

## What Is the Recommended Procedure for Chemical Disposal?

HAZARDOUS chemical waste, as designated by the U.S. Environmental Protection Agency (EPA) or State authority, is waste that presents a danger to human health and/or the environment. EPA has determined hundreds of chemicals to be hazardous waste; no Soil Survey Office Laboratory (SSOL) should assume that a particular chemical is not hazardous but should leave such determinations to regulatory authorities.

**The following steps are recommended before disposing of any chemical waste.**

- 1) Create a log book that itemizes chemical items for disposal, showing at a minimum: item name, quantity, and date available for disposal.
- 2) Because of particular differences among States, NRCS Soil Survey Office Laboratories are directed to consult FedCenter for environmental regulation compliance assistance when disposing of chemical items. Go to [www.fedcenter.gov](http://www.fedcenter.gov), or contact:
  - a. Steve Luzzi at [Stephen.T.Luzzi@erdc.usace.army.mil](mailto:Stephen.T.Luzzi@erdc.usace.army.mil) (tel: 217-373-5894)
  - b. Mike Shields at [Shields.Mike@epa.gov](mailto:Shields.Mike@epa.gov) (tel: 202-564-9035)

Be sure to have the Material Safety Data Sheet(s) (MSDS) for the chemical item(s) before inquiring. An MSDS is ordinarily shipped with a chemical; these sheets should be kept on file for reference. A list of some of the more common chemicals cited in the Soil Survey Field and Laboratory Methods Manual can be found by using the hyperlinked list on the following page or by clicking on the list in the left panel.

- 3) Even if EPA declares a particular chemical to be nonhazardous for disposal “down the drain,” it is still necessary to contact your local Publicly Owned Treatment Works (POTW) or sewer authority to ascertain whether disposal to the POTW is permissible in your area. If disposal is permissible, *obtain written permission from the local POTW authority*. Do not dispose any chemical to the local POTW beforehand, even on the basis of a verbal or e-mailed notification of permissibility. Prepare and maintain a binder with such letters for reference.
- 4) If it is impermissible to dispose of a chemical to the POTW, there are two disposal options:
  - a. Hire a hazardous waste contractor to collect the waste and haul it away.
  - b. Contact your local health department to ascertain whether your community has a hazardous chemical “disposal event” in which your SSOL would be eligible to participate. This is usually a much less expensive option when it is available.

Never transport chemicals to other regions or towns for disposal, but always abide by the regulations in your area.

- 5) Document the means of disposal (e.g., drain or contractor), including disposal date, in the logbook.

### Disclaimer

The mention of the name of any resource, including Web sites, products, or product types, does not constitute endorsement by the U.S. Department of Agriculture (USDA) or the Natural Resources Conservation Service (NRCS). The MSDSs contained in this document, current as of August 2009 and presented in unaltered form from manufacturers, are given as examples only. For the most up-to-date information, please contact the manufacturer of the chemical item. For instance, the most updated MSDSs for Hach chemicals can be downloaded from [www.hach.com](http://www.hach.com).

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## Soil Survey Office Laboratory Chemical Inventory

### Sample Material Safety Data Sheets for:

Acetic Acid	Hach NitraVer 5 Nitrate Reagent	LaMotte Soil Flocculating Reagent
Acetone	Hach Phenolphthalein Indicator Solution	LaMotte Sulfate Test Solution
Algicide	Hach PhosVer 3 Phosphate Reagent	LaMotte Universal Extracting Solution
Alpha, Alpha-Dipyridyl	Hach Potassium 2 Reagent Solution Pillows	LaMotte Zinc Reagent #4
Ammonium Acetate	Hach Potassium 3 Reagent	Magnesium Oxide
Ammonium Chloride	Hach Potassium Chloride	Methyl Green
Ammonium Hydroxide	Hach Sodium and Potassium Ionic Strength Adjustor Powder	Methyl Red
Ammonium Molybdate	Hach Sodium Hydroxide Solution, 0.075 N	Methyl Red Hydrochloride
Ammonium Nitrate	Hach Sodium Reference Standard Solution	Methylene Blue
Ammonium Oxalate	Hydrochloric Acid	Nitric Acid
Antimony Potassium Tartrate	Hydrogen Peroxide	Petropoxy 154
Barium Chloride	Immersion Oil	Phenol Red Solution
Barium Chromate	Lab Algicide	Phenol Red, Sodium Salt
Borax	LaMotte Aluminum Test Solution	Phenol, Liquefied
Boric Acid	LaMotte Ammonia Nitrogen Test Solution	Phenolphthalein
Boric Acid, 4% with Indicator	LaMotte Buffer Reagent	Phenolsulfonphthalin (Phenol Red)
Bromocresol Green	LaMotte Calcium Test Solution (Sodium Oxalate)	Potassium Chloride
Bromocresol Green - Methyl Red	LaMotte Chloride Test Solution	Potassium Fluoride
Bromocresol Purple	LaMotte Copper Test Solution	Potassium Hydroxide
Bromophenol Blue	LaMotte Ferric Iron Test Solution	Potassium Oxalate
Calcium Carbonate	LaMotte Ferrous Iron Reagent	Potassium Permanganate
Calcium Chloride	LaMotte Humus Screening Reagent	Saran
Calcium Sulfate	LaMotte Iron Reagent Powder	Silica Gel
Calcium, 1000 ug/ml or 10,000 ug/ml	LaMotte Magnesium Test Solution #1	Silver Nitrate
Chlorophenol Red, Sodium Salt	LaMotte Manganese - Magnesium Test Solution #2	Sodium Bicarbonate
Clayton Yellow	LaMotte Manganese Periodate Reagent	Sodium Borate
Cresol Red	LaMotte Nitrate Reagent #1	Sodium Carbonate
Cresolphthalein	LaMotte Nitrate Reagent #2	Sodium Chloride
Diphenylcarbazone Indicator	LaMotte Nitrite-Nitrogen Reagent #1	Sodium Citrate
Dipyridyl Test Strips	LaMotte Nitrite-Nitrogen Reagent #2	Sodium Dithionite
Eriochrome Black T	LaMotte Nitrite-Nitrogen Reagent #3	Sodium Fluoride
Ethanol 95%	LaMotte Phosphorus Reagent #2	Sodium Hexametaphosphate
Ethyl Alcohol	LaMotte Phosphorus Reagent #3 Tablets	Sodium Hydrosulfite
Ethylenediamine Tetraacetic Acid	LaMotte Potassium Reagent B Tablets	Sodium Hydroxide
Hach Alkaline EDTA Solution	LaMotte Potassium Reagent C	Sodium Pyrophosphate
Hach Ammonium Chloride Reference Electrolyte Cartridge		Sulfuric Acid
Hach Buffer Solution Hardness		SUPERFLOC 16
Hach Calcium Sulfate		Thymol Blue
Hach EDTA Standard Solution, 0.0075 N		Titan Yellow
Hach ManVer Hardness Indicator		Triethanolamine
Hach Mehlich 2 Soil Extractant Concentrate		Uranyl Acetate, Dihydrate
Hach Nitrate Standard Solution		Zinc Acetate Dihydrate

**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: 613-996-6666

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.

# ACETIC ACID GLACIAL

## 1. Product Identification

**Synonyms:** Acetic acid, methane carboxylic acid; ethanoic acid

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

**Molecular Weight:** 60.05

**Chemical Formula:** CH<sub>3</sub>COOH

**Product Codes:**

J.T. Baker: 5355, 5579, 5844, 6903, 9500, 9501, 9502, 9503, 9505, 9507, 9508, 9511, 9513, 9514, 9515, 9517, 9522, 9523, 9524, 9526

Mallinckrodt: 10127, 1302, 2501, 2504, 3121, 5586, 7711, 8817, H979, V155, V190, V193, V194, V625

## 2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
Acetic Acid	64-19-7	99.5 - 100%	Yes

## 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: Red (Flammable)

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### Potential Health Effects

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**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.

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## 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.

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## 5. Fire Fighting Measures

**Fire:**

Flash point: 40C (104F) CC

Autoignition temperature: 427C (801F)

Flammable limits in air % by volume:

lcl: 4.0; ucl: 16.0

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, dry chemical, 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 may be used to flush spills away from exposures and to dilute spills to non-flammable mixtures. 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! 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. Protect from freezing. 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, 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

**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. Releases heat and toxic, irritating vapors when mixed with water. Acetic acid contracts slightly upon freezing which may cause the container to burst.

**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

Oral rat LD50: 3310 mg/kg; skin rabbit LD50: 1.06 g/kg; inhalation mouse LC50: 5620ppm/1-hr; investigated as a mutagen, reproductive effector.

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

## 12. Ecological Information

**Environmental Fate:**

When released into the air, this material may be moderately degraded by reaction with photochemically

produced hydroxyl radicals. When released into air, this material is expected to have a half-life between 10 and 30 days. When released into water, this material is expected to readily biodegrade. When released into the water, this material is expected to have a half-life between 1 and 10 days. Standard dilution BOD5/TOD = 58% When released into the soil, this material is expected to readily biodegrade. This material is not expected to significantly bioaccumulate. This material has an estimated bioconcentration factor (BCF) of less than 100.

**Environmental Toxicity:**

This material is expected to be slightly toxic to aquatic life. The LC50/96-hour values for fish are between 10 and 100 mg/l.

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.

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## 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.

