATERIAL SAFETY DATA SHEET**

WRIGHT STAIN  
CAROLINA BIOLOGICAL

Revised: 16/07/04  
Replaces: 09/05/00  
Printed: 20/05/08

---

Unusual Fire and Explosion Hazards: N/A

### **6. SPILL OR LEAK PROCEDURES**

Steps to be Taken in Case Material is Released or Spilled:

Ventilate area of spill. Clean-up personnel should wear proper protective equipment. Avoid creating dust. Sweep or scoop up and containerize for disposal.

### **7. SPECIAL PRECAUTIONS**

Precautions to be Taken in Handling or Storing: Keep container tightly closed. Store at controlled room temperature.

Other Precautions: Do not breathe dust or get in eyes, on skin, on clothing.

### **8. SPECIAL PROTECTION INFORMATION**

Respiratory Protection (Specify Type):

None needed under normal conditions of use with adequate ventilation.

NIOSH approved equipment should be worn if PELs are exceeded.

Ventilation:

Local Exhaust:	Yes
Mechanical (General):	Yes
Special:	No
Other:	No

Protective Gloves:

Rubber, neoprene, PVC, or equivalent.

Eye Protection:

Splash proof chemical safety goggles should be worn at all times.

Other Protective Clothing or Equipment:

Lab apron, eye wash, and safety shower.

### **9. PHYSICAL DATA**

Molecular Weight:	None
Melting Point:	N/A
Boiling Point:	N/A
Vapor Pressure:	N/A
Vapor Density (Air=1):	N/A
Specific Gravity (H <sub>2</sub> O=1):	N/A
Percent Volatile by Volume:	N/A
Evaporation Rate (H <sub>2</sub> O=1):	N/A
Solubility in Water:	Very slight
Appearance and Odor:	Dark green crystalline powder

### **10. REACTIVITY DATA**

Stability: Stable

Conditions to Avoid: Extreme heat, dusting

Incompatibility (Materials to Avoid): Oxidizers

Hazardous Decomposition Products: Toxic fumes (exact composition unknown)

Hazardous Polymerization: Will not occur

### **11. TOXICITY DATA**

Toxicity Data: No data available

Effects of Overexposure: None

Acute: See section 3

Chronic: Material is not listed (IARC, NTP, OSHA) as cancer causing agent.

# MATERIAL SAFETY DATA SHEET

WRIGHT STAIN  
CAROLINA BIOLOGICAL

Revised: 16/07/04  
Replaces: 09/05/00  
Printed: 20/05/08

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Conditions Aggravated by Overexposure: No data available  
Target Organs: Eyes, skin, respiratory tract,  
Primary Route(s) of Entry: Inhalation, ingestion, skin, eyes

## 12. ECOLOGICAL DATA

EPA Waste Numbers: None

## 13. DISPOSAL INFORMATION

Waste Disposal Methods: Dispose in accordance with all applicable Federal, State and Local regulations.  
Always contact a permitted waste disposer (TSD) to assure compliance.

## 14. TRANSPORT INFORMATION

Non-regulated

## 15. REGULATORY INFORMATION

EPA TSCA Status: TSCA inventory, Yes  
Hazard Category for SARA Section 311/312 Reporting: Acute, chronic

Product or Components	SARA EHS Sec. 302 TPQ	SARA Sec. 313 Chemicals List	SARA Sec. 313 Chemical Category	CERCLA Sec. 103 RQ lbs.	RCRA Sec.
261.33					

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Wright Stain	No	No	No	No	No
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## 16. ADDITIONAL INFORMATION

The information provided in this Material Safety Data Sheet represents a compilation of data drawn directly from various sources available to us. Carolina Biological Supply makes no representation or guarantee as to the suitability of this information to a particular application of the substance covered in the Material Safety Data Sheet. Any employer must carefully assess the applicability of any information contained herein in regards to the particular use to which the employer puts the material.