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## 14. Transport Information

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

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**Proper Shipping Name:** ACETIC ACID, GLACIAL

**Hazard Class:** 8, 3

**UN/NA:** UN2789

Packing Group: II

**Information reported for product/size:** 450LB

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

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**Proper Shipping Name:** ACETIC ACID, GLACIAL

**Hazard Class:** 8, 3

**UN/NA:** UN2789

Packing Group: II

**Information reported for product/size:** 450LB

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

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**Proper Shipping Name:** ACETIC ACID, GLACIAL

**Hazard Class:** 8, 3

**UN/NA:** UN2789

Packing Group: II

**Information reported for product/size:** 450LB

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## 15. Regulatory Information

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

-----\Chemical Inventory Status - Part 2\-----  
Ingredient Korea DSL --Canada-- NDSL Phil.  
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Ingredient	-SARA 302- RQ	TPQ	List	SARA 313 Chemical Catg.
Acetic Acid (64-19-7)	No	No	No	No

Ingredient	CERCLA	-RCRA- 261.33	-TSCA- 8(d)
Acetic Acid (64-19-7)	5000	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 (Pure / 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: 2 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 get medical attention immediately.

**Product Use:**

Laboratory Reagent.

**Revision Information:**

MSDS Section(s) changed since last revision of document include: 14.

**Disclaimer:**

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**RELIANCE UPON THIS INFORMATION.**

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

<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
 	<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.

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

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### Potential Health Effects

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**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.

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## 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:

lel: 2.5; uel: 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.

---

## 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.

-----\Cancer Lists\-----			
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

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

-----\Chemical Inventory Status - Part 2\-----				
Ingredient	Korea	DSL	--Canada-- NDSL	Phil.
Acetone (67-64-1)	Yes	Yes	No	Yes

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

-----\Federal, State & International Regulations - Part 2\-----			
Ingredient	CERCLA	-RCRA-	-TSCA-
		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:**

\*\*\*\*\*

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\*\*\*\*\*

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

**▽ PolyScience**  
**Material Safety Data Sheet**  
**Lab Algicide**

<b>1. Product And Company Identification</b>	
<b>Supplier</b> PolyScience 6600 West Touhy Avenue Niles, IL 60714 Telephone Number: (847) 647-0611 FAX Number: (847) 647-1155 Web Site: www.polyscience.com	
<b>Supplier Emergency Contacts &amp; Phone Number</b> CHEMTREC - DAY or NIGHT: (800) 424-9300	<b>Manufacturer Emergency Contacts &amp; Phone Number</b> CHEMTREC - DAY or NIGHT: (800) 424-9300
Issue Date: 11/20/2000 Product Name: LabAlgicide CAS Number: Not Established Chemical Family: Copper and Nitrogen Compounds Chemical Formula: Proprietary Mixture MSDS Number: 86	

<b>2. Composition/Information On Ingredients</b>			
	Ingredient Name	CAS Number	Percent Of Total Weight
	COPPER CARBONATE	12069-69-1	
	DIMETHYL BENZYL AMMONIUM CHLORIDE	68424-85-1	
	ETHYL ALCOHOL	64-17-5	
	MONOETHANOLAMINE	141-43-5	
	TRIETHANOLAMINE	102-71-6	
Ingredients listed in this section have been determined to be hazardous as defined in 29CFR 1910.1200. Materials determined to be health hazards are listed if they comprise 1% or more of the composition. Materials identified as carcinogens are listed if they comprise 0.1% or more of the composition. Information on proprietary materials is available in 29CFR 1910.1200(i)(1).			

<b>Hazards Identification (Pictograms)</b> 
---

<b>3. Hazards Identification</b> <b>Primary Routes(s) Of Entry</b> Skin Contact, Eye Contact, Inhalation <b>Eye Hazards</b> Causes severe eye burns.
--



**▼ PolyScience**  
**Material Safety Data Sheet**  
**Lab Algicide**

**3. Hazards Identification - Continued**

**Skin Hazards**

Corrosive to living tissue.

**Ingestion Hazards**

Harmful if swallowed.

**Inhalation Hazards**

Causes respiratory tract irritation.

**Signs And Symptoms**

Irritation of Eyes, Skin, and Respiratory Passages

**Conditions Aggravated By Exposure**

None Known

**First Aid (Pictograms)**



**4. First Aid Measures**

**Eye**

Remove the victim from the source of contamination or exposure to nearest eyewash or other source of clean water. In case of contact, hold eyelids apart and immediately flush eyes with plenty of water for at least 15 minutes.

**Skin**

Rinse the affected area with tepid water for at least 15 minutes.

**Ingestion**

Call a physician or a poison control center immediately. If victim is fully conscious, give one or two cups of water or milk to drink. If swallowed, do not induce vomiting unless directed to do so by medical personnel.

**Inhalation**

If inhaled, remove to fresh air. If breathing is difficult, give oxygen. Evaluate Principal Route of Entry, Seek appropriate medical attention. Never give anything by mouth to an unconscious person.

**Fire Fighting (Pictograms)**



**5. Fire Fighting Measures**

**Flash Point:** N/A °F

**Extinguishing Media**

Use the appropriate extinguishing media for the surrounding fire. Combustion products are toxic.

**6. Accidental Release Measures**

Contain and/or absorb spill with inert material (e.g. sand, vermiculite). Avoid release to the environment. May flush small amount to sewer.

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**Material Safety Data Sheet**  
**Lab Algicide**

**7. Handling And Storage**

**Handling And Storage Precautions**

Keep out of reach of children. Wash thoroughly after handling.

**Handling Precautions**

Avoid contact with eyes. Wash hands before eating, drinking, or smoking. Avoid contact with skin and clothing.

**Storage Precautions**

Store in a cool dry place. Keep out of reach of children.

**Work/Hygienic Practices**

Use safe chemical handling procedures suitable for the hazards presented by this material.

**Protective Clothing (Pictograms)**



**8. Exposure Controls/Personal Protection**

**Engineering Controls**

Local exhaust acceptable. Special exhaust not required

**Eye/Face Protection**

Safety glasses with side shields or goggles recommended.

**Skin Protection**

Chemical-resistant gloves.

**Respiratory Protection**

General room ventilation is normally adequate.

**Ingredient(s) - Exposure Limits**

ETHYL ALCOHOL

ACGIH TLV-TWA 1000 ppm

OSHA PEL-TWA 1000 ppm

TRIETHANOLAMINE

ACGIH TLV-TWA 5 mg/m<sup>3</sup>

**9. Physical And Chemical Properties**

**Appearance**

Blue viscous liquid

**Odor**

slight

**Chemical Type:** Mixture

**Physical State:** Liquid

**Boiling Point:** 212 °F

**Specific Gravity:** 1.2

**Percent Volatiles:** Nil

**Vapor Pressure:** Not established

**Vapor Density:** >1

**pH Factor:** 6-8

**Solubility:** soluble

**Evaporation Rate:** <1

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**Lab Algicide**

**10. Stability And Reactivity**

**Stability:** Stable

**Hazardous Polymerization:** Will not occur

**Conditions To Avoid (Stability)**

Contact with Clay

**Incompatible Materials**

Strong Acids

**Hazardous Decomposition Products**

Hydrogen chloride fumes, oxides of Carbon and Nitrogen

**11. Toxicological Information**

No Data Available...

**12. Ecological Information**

No Data Available...

**13. Disposal Considerations**

Refer to applicable local, state and federal regulations as well as industry standards.

**14. Transport Information**

**Proper Shipping Name**

CORROSIVE LIQUID NOS(Copper Triethanolamine Complex)

**Hazard Class**

8,PGIII (<4L Consumer Commodity ORM-D)

**DOT Identification Number**

UN1760

**DOT (Pictograms)**



**15. Regulatory Information**

**Ingredient(s) - State Regulations**

ETHYL ALCOHOL

New Jersey - Workplace Hazard

New Jersey - Special Hazard

Pennsylvania - Workplace Hazard

California - Proposition 65

Massachusetts - Hazardous Substance


New York City - Hazardous Substance

TRIETHANOLAMINE

Pennsylvania - Workplace Hazard

Massachusetts - Hazardous Substance

**▼ PolyScience**  
**Material Safety Data Sheet**  
**Lab Algicide**

<u>NFPA</u>	<u>HMIS</u>								
	<table border="1"><tr><td>HEALTH</td><td style="text-align: center;">2</td></tr><tr><td>FLAMMABILITY</td><td style="text-align: center;">0</td></tr><tr><td>REACTIVITY</td><td style="text-align: center;">1</td></tr><tr><td>PERSONAL PROTECTION</td><td style="text-align: center;">B</td></tr></table>	HEALTH	2	FLAMMABILITY	0	REACTIVITY	1	PERSONAL PROTECTION	B
HEALTH	2								
FLAMMABILITY	0								
REACTIVITY	1								
PERSONAL PROTECTION	B								

**16. Other Information**

Revision/Preparer Information

MSDS Preparer: JHW3

This MSDS Superceeds A Previous MSDS Dated: 09/13/2000

**Disclaimer**

Although reasonable care has been taken in the preparation of this document, we extend no warranties and make no representations as to the accuracy or completeness of the information contained therein, and assume no responsibility regarding the suitability of this information for the user's intended purposes or for the consequences of its use. Each individual should make a determination as to the suitability of the information for their particular purposes(s).

Laporte Water Technologies

# Material Safety Data Sheet

## alpha, alpha'-Dipyridyl

ACC# 08235

### Section 1 - Chemical Product and Company Identification

**MSDS Name:** alpha, alpha'-Dipyridyl

**Catalog Numbers:** D95-5, ZZD9550015

**Synonyms:** 2, 2'-Dipyridyl; 2,2'-Bipyridine.

**Company Identification:**

Fisher Scientific

1 Reagent Lane

Fair Lawn, NJ 07410

**For information, call:** 201-796-7100

**Emergency Number:** 201-796-7100

**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
366-18-7	2,2'-Dipyridyl	100	206-674-4

### Section 3 - Hazards Identification

#### EMERGENCY OVERVIEW

Appearance: light cream to yellow solid.