### Glossary

ACGIH.....American Conference of Governmental Industrial Hygienists  
CAS Number..Chemical Abstracts Service Number  
CERCLA.....Comprehensive Environmental Response, Compensation, and Liability Act  
DOT.....U.S. Department of Transportation  
IARC.....International Agency of Research on Cancer  
mppcf.....million particles per cubic foot  
N/A.....Not Available  
NTP.....National Toxicology Program  
OSHA.....Occupational Safety and Health Administration  
PEL.....Permissible Exposure Limit  
ppm.....parts per million  
RCRA.....Resource Conservation and Recovery Act  
SARA.....Superfund Amendments and Reauthorization Act  
TLV.....Threshold Limit Value  
TSCA.....Toxic Substances Control Act



## **MATERIAL SAFETY DATA SHEET**

WRIGHT STAIN  
CAROLINA BIOLOGICAL

Revised: 16/07/04  
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# FLINN SCIENTIFIC INC.

"Your Safer Source for Science Supplies"

## Material Safety Data Sheet (MSDS)

MSDS #: 862.00

Revision Date: March 12, 2001

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### Section 1 — Chemical Product and Company Identification

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#### Zinc Nitrate

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

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### Section 2 — Composition, Information on Ingredients

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Zinc Nitrate, hexahydrate

Synonym: zinc dinitrate

CAS#: 10196-18-6

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### Section 3 — Hazards Identification

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Moist, white lumps or crystals. Odorless.

Slightly toxic by ingestion and inhalation. Corrosive to body tissues. Avoid all body tissue contact.

Strong oxidizer. Fire risk when in contact with combustible materials.

#### FLINN AT-A-GLANCE

Health-1

Flammability-0

Reactivity-3

Exposure-2

Storage-0

0 is low hazard, 3 is high hazard

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### Section 4 — First Aid Measures

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Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash continuously with fresh water for 15 minutes.

Internal: Give no more than 1-2 cups of water for dilution. Do not induce vomiting. Call a physician or poison control at once.

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### Section 5 — Fire Fighting Measures

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Non flammable solid.

Strong oxidizer. Fire and explosion risk when in contact with combustible materials. When heated to decomposition, emits toxic fumes of NO<sub>x</sub> and ZnO.

**Fire Fighting Instructions:** Use triclass, dry chemical fire extinguisher. Firefighters should wear PPE and SCBA with full facepiece operated in positive pressure mode.

#### NFPA CODE

None established

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### Section 6 — Accidental Release Measures

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Restrict unprotected personnel from area. Sweep up, place in sealed bag or container and dispose. Ventilate area and wash spill site after material pickup is complete. See Sections 8 and 13 for further information.

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### Section 7 — Handling and Storage

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Flinn Suggested Chemical Storage Pattern: Inorganic #3. Store with amides, nitrates and nitrites.

Store in a cool, dry place. Use and dispense in a hood.

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### Section 8 — Exposure Controls, Personal Protection

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Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron.

Use exhaust ventilation to keep airborne concentrations low.

### Section 9 — Physical and Chemical Properties

Moist, white lumps or crystals. Odorless.  
Solubility: Water and alcohol.  
Formula:  $Zn(NO_3)_2 \cdot 6H_2O$   
Formula Weight: 297.49

Specific Gravity: 2.065  
Melting Point: 36.4 C

### Section 10 — Stability and Reactivity

Avoid contact with strong reducers, organic and combustible materials.  
Shelf Life: Indefinite.

### Section 11 — Toxicological Information

Acute effects: Corrosive  
Chronic effects: N.A.  
Target organs: N.A.

ORL-RAT LD50: 1190 mg/kg  
IHL-RAT LC50: N.A.  
SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

### Section 12 — Ecological Information

Data not yet available.

### Section 13 — Disposal Considerations

Please consult with state and local regulations.  
Flinn Suggested Disposal Method #26a is one option.

### Section 14 — Transport Information

Shipping Name: Zinc Nitrate  
Hazard Class: 5.1, Oxidizer  
UN Number: UN1514

N/A = Not applicable

### Section 15 — Regulatory Information

TSCA-listed, EINECS-listed (292-366-5), RCRA code D001.

### Section 16 — Other Information

Consult your copy of the Flinn Scientific Catalog/Reference Manual for additional information about laboratory chemicals. This Material Safety Data Sheet (MSDS) is for guidance and is based upon information and tests believed to be reliable. Flinn Scientific Inc. makes no guarantee of the accuracy or completeness of the data and shall not be liable for any damages relating thereto. The data is offered solely for your consideration, investigation, and verification. Flinn Scientific Inc. assumes no legal responsibility for use or reliance upon this data.

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# FLINN SCIENTIFIC INC.

"Your Safer Source for Science Supplies"

## Material Safety Data Sheet (MSDS)

MSDS #: 864.00

Revision Date: May 22, 2001

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### Section 1 — Chemical Product and Company Identification

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#### Zinc Oxide

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

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### Section 2 — Composition, Information on Ingredients

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Zinc Oxide

Synonym: zinc white

CAS#: 1314-13-2

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### Section 3 — Hazards Identification

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Pale-yellow granular powder. Odorless.

Moderately toxic by ingestion and inhalation. Body tissue irritant. Avoid all body tissue contact.

#### FLINN AT-A-GLANCE

Health-2

Flammability-0

Reactivity-1

Exposure-1

Storage-0

0 is low hazard, 3 is high hazard

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### Section 4 — First Aid Measures

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Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash continuously with fresh water for 15 minutes.

Internal: Give large quantities of water. Call a physician or poison control at once.

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### Section 5 — Fire Fighting Measures

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Non flammable solid.

#### NFPA CODE

None established

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### Section 6 — Accidental Release Measures

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Restrict unprotected personnel from area. Sweep up, place in sealed bag or container and dispose. Ventilate area and wash spill site after material pickup is complete. See Sections 8 and 13 for further information.

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### Section 7 — Handling and Storage

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Flinn Suggested Chemical Storage Pattern: Inorganic #4. Store with hydroxides, oxides, silicates and carbonates.

Store in a cool, dry place. Use and dispense in a hood.

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### Section 8 — Exposure Controls, Personal Protection

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Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron. Use ventilation to keep airborne concentrations below exposure limits. Always wear a NIOSH-approved respirator with proper cartridges or a positive pressure, air-supplied respirator when handling this material in emergency situations (spill or fire).

Exposure guidelines: TWA 5 mg/m<sup>3</sup>, STEL 10 mg/m<sup>3</sup> (OSHA, ACGIH)

### Section 9 — Physical and Chemical Properties

Pale-yellow granular powder. Odorless.  
Solubility: Acids and alkali.  
Formula: ZnO  
Formula Weight: 81.38

Specific Gravity: 5.47  
Melting Point: 1975 C

### Section 10 — Stability and Reactivity

Zinc oxide, powder reacts violently with chlorinated rubber. Avoid heating.  
Shelf Life: Indefinite.

### Section 11 — Toxicological Information

Acute effects: Harmful dust  
Chronic effects: N.A.  
Target organs: N.A.

ORL-RAT LD50: 630 mg/kg  
IHL-MUS LC50: 2500 mg/m<sup>3</sup>  
SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

### Section 12 — Ecological Information

Data not yet available.

### Section 13 — Disposal Considerations

Please consult with state and local regulations.  
Flinn Suggested Disposal Method #26a is one option.

### Section 14 — Transport Information

Shipping Name: Not regulated  
Hazard Class: N/A  
UN Number: N/A

N/A = Not applicable

### Section 15 — Regulatory Information

TSCA-listed, EINECS-listed (215-222-5).

### Section 16 — Other Information

Consult your copy of the Flinn Scientific Catalog/Reference Manual for additional information about laboratory chemicals. This Material Safety Data Sheet (MSDS) is for guidance and is based upon information and tests believed to be reliable. Flinn Scientific Inc. makes no guarantee of the accuracy or completeness of the data and shall not be liable for any damages relating thereto. The data is offered solely for your consideration, investigation, and verification. Flinn Scientific Inc. assumes no legal responsibility for use or reliance upon this data.