**Warning!** Toxic if swallowed. Harmful if absorbed through skin or if inhaled. Causes eye, skin, and respiratory tract irritation.

**Target Organs:** Eyes, skin, mucous membranes.

#### Potential Health Effects

**Eye:** Causes eye irritation.

**Skin:** Causes skin irritation. Harmful if absorbed through the skin.

**Ingestion:** May be harmful if swallowed. Causes digestive tract irritation. Toxic if swallowed.

**Inhalation:** Harmful if inhaled. Causes respiratory tract irritation.

**Chronic:** No information found.

### Section 4 - First Aid Measures

**Eyes:** Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.

**Skin:** Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Get medical aid if irritation develops or persists.

**Ingestion:** If victim is conscious and alert, give 2-4 cupfuls of milk or water. Never give anything by mouth to an unconscious person. Get medical aid.

**Inhalation:** Remove from exposure and move to fresh air immediately. Get medical aid if cough or

other symptoms appear.

**Notes to Physician:** Treat symptomatically and supportively.

## Section 5 - Fire Fighting Measures

**General Information:** As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. This material in sufficient quantity and reduced particle size is capable of creating a dust explosion.

**Extinguishing Media:** Use water spray, dry chemical, carbon dioxide, or chemical foam.

**Flash Point:** Not applicable.

**Autoignition Temperature:** Not applicable.

**Explosion Limits, Lower:** Not available.

**Upper:** Not available.

**NFPA Rating:** (estimated) Health: 2; Flammability: 1; 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. Avoid generating dusty conditions. Provide ventilation.

## Section 7 - Handling and Storage

**Handling:** Wash thoroughly after handling. Use with adequate ventilation. Minimize dust generation and accumulation. Avoid contact with eyes, skin, and clothing. Keep container tightly closed. Avoid breathing dust.

**Storage:** 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:** Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use adequate ventilation to keep airborne concentrations low.

### Exposure Limits

Chemical Name	ACGIH	NIOSH	OSHA - Final PELs
2,2'-Dipyridyl	none listed	none listed	none listed

**OSHA Vacated PELs:** 2,2'-Dipyridyl: 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. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

## Section 9 - Physical and Chemical Properties

**Physical State:** Solid  
**Appearance:** light cream to yellow  
**Odor:** Not available.  
**pH:** Not available.  
**Vapor Pressure:** Negligible.  
**Vapor Density:** Not available.  
**Evaporation Rate:** Negligible.  
**Viscosity:** 1.51 cSt 90C  
**Boiling Point:** 273 deg C  
**Freezing/Melting Point:** 69 - 70 deg C  
**Decomposition Temperature:** Not available.  
**Solubility:** 0.5%  
**Specific Gravity/Density:** Not available.  
**Molecular Formula:** C<sub>10</sub>H<sub>8</sub>N<sub>2</sub>  
**Molecular Weight:** 156.19

## Section 10 - Stability and Reactivity

**Chemical Stability:** Stable. Stable under normal temperatures and pressures.  
**Conditions to Avoid:** High temperatures, dust generation.  
**Incompatibilities with Other Materials:** Strong oxidizers.  
**Hazardous Decomposition Products:** Nitrogen oxides, carbon monoxide, carbon dioxide.  
**Hazardous Polymerization:** Has not been reported.

## Section 11 - Toxicological Information

**RTECS#:**  
**CAS#** 366-18-7: DW1750000  
**LD50/LC50:**  
**CAS#** 366-18-7:  
Oral, mouse: LD50 = 330 mg/kg;  
Oral, rat: LD50 = 100 mg/kg;

**Carcinogenicity:**  
**CAS#** 366-18-7: Not listed by ACGIH, IARC, NTP, or CA Prop 65.

**Epidemiology:** No information found  
**Teratogenicity:** This chelator for ferrous iron was given intraperitoneally to rats on days 11.5 through 14.5 in doses of 60-75 mg per kg. Skeletal defects especially of the limbs were found.  
**Reproductive Effects:** See actual entry in RTECS for complete information.  
**Mutagenicity:** See actual entry in RTECS for complete information.  
**Neurotoxicity:** No information found  
**Other Studies:**

## 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:** None listed.

## Section 14 - Transport Information

	US DOT	Canada TDG
<b>Shipping Name:</b>	DOT regulated - small quantity provisions apply (see 49CFR173.4)	No information available.
<b>Hazard Class:</b>		
<b>UN Number:</b>		
<b>Packing Group:</b>		

## Section 15 - Regulatory Information

### US FEDERAL

#### TSCA

CAS# 366-18-7 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.

#### CERCLA Hazardous Substances and corresponding RQs

None of the chemicals in this material have an RQ.

#### SARA Section 302 Extremely Hazardous Substances

None of the chemicals in this product have a TPO.

#### SARA Codes

CAS # 366-18-7: immediate.

**Section 313** No chemicals are reportable under Section 313.

#### Clean Air Act:

This material does not contain any hazardous air pollutants.

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# 366-18-7 is not present on state lists from CA, PA, MN, MA, FL, or NJ.

#### California Prop 65

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:**

T

**Risk Phrases:**

- R 20/21 Harmful by inhalation and in contact with skin.
- R 25 Toxic if swallowed.
- R 36/37/38 Irritating to eyes, respiratory system and skin.

**Safety Phrases:**

- S 26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
- S 36/37/39 Wear suitable protective clothing, gloves and eye/face protection.
- S 45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

**WGK (Water Danger/Protection)**

CAS# 366-18-7: 2

**Canada - DSL/NDSL**

CAS# 366-18-7 is listed on Canada's DSL List.

**Canada - WHMIS**

This product has a WHMIS classification of D1B, D2B.

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all of the information required by those regulations.

**Canadian Ingredient Disclosure List**

**Section 16 - Additional Information**

**MSDS Creation Date:** 12/12/1997

**Revision #8 Date:** 5/17/2007

*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.*

**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: 613-996-6666

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 ACETATE

## 1. Product Identification

**Synonyms:** Acetic acid; ammonium salt

**CAS No.:** 631-61-8

**Molecular Weight:** 77.08

**Chemical Formula:** CH<sub>3</sub>COONH<sub>4</sub>

**Product Codes:**

J.T. Baker: 0596, 0598, 0599

Mallinckrodt: 3271, 3272, 5857

## 2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
Ammonium Acetate	631-61-8	100%	Yes

## 3. Hazards Identification

### Emergency Overview

**CAUTION! MAY CAUSE IRRITATION TO SKIN, EYES, AND RESPIRATORY TRACT. MAY BE HARMFUL IF SWALLOWED.**

**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:**

Dusts may irritate the respiratory tract with symptoms of coughing, and shortness of breath.

### **Ingestion:**

May irritate the G. I. tract. Abdominal pain, nausea, and vomiting may occur. Ingestion of large amounts may result in diuresis and systemic ammonia poisoning. Normal human subjects infused with ammonium acetate exhibit flaccidity of facial muscles, tremor, generalized discomfort, anxiety and impairment of motor performance .

### **Skin Contact:**

May cause irritation with redness and pain.

### **Eye Contact:**

May cause irritation, redness and pain. Splashes from solutions may produce severe eye damage.

### **Chronic Exposure:**

Chronic ammonium acetate ingestion may cause some liver dysfunction.

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

Persons with pre-existing liver damage may be more susceptible to the effects of this material.

---

## 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. Call a physician.

### **Skin Contact:**

In case of contact, immediately flush skin with plenty of water for at least 15 minutes. 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:**

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: 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. 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 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:**

Transparent, colorless crystals.

### **Odor:**

Slight acetic acid odor.

### **Solubility:**

Very soluble in water.

### **Specific Gravity:**

1.07

### **pH:**

7.0 Aqueous solution; very concentrated solution is slightly acidic

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

No information found.

### **Boiling Point:**

No information found.

### **Melting Point:**

114C (237F)

### **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. Readily absorbs moisture from the air.  
Tends to lose ammonia under normal conditions.

**Hazardous Decomposition Products:**

Burning may produce ammonia, nitrogen oxides.

**Hazardous Polymerization:**

Will not occur.

**Incompatibilities:**

Decomposes on contact with Sodium Hypochlorite, strong acids.

**Conditions to Avoid:**

Heat, moisture, 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	
Ammonium Acetate (631-61-8)	No	No	None

## 12. Ecological Information

**Environmental Fate:**

When released into water, this material is expected to readily biodegrade. When released into the water, 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
Ammonium Acetate (631-61-8)	Yes	Yes	Yes	Yes

-----\Chemical Inventory Status - Part 2\-----				
Ingredient	Korea	--Canada--		Phil.
		DSL	NDSL	
Ammonium Acetate (631-61-8)	Yes	Yes	No	Yes

-----\Federal, State & International Regulations - Part 1\-----				
Ingredient	-SARA 302-		-----SARA 313-----	
	RQ	TPQ	List	Chemical Catg.

Ammonium Acetate (631-61-8)	No	No	No	No
-----\Federal, State & International Regulations - Part 2\-----				
Ingredient	CERCLA	-RCRA-	261.33	-TSCA-
				8(d)
Ammonium Acetate (631-61-8)	5000	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: 1 Flammability: 1 Reactivity: 0

**Label Hazard Warning:**

CAUTION! MAY CAUSE IRRITATION TO SKIN, EYES, AND RESPIRATORY TRACT. MAY BE HARMFUL IF SWALLOWED.

**Label Precautions:**

- Avoid breathing dust.
- Keep container closed.
- Avoid contact with eyes, skin and clothing.
- Wash thoroughly after handling.
- 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 swallowed, induce vomiting immediately as directed by medical personnel. Never give anything by mouth to an unconscious person. If inhaled, remove to fresh air. Get medical attention for any breathing difficulty. 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. 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** **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: 613-996-6666

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.