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# FLINN SCIENTIFIC INC.

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## Material Safety Data Sheet (MSDS)

MSDS #: 868.00

Revision Date: March 12, 2001

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### Section 1 — Chemical Product and Company Identification

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#### Zinc Sulfide

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

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### Section 2 — Composition, Information on Ingredients

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Zinc Sulfide

CAS#: 1314-98-3

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### Section 3 — Hazards Identification

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Yellowish-white powder. Odorless.

Substance not considered hazardous. However, not all health aspects of this substance have been thoroughly investigated. Contact with acids liberates toxic and flammable hydrogen sulfide gas.

#### FLINN AT-A-GLANCE

Health-0  
Flammability-0  
Reactivity-2  
Exposure-0  
Storage-1

0 is low hazard, 3 is high hazard

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### Section 4 — First Aid Measures

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Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash continuously with fresh water for 15 minutes.

Internal: Give large quantities of water. Call a physician or poison control at once.

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### Section 5 — Fire Fighting Measures

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Non flammable solid.

When heated to decomposition, emits toxic fumes of SO<sub>x</sub>.

**Fire Fighting Instructions:** Use triclass, dry chemical fire extinguisher. Firefighters should wear PPE and SCBA with full facepiece operated in positive pressure mode.

#### NFPA CODE

None established

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### Section 6 — Accidental Release Measures

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Restrict unprotected personnel from area. Remove all sources of water and acids. Sweep up, place in sealed bag or container and dispose. Ventilate area and wash spill site after material pickup is complete. See Sections 8 and 13 for further information.

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### Section 7 — Handling and Storage

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Flinn Suggested Chemical Storage Pattern: Inorganic #5. Store with sulfides, phosphides, carbides and nitrides.

Store in a cool, dry place. Air and moisture sensitive. Store in a Flinn Chem-Saf bag. Use fume hood when heating.

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### Section 8 — Exposure Controls, Personal Protection

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Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron.

### Section 9 — Physical and Chemical Properties

Yellowish-white powder. Odorless.  
Solubility: Soluble in acids; insoluble in water.  
Formula: ZnS  
Formula Weight: 97.45

Specific Gravity: 4.100

### Section 10 — Stability and Reactivity

Avoid contact with strong oxidizers, strong acids, and moisture. Contact with acids liberates toxic hydrogen sulfide gas.  
Shelf Life: Poor; moisture sensitive.

### Section 11 — Toxicological Information

Acute effects: N.A.  
Chronic effects: N.A.  
Target organs: N.A.

ORL-RAT LD50: N.A.  
IHL-RAT LC50: N.A.  
SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

### Section 12 — Ecological Information

Data not yet available.

### Section 13 — Disposal Considerations

Please consult with state and local regulations.  
Flinn Suggested Disposal Method #26a is one option.

### Section 14 — Transport Information

Shipping Name: Not regulated  
Hazard Class: N/A  
UN Number: N/A

N/A = Not applicable

### Section 15 — Regulatory Information

TSCA-listed, EINECS-listed (215-251-3), RCRA code D003.

### Section 16 — Other Information

Consult your copy of the Flinn Scientific Catalog/Reference Manual for additional information about laboratory chemicals. This Material Safety Data Sheet (MSDS) is for guidance and is based upon information and tests believed to be reliable. Flinn Scientific Inc. makes no guarantee of the accuracy or completeness of the data and shall not be liable for any damages relating thereto. The data is offered solely for your consideration, investigation, and verification. Flinn Scientific Inc. assumes no legal responsibility for use or reliance upon this data.

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# FLINN SCIENTIFIC INC.