---

## 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.

---

## 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

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## 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  DSL   --Canada--  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-
                                     5000    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:

\*\*\*\*\*

**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.)

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**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: 613-996-6666

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)

MSDS Number: A5916 --- Effective Date: 11/02/01

---

## 1. Product Identification

**Synonyms:** Ammonium hydroxide solutions; ammonia aqueous; ammonia solutions  
**CAS No.:** 1336-21-6  
**Molecular Weight:** 35.05  
**Chemical Formula:** NH4OH in H2O  
**Product Codes:**  
J.T. Baker: 4807, 5019, 5350, 5358, 5604, 5817, 5820, 5838, 5891, 5893, 5993, 7847, 9718, 9719, 9721, 9730, 9731, 9733, 9741, 9742  
Mallinckrodt: 0124, 0127, 1177, 3248, 3256, 5318, 6665, H007, H010, H893, H894, V044, V066, 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.**

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

---

Health Rating: 3 - Severe (Poison)

Flammability Rating: 1 - Slight

Reactivity Rating: 2 - Moderate

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

---

### **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:

lel: 16; uel: 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.

---

## 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)

### **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% NH<sub>4</sub>OH)

### **pH:**



11.6 (1.0N)  
**% 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 (68F)  
**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.

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:

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:** 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

-----\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	No
Water (7732-18-5)	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      (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: 8.

**Disclaimer:**

\*\*\*\*\*

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\*\*\*\*\*

**Prepared by:** Environmental Health & Safety

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



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.

# 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.

---

## 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  DSL   --Canada--  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:

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\*\*\*\*\*

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

# Material Safety Data Sheet

## Ammonium nitrate, reagent ACS, crystals

ACC# 02020

### Section 1 - Chemical Product and Company Identification

**MSDS Name:** Ammonium nitrate, reagent ACS, crystals

**Catalog Numbers:** AC423350000, AC423350010, AC423350250

**Synonyms:** Nitric acid; ammonium salt.

**Company Identification:**

Acros Organics N.V.  
One Reagent Lane  
Fair Lawn, NJ 07410

**For information in North America, call:** 800-ACROS-01

**For emergencies in the US, call CHEMTREC:** 800-424-9300

### Section 2 - Composition, Information on Ingredients

CAS#	Chemical Name	Percent	EINECS/ELINCS
6484-52-2	Ammonium nitrate	> 98.0	229-347-8

**Hazard Symbols:** XI O

**Risk Phrases:** 36/37/38 8

### Section 3 - Hazards Identification

#### EMERGENCY OVERVIEW

Appearance: colorless crystals. Irritant. Strong oxidizer. Contact with other material may cause a fire. Causes eye and skin irritation. Hygroscopic (absorbs moisture from the air). May cause methemoglobinemia. May cause severe respiratory and digestive tract irritation with possible burns.

**Danger!**

**Target Organs:** Gastrointestinal system, red blood cells.

#### Potential Health Effects

**Eye:** Causes eye irritation.

**Skin:** Causes skin irritation.

**Ingestion:** Ingestion of large amounts may cause gastrointestinal irritation. Methemoglobinemia is characterized by dizziness, drowsiness, headache, shortness of breath, cyanosis (bluish discoloration of skin due to deficient oxygenation of the blood), rapid heart rate and chocolate-brown colored blood. May cause nausea and vomiting. May cause low blood pressure, rapid heartbeat, skin discoloration, and possible coma.

**Inhalation:** May cause methemoglobinemia, cyanosis (bluish discoloration of skin due to deficient oxygenation of the blood), convulsions, tachycardia, dyspnea (labored breathing), and death. May cause severe irritation of the respiratory tract with sore throat, coughing, shortness of breath and delayed lung edema. Methemoglobinemia is characterized by dizziness, drowsiness, headache, shortness of breath, cyanosis (bluish discoloration of skin due to deficient oxygenation of the blood), rapid heart rate and chocolate-brown blood. Inhalation can cause systemic acidosis and methemoglobinemia.

**Chronic:** May cause methemoglobinemia, which is characterized by chocolate-brown colored blood, headache, weakness, dizziness, breath shortness, cyanosis (bluish skin due to deficient oxygenation of blood), rapid heart rate, unconsciousness and possible death. May cause digestive tract disturbances.

## 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. Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.

**Ingestion:** If victim is conscious and alert, give 2-4 cupfuls of milk or water. Never give anything by mouth to an unconscious person. Get medical aid immediately.

**Inhalation:** Remove from exposure and move to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical aid.

**Notes to Physician:** Treat symptomatically and supportively.

## Section 5 - Fire Fighting Measures

**General Information:** As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. Strong oxidizer. Contact with combustible materials may cause a fire. During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion.

**Extinguishing Media:** Use water spray to cool fire-exposed containers. Use flooding quantities of water as spray.

**Flash Point:** Not available.

**Autoignition Temperature:** Not applicable.

**Explosion Limits, Lower:** Not available.

**Upper:** Not available.

**NFPA Rating:** (estimated) Health: 0; Flammability: 0; Instability: 3; Special Hazard: OX

## Section 6 - Accidental Release Measures

**General Information:** Use proper personal protective equipment as indicated in Section 8.

**Spills/Leaks:** Vacuum or sweep up material and place into a suitable disposal container. Avoid generating dusty conditions. Remove all sources of ignition. Provide ventilation.

## Section 7 - Handling and Storage

**Handling:** Wash thoroughly after handling. Use only in a well-ventilated area. Avoid contact with eyes, skin, and clothing. Avoid ingestion and inhalation.

**Storage:** Keep away from sources of ignition. Do not store near combustible materials. Store in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances. Keep away from acids. Keep away from reducing agents. Do not store near alkaline substances.

## Section 8 - Exposure Controls, Personal Protection

**Engineering Controls:** Use adequate ventilation to keep airborne concentrations low.

### Exposure Limits

Chemical Name	ACGIH	NIOSH	OSHA - Final PELs
Ammonium nitrate	none listed	none listed	none listed

**OSHA Vacated PELs:** Ammonium nitrate: 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:** Crystals

**Appearance:** colorless

**Odor:** odorless

**pH:** Not available.

**Vapor Pressure:** Not available.

**Vapor Density:** 2.8

**Evaporation Rate:** Not available.

**Viscosity:** Not available.

**Boiling Point:** Not available.

**Freezing/Melting Point:** 169 deg C

**Decomposition Temperature:** 210 deg C

**Solubility:** 190 G/100ML (20°C)

**Specific Gravity/Density:** 1.7300g/cm<sup>3</sup>

**Molecular Formula:** H<sub>4</sub>N<sub>2</sub>O<sub>3</sub>

**Molecular Weight:** 80.04

## Section 10 - Stability and Reactivity

**Chemical Stability:** Stable under normal temperatures and pressures.

**Conditions to Avoid:** Ignition sources, excess heat, combustible materials.

**Incompatibilities with Other Materials:** Strong reducing agents; strong acids; finely powdered metals; acetic acid; ammonium chloride; phosphorus; sodium perchlorate; sulfur.

**Hazardous Decomposition Products:** Nitrogen oxides, ammonia and/or derivatives.

**Hazardous Polymerization:** Has not been reported

## Section 11 - Toxicological Information

**RTECS#:**

**CAS#** 6484-52-2: BR9050000

**LD50/LC50:**

CAS# 6484-52-2:

Oral, rat: LD50 = 2217 mg/kg;

**Carcinogenicity:**

CAS# 6484-52-2: Not listed by ACGIH, IARC, NIOSH, NTP, or OSHA.

**Epidemiology:** No data available.

**Teratogenicity:** No data available.

**Reproductive Effects:** No data available.

**Neurotoxicity:** No data available.

**Mutagenicity:** No data available.

**Other Studies:** No data available.

## Section 12 - Ecological Information

**Ecotoxicity:** No data available. Water danger/protection: WGK 1

**Environmental:** Degradation studies: LC50 40 hr *Aspergillus niger* 15 mg/l (36°C) Ammonium nitrate will be taken up by bacteria. Nitrate is more persistent in water than the ammonium ion. Nitrate degradation is fastest in anaerobic conditions. [Tech. Info. for Problem Spills: Ammonium Nitrate (Draft) 1981,57, Environment Canada]

**Physical:** No information available.

**Other:** 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:** None listed.

## Section 14 - Transport Information

	US DOT	IATA	RID/ADR	IMO	Canada TDG
<b>Shipping Name:</b>	AMMONIUM NITRATE				No information available.
<b>Hazard Class:</b>	5.1				
<b>UN Number:</b>	UN1942				
<b>Packing Group:</b>	III				

## Section 15 - Regulatory Information

### US FEDERAL

#### TSCA

CAS# 6484-52-2 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

None of the chemicals in this material have an RQ.

#### SARA Section 302 Extremely Hazardous Substances

None of the chemicals in this product have a TPQ.

**SARA Codes**

CAS # 6484-52-2: acute, flammable, reactive.

**Section 313**

No chemicals are reportable under Section 313.

**Clean Air Act:**

This material does not contain any hazardous air pollutants. 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# 6484-52-2 can be found on the following state right to know lists: New Jersey, Pennsylvania, Massachusetts.

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:**

XI O

**Risk Phrases:**

R 36/37/38 Irritating to eyes, respiratory system and skin.

R 8 Contact with combustible material may cause fire.

**Safety Phrases:**

S 17 Keep away from combustible material.

S 26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.

S 37/39 Wear suitable gloves and eye/face protection.

**WGK (Water Danger/Protection)**

CAS# 6484-52-2: 1

**Canada - DSL/NDSL**

CAS# 6484-52-2 is listed on Canada's DSL List.

**Canada - WHMIS**

This product does not have a WHMIS classification.