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## Material Safety Data Sheet (MSDS)

MSDS #: 859.00

Revision Date: March 15, 2001

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### Section 1 — Chemical Product and Company Identification

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#### Zinc

Flinn Scientific, Inc. P.O. Box 219 Batavia, IL 60510 (800) 452-1261

CHEMTREC Emergency Phone Number: (800) 424-9300

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### Section 2 — Composition, Information on Ingredients

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Zinc

CAS#: 7440-66-6

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### Section 3 — Hazards Identification

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Shiny white metal with bluish-gray luster. Forms: granular, mossy dust, metal pieces, foil, sheets, shot, strips. Odorless.

Substance not considered hazardous. However, not all health aspects of this substance have been thoroughly investigated. Inhalation of zinc dust may cause lung irritations. Zinc dust can spontaneously combust when in contact with moisture.

#### FLINN AT-A-GLANCE

Health-0  
Flammability-1  
Reactivity-2  
Exposure-0  
Storage-0

0 is low hazard, 3 is high hazard

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### Section 4 — First Aid Measures

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Call a physician, seek medical attention for further treatment, observation and support after first aid.

Inhalation: Remove to fresh air at once. If breathing has stopped give artificial respiration immediately.

Eye: Immediately flush with fresh water for 15 minutes.

External: Wash continuously with fresh water for 15 minutes.

Internal: Give large quantities of water. Call a physician or poison control at once.

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### Section 5 — Fire Fighting Measures

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Non flammable solid.

Finely divided zinc dust is a severe fire hazard. Zinc dust can spontaneously combust when in contact with moisture.

#### NFPA CODE

None established

**Fire Fighting Instructions:** Use triclass, dry chemical fire extinguisher. Firefighters should wear PPE and SCBA with full facepiece operated in positive pressure mode.

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### Section 6 — Accidental Release Measures

---

Restrict unprotected personnel from area. Sweep up, place in sealed bag or container and dispose. Ventilate area and wash spill site after material pickup is complete. See Sections 8 and 13 for further information.

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### Section 7 — Handling and Storage

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Flinn Suggested Chemical Storage Pattern: Inorganic #1. Store with metals and metal hydrides.

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### Section 8 — Exposure Controls, Personal Protection

---

Avoid contact with eyes, skin and clothing. Wear chemical splash goggles, chemical-resistant gloves and chemical-resistant apron.



### Section 9 — Physical and Chemical Properties

Shiny white metal with bluish-gray luster. Forms: granular, mossy dust, metal pieces, foil, sheets, shot, strips. Odorless. Solubility: Soluble in acids and alkalis; not water.

Formula: Zn

Formula Weight: 65.37

Specific Gravity: 7.14

Melting Point: 419 C

Boiling Point: 908 C

### Section 10 — Stability and Reactivity

Avoid strong acids, strong bases, cadmium, sulfur chlorinated solvents, amines, and carbon disulfide. Avoid any source of flame for zinc dust only! Zinc dust can spontaneously combust when in contact with moisture.

Shelf Life: Indefinite.

### Section 11 — Toxicological Information

Acute effects: Dust may cause lung irritations.

Chronic effects: N.A.

Target organs: N.A.

ORL-RAT LD50: N.A.

IHL-RAT LC50: N.A.

SKN-RBT LD50: N.A.

N.A. = Not available, not all health aspects of this substance have been fully investigated.

### Section 12 — Ecological Information

Data not yet available.

### Section 13 — Disposal Considerations

Please consult with state and local regulations.

Flinn Suggested Disposal Method #26a is one option.

### Section 14 — Transport Information

Shipping Name: Not regulated

Hazard Class: N/A

UN Number: N/A

N/A = Not applicable

### Section 15 — Regulatory Information

TSCA-listed, EINECS-listed (231-175-3).

### Section 16 — Other Information

Consult your copy of the Flinn Scientific Catalog/Reference Manual for additional information about laboratory chemicals. This Material Safety Data Sheet (MSDS) is for guidance and is based upon information and tests believed to be reliable. Flinn Scientific Inc. makes no guarantee of the accuracy or completeness of the data and shall not be liable for any damages relating thereto. The data is offered solely for your consideration, investigation, and verification. Flinn Scientific Inc. assumes no legal responsibility for use or reliance upon this data.

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