**Canadian Ingredient Disclosure List****Exposure Limits**

Section 16 - Additional Information
-------------------------------------

**MSDS Creation Date:** 12/29/1997

**Revision #3 Date:** 3/18/2003

*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.*

<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
 	<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.

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

# AMMONIUM OXALATE

## 1. Product Identification

**Synonyms:** Ethanedioic acid, diammonium salt monohydrate; Ammonium oxalate, monohydrate

**CAS No.:** 1113-38-8 (Anhydrous) 6009-70-7(monohydrate)

**Molecular Weight:** 142.11

**Chemical Formula:** NH<sub>4</sub>COCOO NH<sub>4</sub> . H<sub>2</sub>O

**Product Codes:**

J.T. Baker: 0746

Mallinckrodt: 3452

## 2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
Ammonium Oxalate	1113-38-8	99 - 100%	Yes

## 3. Hazards Identification

### Emergency Overview

**POISON! DANGER! MAY BE FATAL IF SWALLOWED OR INHALED. MAY CAUSE BURNS TO RESPIRATORY TRACT AND SEVERE IRRITATION TO SKIN AND EYES. MAY AFFECT KIDNEYS.**

**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: 3 - Severe (Corrosive)

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

Storage Color Code: White (Corrosive)



## Potential Health Effects

---

Ammonium oxalate is very poisonous by ingestion and inhalation.

### **Inhalation:**

Inhalation of dust is corrosive to mucous membranes. Oxalates can be absorbed through the lungs. Symptoms of poisoning include nervousness, cramps, central nervous system depression.

### **Ingestion:**

Mean lethal dose for oxalates in adults is estimated at 15-30 grams with death within a few hours or even minutes. Corrosive action on the mucosa and severe gastroenteritis can occur with pain, vomiting, etc. Sharp reduction of serum calcium can cause disfunction of the brain. Calcium oxalate may be deposited in the kidneys.

### **Skin Contact:**

Skin contact may produce severe skin irritation with burning, redness.

### **Eye Contact:**

May cause severe irritation and pain. May cause burns.

### **Chronic Exposure:**

Circulatory failure or nervous system irregularities may follow prolonged calcium metabolism disturbances due to oxalation.

### **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 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. 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.

### **Note to Physician:**

Carefully monitor cardiovascular, respiratory, neurologic and renal functions. Treat supportively in consultation with a medical toxicologist.

---

## 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. 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. 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. Practice good personal hygiene and wash thoroughly after handling material. Do not eat, drink, or smoke in the workplace.

---

## 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 the dust or mist is apparent, a half-face dust/mist respirator may be worn. 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 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 or granules.

### **Odor:**

Odorless.

### **Solubility:**

11.8 g/100 g water @ 50C (122F)

### **Specific Gravity:**

1.50

### **pH:**

6.4 (0.1 molar solution)

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

0

**Boiling Point:**

Not applicable.

**Melting Point:**

70C (158F)

**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:**

Sodium hypochlorite plus ammonium acetate , strong acids.

**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 Oxalate (1113-38-8)	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 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 SOLID,N.O.S. (AMMONIUM OXALATE)  
**Hazard Class:** 8  
**UN/NA:** UN1759  
Packing Group: III  
**Information reported for product/size:** 250LB

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

-----  
**Proper Shipping Name:** CORROSIVE SOLID,N.O.S. (AMMONIUM OXALATE)  
**Hazard Class:** 8  
**UN/NA:** UN1759  
Packing Group: III  
**Information reported for product/size:** 250LB

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

-----  
**Proper Shipping Name:** CORROSIVE SOLID,N.O.S. (AMMONIUM OXALATE)  
**Hazard Class:** 8  
**UN/NA:** UN1759  
Packing Group: III  
**Information reported for product/size:** 250LB

## 15. Regulatory Information

```
-----\Chemical Inventory Status - Part 1\-----
Ingredient                                     TSCA  EC   Japan  Australia
-----
Ammonium Oxalate (1113-38-8)                 Yes   Yes   Yes    Yes
```

```
-----\Chemical Inventory Status - Part 2\-----
Ingredient                                     Korea  --Canada--  Phil.
-----
Ammonium Oxalate (1113-38-8)                 Yes   Yes   No     Yes
```

```
-----\Federal, State & International Regulations - Part 1\-----
Ingredient                                     -SARA 302-  -SARA 313-
RQ  TPQ      List  Chemical Catg.
-----
Ammonium Oxalate (1113-38-8)                 No   No     No     No
```

```
-----\Federal, State & International Regulations - Part 2\-----
Ingredient                                     -RCRA-  -TSCA-
CERCLA  261.33  8(d)
-----
Ammonium Oxalate (1113-38-8)                 5000   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 / 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: 4 Flammability: 1 Reactivity: 0

**Label Hazard Warning:**

POISON! DANGER! MAY BE FATAL IF SWALLOWED OR INHALED. MAY CAUSE BURNS TO

RESPIRATORY TRACT AND SEVERE IRRITATION TO SKIN AND EYES. MAY AFFECT KIDNEYS.

**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:**

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. In all cases get medical attention immediately.

**Product Use:**

Laboratory Reagent.

**Revision Information:**

No Changes.

**Disclaimer:**

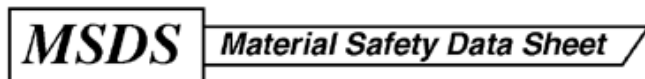
\*\*\*\*\*

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\*\*\*\*\*

**Prepared by:** Environmental Health & Safety

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



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.

# ANTIMONY POTASSIUM TARTRATE

## 1. Product Identification

**Synonyms:** 2,3-Dihydroxybutanedioic acid antimony potassium salt; tartar emetic; Tartaric acid, antimony potassium salt; Antimonyl potassium tartrate, trihydrate

**CAS No.:** 11071-15-1 (Anhydrous); 28300-74-5 (Trihydrate)

**Molecular Weight:** 667.85

**Chemical Formula:** C<sub>8</sub>H<sub>4</sub>K<sub>2</sub>O<sub>12</sub>Sb<sub>2</sub> · 3H<sub>2</sub>O

**Product Codes:**

J.T. Baker: 0864

Mallinckrodt: 2388

## 2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
Antimony Potassium Tartrate	11071-15-1	99 - 100%	Yes

## 3. Hazards Identification

### Emergency Overview

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

**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: 2 - Moderate

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

Storage Color Code: Blue (Health)

## Potential Health Effects

---

### **Inhalation:**

May cause irritation to the respiratory tract, symptoms include sore throat, coughing, and shortness of breath.

### **Ingestion:**

Toxic! May cause salivation, cough, metallic taste, nausea, vomiting, bloody diarrhea, dizziness, irritability, and muscular pains. May cause heart to beat irregularly or stop.

### **Skin Contact:**

May cause irritation with redness and pain.

### **Eye Contact:**

May cause irritation, redness and pain.

### **Chronic Exposure:**

Prolonged or repeated skin exposure may cause dermatitis. Prolonged or repeated inhalation of dusts may cause blood, liver and CNS effects, heart muscle damage, laryngitis, headache, weight loss, and anemia.

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

Persons with pre-existing skin disorders, impaired respiratory function, or heart disorders (or disease) 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:**

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

### **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 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:**

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 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):

0.5 mg (Sb)/m<sup>3</sup> (TWA)

-ACGIH Threshold Limit Value (TLV):

0.5 mg(Sb)/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. Maintain eye wash fountain and quick-drench facilities in work area.

---

## 9. Physical and Chemical Properties

### **Appearance:**

Transparent crystals, or white powder.

### **Odor:**

Odorless.

### **Solubility:**

8 g/100 ml water @ 20C (68F)

### **Specific Gravity:**

2.6

### **pH:**

Slightly acidic (aqueous solution).

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

0

### **Boiling Point:**

No information found.

### **Melting Point:**

ca. 100C (ca. 212F) Loses water

### **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:**

Alkali metals and their carbonates, Perchloric Acid, and reducing agents. Reduction may form stilbene.

**Conditions to Avoid:**

Incompatibles.

---

## 11. Toxicological Information

For C<sub>4</sub>H<sub>4</sub>O<sub>7</sub>SbK: Oral rat LD<sub>50</sub>: 115 mg/kg. Investigated as a tumorigen and mutagen.

-----\Cancer Lists\-----			
Ingredient	---NTP Carcinogen---		IARC Category
	Known	Anticipated	
Antimony Potassium Tartrate (11071-15-1)	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 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:** ANTIMONY POTASSIUM TARTRATE

**Hazard Class:** 6.1

**UN/NA:** UN1551

**Packing Group:** III

**Information reported for product/size:** 2.5KG

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

-----  
**Proper Shipping Name:** ANTIMONY POTASSIUM TARTRATE  
**Hazard Class:** 6.1  
**UN/NA:** UN1551  
**Packing Group:** III  
**Information reported for product/size:** 2.5KG

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

-----  
**Proper Shipping Name:** ANTIMONY POTASSIUM TARTRATE  
**Hazard Class:** 6.1  
**UN/NA:** UN1551  
**Packing Group:** III  
**Information reported for product/size:** 2.5KG

## 15. Regulatory Information

-----\Chemical Inventory Status - Part 1\-----				
Ingredient	TSCA	EC	Japan	Australia
Antimony Potassium Tartrate (11071-15-1)	Yes	Yes	Yes	Yes

-----\Chemical Inventory Status - Part 2\-----				
Ingredient	Korea	DSL	--Canada-- NDSL	Phil.
Antimony Potassium Tartrate (11071-15-1)	No	Yes	No	Yes

-----\Federal, State & International Regulations - Part 1\-----				
Ingredient	-SARA 302- RQ TPQ		List	-----SARA 313----- Chemical Catg.
Antimony Potassium Tartrate (11071-15-1)	No	No	No	Antimony com

-----\Federal, State & International Regulations - Part 2\-----			
Ingredient	CERCLA	-RCRA- 261.33	-TSCA- 8(d)
Antimony Potassium Tartrate (11071-15-1)	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:** 2X  
**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 THE CARDIOVASCULAR SYSTEM.

**Label Precautions:**

- Avoid breathing dust.
- Avoid contact with eyes, skin and clothing.
- 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. Remove contaminated clothing and shoes. Wash clothing before reuse. In all cases call a physician.

**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.)

<b>MSDS</b> <i>Material Safety Data Sheet</i>	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 Chemtec: 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.

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

# BARIUM CHLORIDE DIHYDRATE

## 1. Product Identification

**Synonyms:** Barium chloride  
**CAS No.:** 10361-37-2 (Anhydrous) 10326-27-9 (Dihydrate)  
**Molecular Weight:** 244.27  
**Chemical Formula:** BaCl<sub>2</sub>·2H<sub>2</sub>O  
**Product Codes:**  
J.T. Baker: 0970, 0974  
Mallinckrodt: 3756

## 2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
Barium Chloride	10361-37-2	90 - 100%	Yes

## 3. Hazards Identification

### Emergency Overview

**DANGER! MAY BE FATAL IF SWALLOWED. HARMFUL IF INHALED. MAY CAUSE IRRITATION TO SKIN, EYES, AND RESPIRATORY TRACT. AFFECTS HEART, RESPIRATORY SYSTEM, AND CENTRAL NERVOUS SYSTEM.**

**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: 2 - Moderate  
Lab Protective Equip: GOGGLES; LAB COAT; VENT HOOD; PROPER GLOVES  
Storage Color Code: Blue (Health)

## Potential Health Effects

---

### **Inhalation:**

Irritates the respiratory tract. May produce sore throat, coughing and labored breathing. Other symptoms may parallel ingestion.

### **Ingestion:**

Toxic! May cause severe gastroenteritis, including abdominal pain, vomiting and diarrhea. May cause tremors, faintness, paralysis of arms and legs, and slow or irregular heartbeat. Severe cases may produce collapse and death on respiratory failure. Estimated lethal dose in humans: 1 gram.

### **Skin Contact:**

May cause irritation with redness and pain.

### **Eye Contact:**

May cause irritation, redness, pain, or blurred vision.

### **Chronic Exposure:**

No information found.

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

Persons with pre-existing skin disorders or 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. Call a physician.

### **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:**

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:**

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

### **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 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. 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:**

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 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. Maintain eye wash fountain and quick-drench facilities in work area.

---

## 9. Physical and Chemical Properties

### **Appearance:**

White solid.

### **Odor:**

Odorless.

### **Solubility:**

31 g/100 g water @ 0C (32F) (Anhydrous)

### **Specific Gravity:**

3.86 @ 24C(75F) (Anhydrous)

**pH:**

No information found.

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

0

**Boiling Point:**

1560C (2840F) (Anhydrous)

**Melting Point:**

963C (1765F) (Anhydrous)

**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 the contained metal and halogen, possibly also free, or ionic halogen.

**Hazardous Polymerization:**

Will not occur.

**Incompatibilities:**

Bromine trifluoride; 2-furan percarboxylic acid. (Anhydrous)

**Conditions to Avoid:**

Incompatibles.

---

## 11. Toxicological Information

Barium chloride: Oral rat LD50: 118 mg/kg (anhydrous).

Investigated as a tumorigen (dihydrate).

-----\Cancer Lists\-----			
Ingredient	---NTP Known	Carcinogen--- Anticipated	IARC Category
Barium Chloride (10361-37-2)	No	No	None

---

## 12. Ecological Information

**Environmental Fate:**

This material is expected to significantly bioaccumulate.

**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 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:** BARIUM COMPOUND, N.O.S. (BARIUM CHLORIDE)

**Hazard Class:** 6.1

**UN/NA:** UN1564

Packing Group: III

**Information reported for product/size:** 250LB

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

-----  
**Proper Shipping Name:** BARIUM COMPOUND, N.O.S. (BARIUM CHLORIDE)

**Hazard Class:** 6.1

**UN/NA:** UN1564

Packing Group: III

**Information reported for product/size:** 250LB

---

## 15. Regulatory Information

```
-----\Chemical Inventory Status - Part 1\-----
Ingredient                                     TSCA  EC   Japan  Australia
-----
Barium Chloride (10361-37-2)                 Yes  Yes  Yes    Yes
```

```
-----\Chemical Inventory Status - Part 2\-----
Ingredient                                     Korea  --Canada--
                                     DSL    NDSL   Phil.
-----
Barium Chloride (10361-37-2)                 Yes   Yes   No     Yes
```

```
-----\Federal, State & International Regulations - Part 1\-----
Ingredient                                     -SARA 302-  -SARA 313-
                                     RQ   TPQ      List  Chemical Catg.
-----
Barium Chloride (10361-37-2)                 No    No      No    Barium compo
```

```
-----\Federal, State & International Regulations - Part 2\-----
Ingredient                                     CERCLA  -RCRA-  -TSCA-
                                     261.33  8(d)
-----
Barium Chloride (10361-37-2)                 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      (Mixture / Solid)

**Australian Hazchem Code:** 2Z

**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

### Label Hazard Warning:

DANGER! MAY BE FATAL IF SWALLOWED. HARMFUL IF INHALED. MAY CAUSE IRRITATION TO SKIN, EYES, AND RESPIRATORY TRACT. AFFECTS HEART, RESPIRATORY SYSTEM, AND CENTRAL NERVOUS SYSTEM.



**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 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. In all cases get medical attention immediately.

**Product Use:**

Laboratory Reagent.

**Revision Information:**

No Information Found.

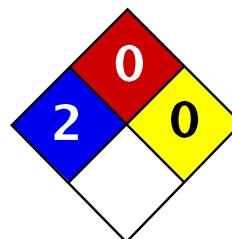
**Disclaimer:**

\*\*\*\*\*

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\*\*\*\*\*

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



Health	2
Fire	0
Reactivity	0
Personal Protection	E

## Material Safety Data Sheet Barium chromate MSDS

### Section 1: Chemical Product and Company Identification

**Product Name:** Barium chromate

**Catalog Codes:** SLB4219, SLB4522

**CAS#:** 10294-40-3

**RTECS:** CQ8760000

**TSCA:** TSCA 8(b) inventory: Barium chromate

**CI#:** Not applicable.

**Synonym:** Barium Chromate Oxide

**Chemical Name:** Barium Chromate

**Chemical Formula:** BaCrO4

**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: [www.sciencelab.com](#) & [www.chemtrec.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
Barium chromate	10294-40-3	100

**Toxicological Data on Ingredients:** Barium chromate LD50: Not available. LC50: Not available.

### Section 3: Hazards Identification

**Potential Acute Health Effects:**

Extremely hazardous in case of ingestion, of inhalation. Hazardous in case of skin contact (irritant), of eye contact (irritant). Slightly hazardous in case of skin contact (permeator). Prolonged exposure may result in skin burns and ulcerations. Over-exposure by inhalation may cause respiratory irritation. Severe over-exposure can result in death.

**Potential Chronic Health Effects:**

**CARCINOGENIC EFFECTS:** Classified A1 (Confirmed for human.) by ACGIH.

**MUTAGENIC EFFECTS:** Not available.

**TERATOGENIC EFFECTS:** Not available.

**DEVELOPMENTAL TOXICITY:** Not available.

The substance is toxic to blood, kidneys, lungs, the nervous system, liver, mucous membranes.

Repeated or prolonged exposure to the substance can produce target organs damage. Repeated exposure to a highly toxic material may produce general deterioration of health by an accumulation in one or many human organs.

## 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. Cold water may be used. WARM water MUST be used. Get medical attention.

### 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 immediately.

### Serious Skin Contact:

Wash with a disinfectant soap and cover the contaminated skin with an anti-bacterial cream. Seek immediate medical attention.

### Inhalation:

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

### Serious Inhalation:

Evacuate the victim to a safe area as soon as possible. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, administer oxygen. If the victim is not breathing, perform mouth-to-mouth resuscitation. WARNING: It may be hazardous to the person providing aid to give mouth-to-mouth resuscitation when the inhaled material is toxic, infectious or corrosive. Seek immediate medical attention.

### Ingestion:

If swallowed, do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention immediately.

**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.

**Large Spill:**

Oxidizing material. Poisonous solid.

Stop leak if without risk. Do not get water inside container. Avoid contact with a combustible material (wood, paper, oil, clothing...). Keep substance damp using water spray. Do not touch spilled material. Use water spray to reduce vapors. Prevent entry into sewers, basements or confined areas; dike if needed. Call for assistance on disposal. 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 locked up.. Keep away from heat. Keep away from sources of ignition. Keep away from combustible material.. Do not ingest. Do not breathe dust. Wear suitable protective clothing. In case of insufficient ventilation, wear suitable respiratory equipment. If ingested, seek medical advice immediately and show the container or the label. Avoid contact with skin and eyes.

**Storage:**

Keep container tightly closed. Keep container in a cool, well-ventilated area. Separate from acids, alkalies, reducing agents and combustibles. See NFPA 43A, Code for the Storage of Liquid and Solid Oxidizers.

**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:**

TWA: 0.5 from ACGIH (TLV) [United States] [1995]  
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:** 253.37 g/mole

**Color:** Not available.

**pH (1% soln/water):** Not available.

**Boiling Point:** Not available.

**Melting Point:** Decomposes.

**Critical Temperature:** Not available.

**Specific Gravity:** 4.498 (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:** Not available.

**Solubility:** Very slightly soluble in cold water, hot water.

## 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:** Will not occur.

## Section 11: Toxicological Information

**Routes of Entry:** Eye contact. Inhalation. Ingestion.

**Toxicity to Animals:**

LD50: Not available.

LC50: Not available.

**Chronic Effects on Humans:**

CARCINOGENIC EFFECTS: Classified A1 (Confirmed for human.) by ACGIH.

Causes damage to the following organs: blood, kidneys, lungs, the nervous system, liver, mucous membranes.

**Other Toxic Effects on Humans:**

Extremely hazardous in case of ingestion, of inhalation.

Hazardous in case of skin contact (irritant).

Slightly hazardous in case of skin contact (permeator).

**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 more toxic.

**Special Remarks on the Products of Biodegradation:** Not available.

## Section 13: Disposal Considerations

**Waste Disposal:**

## Section 14: Transport Information

**DOT Classification:** CLASS 6.1: Poisonous material.

**Identification:** : Not available. UNNA: 1564 PG: Not available.

**Special Provisions for Transport:** Not available.

## Section 15: Other Regulatory Information

**Federal and State Regulations:**

California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer, birth defects or other reproductive harm, which would require a warning under the statute: Barium chromate

California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer which would require a warning under the statute: Barium chromate

Pennsylvania RTK: Barium chromate

Massachusetts RTK: Barium chromate

TSCA 8(b) inventory: Barium chromate

CERCLA: Hazardous substances.: Barium chromate

**Other Regulations:** OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200).

**Other Classifications:**

**WHMIS (Canada):**

CLASS C: Oxidizing material.

CLASS D-2A: Material causing other toxic effects (VERY TOXIC).

**DSCL (EEC):**

R36/38- Irritating to eyes and skin.

R45- May cause cancer.

**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. Wear appropriate respirator when ventilation is inadequate.

Splash goggles.

## Section 16: Other Information

**References:** Not available.

**Other Special Considerations:** Not available.

**Created:** 10/09/2005 04:17 PM

**Last Updated:** 11/06/2008 12:00 PM

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**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: 613-996-6666

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 (1-800-582-2537) 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) (1330-43-4)	Yes	Yes	Yes	Yes

-----\Chemical Inventory Status - Part 2\-----				
--	--	--	--	--

---

Ingredient	--Canada--			
	Korea	DSL	NDSL	Phil.
Borates, Tetra, Sodium Salts (Anhydrous) (1330-43-4)	Yes	Yes	No	Yes

Ingredient	Federal, State & International Regulations - Part 1\			
	-SARA 302- RQ	TPQ	List	SARA 313 Chemical Catg.
Borates, Tetra, Sodium Salts (Anhydrous) (1330-43-4)	No	No	No	No

Ingredient	Federal, State & International Regulations - Part 2\		
	CERCLA	-RCRA- 261.33	-TSCA- 8(d)
Borates, Tetra, Sodium Salts (Anhydrous) (1330-43-4)	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 / 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.)

**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: 613-996-6666

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.

# BORIC ACID

## 1. Product Identification

**Synonyms:** ortho-Boric acid; boracic acid; Borofax, boric acid (H3BO3)

**CAS No.:** 10043-35-3

**Molecular Weight:** 61.83

**Chemical Formula:** H3BO3

**Product Codes:**

J.T. Baker: 0084, 0091, 0092, 2987, 4035, 5168, 5599, 9820

Mallinckrodt: 1326, 1394, 2536, 2549, 2552, 7779, 7794

## 2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
Boric Acid	10043-35-3	100%	Yes

## 3. Hazards Identification

### Emergency Overview

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

**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 mucous membranes of the respiratory tract. May be absorbed from the mucous membranes, and depending on the amount of exposure could result in the development of nausea, vomiting, diarrhea, drowsiness, rash, headache, fall in body temperature, low blood pressure, renal injury, cyanosis, coma, and death.

### **Ingestion:**

Symptoms parallel absorption via inhalation. Adult fatal dose reported at 5 to > 30 grams.

### **Skin Contact:**

Causes skin irritation. Not significantly absorbed through the intact skin. Readily absorbed through damaged or burned skin. Symptoms of skin absorption parallel inhalation and ingestion.

### **Eye Contact:**

Causes irritation, redness, and pain.

### **Chronic Exposure:**

Prolonged absorption causes weight loss, vomiting, diarrhea, skin rash, convulsions and anemia. Liver and particularly the kidneys may be susceptible. Studies of dogs and rats have shown that infertility and damage to testes can result from acute or chronic ingestion of boric acid. Evidence of toxic effects on the human reproductive system is inadequate.

### **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. Call a physician.

### **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. Wash clothing before re-use.

### **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:**

A mixture of potassium and boric acid may explode on impact.

### **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 well closed container stored under cold to warm conditions, 2 to 40 C, (36 to 104F). Protect against physical damage. Carbon steel or aluminum containers are suitable for storage. Stainless steel is needed for moist conditions. Use good housekeeping practices to prevent accumulation of dust and follow sound cleaning techniques that will keep airborne particulates at a low level. Wash hands after handling this material. Avoid contact especially when skin is cut or abraded. 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

### **Appearance:**

White powder or granules.

### **Odor:**

Odorless.

### **Solubility:**

1g/18mL in cold water.

### **Density:**

1.43

### **pH:**

5.1 Aqueous solution: (0.1M)

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

0

### **Boiling Point:**

Decomposes.

### **Melting Point:**

169C (336F)

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

No information found.

### **Vapor Pressure (mm Hg):**

2.6 @ 20C (68F)



**Evaporation Rate (BuAc=1):**  
No information found.

---

## 10. Stability and Reactivity

**Stability:**

Stable under ordinary conditions of use and storage. If moisture is present, boric acid can be corrosive to iron.

**Hazardous Decomposition Products:**

Loses chemically combined water upon heating, forming metaboric acid (HBO<sub>2</sub>) at 212-221F, then pyroboric acid (H<sub>2</sub>B<sub>4</sub>O<sub>7</sub>) at 285-320F, and Boric anhydride at higher temperatures.

**Hazardous Polymerization:**

Will not occur.

**Incompatibilities:**

Potassium, acetic anhydride, alkalis, carbonates, and hydroxides.

**Conditions to Avoid:**

No information found.

---

## 11. Toxicological Information

**Toxicological Data:**

Oral rat LD<sub>50</sub>: 2660 mg/kg; oral woman LDLo: 200 mg/kg; investigated as a mutagen, tumorigen, reproductive effector.

**Reproductive Toxicity:**

May impair fertility

May cause harm to the unborn child.

See Chronic Health Hazards.

-----\Cancer Lists\-----			
Ingredient	---NTP Carcinogen---		IARC Category
	Known	Anticipated	
Boric Acid (10043-35-3)	No	No	None

---

## 12. Ecological Information

**Environmental Fate:**

Boric acid: 48 Hr EC<sub>50</sub> water flea: 115.0 mg/L [Static]

**Environmental Toxicity:**

The EC<sub>50</sub>/48-hour values for daphnia are over 100 mg/l. This material may 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  
-----  
Boric Acid (10043-35-3) Yes Yes Yes Yes
```

```
-----\Chemical Inventory Status - Part 2\-----  
Ingredient Korea --Canada--  
DSL NDSL Phil.  
-----  
Boric Acid (10043-35-3) Yes Yes No Yes
```

```
-----\Federal, State & International Regulations - Part 1\-----  
-SARA 302- -----SARA 313-----  
Ingredient RQ TPQ List Chemical Catg.  
-----  
Boric Acid (10043-35-3) No No No No
```

```
-----\Federal, State & International Regulations - Part 2\-----  
-RCRA- -TSCA-  
Ingredient CERCLA 261.33 8(d)  
-----  
Boric Acid (10043-35-3) 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:** 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 OR INHALED. CAUSES IRRITATION TO SKIN, EYES AND RESPIRATORY TRACT. AFFECTS CENTRAL NERVOUS SYSTEM, LIVER AND KIDNEYS.

**Label Precautions:**

Avoid breathing dust.

Keep container closed.

Use with adequate ventilation.

Avoid contact with eyes, skin and clothing.

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. In all cases call a physician.

**Product Use:**

Laboratory Reagent.

**Revision Information:**

No Changes.

**Disclaimer:**

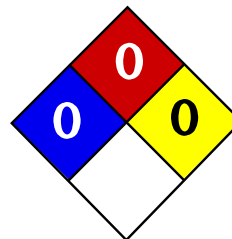
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\*\*\*\*\*

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



Health	0
Fire	0
Reactivity	0
Personal Protection	H

## Material Safety Data Sheet

### Boric Acid, 4% w/indicator MSDS

#### Section 1: Chemical Product and Company Identification

**Product Name:** Boric Acid, 4% w/indicator

**Catalog Codes:** SLB1342

**CAS#:** Mixture.

**RTECS:** Not applicable.

**TSCA:** TSCA 8(b) inventory: Boric acid; Ethyl alcohol 200 Proof; Methyl red; Bromocresol green

**CI#:** Not applicable.

**Synonym:**

**Chemical Name:** Not applicable.

**Chemical Formula:** Not applicable.

**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: [www.sciencelab.com](#) & [SciLab.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
Boric acid	10043-35-3	4
Ethyl alcohol 200 Proof	64-17-5	1
Methyl red	493-52-7	0.0014
Bromocresol green	76-60-8	0.001

**Toxicological Data on Ingredients:** Boric acid: ORAL (LD50): Acute: 2660 mg/kg [Rat]. 3450 mg/kg [Mouse]. Ethyl alcohol 200 Proof: ORAL (LD50): Acute: 7060 mg/kg [Rat.].

#### Section 3: Hazards Identification

**Potential Acute Health Effects:**

Extremely hazardous in case of ingestion. Hazardous in case of eye contact (irritant). Slightly hazardous in case of skin contact (irritant), of inhalation.

**Potential Chronic Health Effects:**

Extremely hazardous in case of ingestion.  
Hazardous in case of eye contact (irritant).  
CARCINOGENIC EFFECTS: Not available.

MUTAGENIC EFFECTS: Not available.  
TERATOGENIC EFFECTS: Not available.  
DEVELOPMENTAL TOXICITY: Classified Reproductive system/toxin/female, Reproductive system/toxin/male [PROVEN] [Ethyl alcohol 200 Proof].  
The substance is toxic to lungs, the reproductive system, mucous membranes.  
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. Immediately flush eyes with running water for at least 15 minutes, keeping eyelids open. Cold water may be used. Get medical attention.

**Skin Contact:**

Wash with soap and water. Cover the irritated skin with an emollient. Get medical attention if irritation develops. Cold water may be used.

**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. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention if symptoms appear.

**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:**

Dilute with water and mop up, or absorb with an inert dry material and place in an appropriate waste disposal container. Finish cleaning by spreading water on the contaminated surface and dispose of according to local and regional authority requirements.

**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 locked up.. Do not ingest. Do not breathe gas/fumes/ vapor/spray. Avoid contact with eyes. Wear suitable protective clothing. If ingested, seek medical advice immediately and show the container or the label.

**Storage:** Keep container tightly closed. Keep container in a cool, well-ventilated area.

## 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:**

Splash goggles. Lab coat. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Gloves.

**Personal Protection in Case of a Large Spill:**

Splash goggles. Full suit. Vapor 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:**

Ethyl alcohol 200 Proof

TWA: 1000 from OSHA (PEL) [United States]

TWA: 1900 from OSHA (PEL) [United States]

Consult local authorities for acceptable exposure limits.

## Section 9: Physical and Chemical Properties

**Physical state and appearance:** Liquid.

**Odor:** Not available.

**Taste:** Not available.

**Molecular Weight:** Not applicable.

**Color:** Clear

**pH (1% soln/water):** Neutral.

**Boiling Point:** The lowest known value is 78.5°C (173.3°F) (Ethyl alcohol 200 Proof).

**Melting Point:** May start to solidify at -114.1°C (-173.4°F) based on data for: Ethyl alcohol 200 Proof.

**Critical Temperature:** Not available.

**Specific Gravity:** Weighted average: 1.23 (Water = 1)

**Vapor Pressure:** The highest known value is 5.7 kPa (@ 20°C) (Ethyl alcohol 200 Proof).

**Vapor Density:** The highest known value is 1.59 (Air = 1) (Ethyl alcohol 200 Proof).

**Volatility:** Not available.

**Odor Threshold:** Not available.

**Water/Oil Dist. Coeff.:** Not available.

**Ionicity (in Water):** Not available.

**Dispersion Properties:** See solubility in water, methanol, diethyl ether.

**Solubility:**

Easily soluble in hot water, methanol, diethyl ether.

Soluble in cold water.

### Section 10: Stability and Reactivity Data

**Stability:** The product is stable.

**Instability Temperature:** Not available.

**Conditions of Instability:** Not available.

**Incompatibility with various substances:** Non-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:** Absorbed through skin. Dermal contact. Eye contact. Inhalation. Ingestion.

**Toxicity to Animals:** Acute oral toxicity (LD50): 2660 mg/kg [Rat]. (Boric acid).

**Chronic Effects on Humans:**

DEVELOPMENTAL TOXICITY: Classified Reproductive system/toxin/female, Reproductive system/toxin/male [PROVEN] [Ethyl alcohol 200 Proof].

**Other Toxic Effects on Humans:**

Extremely hazardous in case 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:** Moderately toxic and narcotic in high concentrations. Experimentally tumorigen. (Ethyl alcohol 200 Proof)

## 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:**

California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer, birth defects or other reproductive harm, which would require a warning under the statute: Ethyl alcohol 200 Proof

California prop. 65: This product contains the following ingredients for which the State of California has found to cause birth defects which would require a warning under the statute: Ethyl alcohol 200 Proof

California prop. 65: This product contains the following ingredients for which the State of California has found to cause cancer which would require a warning under the statute: Ethyl alcohol 200 Proof

Pennsylvania RTK: Ethyl alcohol 200 Proof

Massachusetts RTK: Ethyl alcohol 200 Proof

TSCA 8(b) inventory: Boric acid; Ethyl alcohol 200 Proof; Methyl red; Bromocresol green

**Other Regulations:** OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200).

**Other Classifications:**

**WHMIS (Canada):** CLASS D-2A: Material causing other toxic effects (VERY TOXIC).

**DSCL (EEC):** R60- May impair fertility.

**HMIS (U.S.A.):**

**Health Hazard:** 0

**Fire Hazard:** 0

**Reactivity:** 0

**Personal Protection:** h

**National Fire Protection Association (U.S.A.):**



**Health:** 0

**Flammability:** 0

**Reactivity:** 0

**Specific hazard:**

**Protective Equipment:**

Gloves.

Lab coat.

Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate.

Splash goggles.

## Section 16: Other Information

**References:** Not available.

**Other Special Considerations:** Not available.

**Created:** 10/10/2005 12:53 AM

**Last Updated:** 11/06/2008 12:00 PM

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<b>MSDS</b> <i>Material Safety Data Sheet</i>	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
	<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.

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-cresolsulfonphthalein; 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:** C<sub>21</sub>H<sub>14</sub>O<sub>5</sub>Br<sub>4</sub>S

**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.

-----\Cancer Lists\-----			
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

-----\Chemical Inventory Status - Part 1\-----				
Ingredient	TSCA	EC	Japan	Australia
Bromocresol Green (76-60-8)	Yes	Yes	No	Yes

-----\Chemical Inventory Status - Part 2\-----				
Ingredient	Korea	--Canada--		Phil.
		DSL	NDSL	
Bromocresol Green (76-60-8)	Yes	Yes	No	Yes

-----\Federal, State & International Regulations - Part 1\-----				
Ingredient	-SARA 302-		-----SARA 313-----	
	RQ	TPQ	List	Chemical Catg.
Bromocresol Green (76-60-8)	No	No	No	No

-----\Federal, State & International Regulations - Part 2\-----			
Ingredient	CERCLA	-RCRA-	-TSCA-
		261.33	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:**

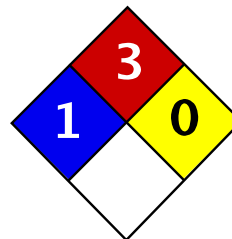
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\*\*\*\*\*

**Prepared by:** Environmental Health & Safety

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



Health	2
Fire	3
Reactivity	0
Personal Protection	H

## Material Safety Data Sheet

### Bromocresol Green - Methyl Red MSDS

#### Section 1: Chemical Product and Company Identification

**Product Name:** Bromocresol Green - Methyl Red

**Catalog Codes:** SLB4141

**CAS#:** Mixture.

**RTECS:** Not applicable.

**TSCA:** TSCA 8(b) inventory: Bromocresol green; Methyl red; Isopropyl alcohol

**CI#:** Not available.

**Synonym:**

**Chemical Name:** Not applicable.

**Chemical Formula:** Not applicable.

**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
Bromocresol green	76-60-8	0.1
Methyl red	493-52-7	0.02
Isopropyl alcohol	67-63-0	99.9

**Toxicological Data on Ingredients:** Bromocresol green LD50: Not available. LC50: Not available. Isopropyl alcohol: ORAL (LD50): Acute: 5045 mg/kg [Rat]. 3600 mg/kg [Mouse]. 6410 mg/kg [Rabbit]. DERMAL (LD50): Acute: 12800 mg/kg [Rabbit].

#### Section 3: Hazards Identification

**Potential Acute Health Effects:**

Very hazardous in case of ingestion. Hazardous in case of eye contact (irritant), of inhalation. Slightly hazardous in case of skin contact (irritant, permeator).

**Potential Chronic Health Effects:**

**CARCINOGENIC EFFECTS:** Classified 3 (Not classifiable for human.) by IARC [Isopropyl alcohol].

**MUTAGENIC EFFECTS:** Not available.

**TERATOGENIC EFFECTS:** Not available.

**DEVELOPMENTAL TOXICITY:** Classified Reproductive system/toxin/female, Development toxin [POSSIBLE] [Isopropyl alcohol].

The substance is toxic to kidneys, lungs, the nervous system, mucous membranes, gastrointestinal tract, cardiovascular system, upper respiratory tract, skin, central nervous system (CNS). 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. Cold water may be used. Get medical attention.

**Skin Contact:**

Wash with soap and water. Cover the irritated skin with an emollient. Get medical attention if irritation develops. Cold water may be used.

**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 if symptoms appear.

**Serious Inhalation:**

Evacuate the victim to a safe area as soon as possible. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, administer oxygen. If the victim is not breathing, perform mouth-to-mouth resuscitation. Seek medical attention.

**Ingestion:**

Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention if symptoms appear.

**Serious Ingestion:** Not available.

#### Section 5: Fire and Explosion Data

**Flammability of the Product:** Flammable.

**Auto-Ignition Temperature:** The lowest known value is 399°C (750.2°F) (Isopropyl alcohol).

**Flash Points:**

The lowest known value is CLOSED CUP: 11.67°C (53°F). (TAG). OPEN CUP: 18.3°C (64.9°F). (Cleveland). (Isopropyl alcohol)

**Flammable Limits:** The greatest known range is LOWER: 2% UPPER: 12% (Isopropyl alcohol)

**Products of Combustion:** These products are carbon oxides (CO, CO<sub>2</sub>), halogenated compounds.

**Fire Hazards in Presence of Various Substances:** Flammable in presence of open flames and sparks, of oxidizing materials.

**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:**

Flammable liquid, soluble or dispersed in water.

SMALL FIRE: Use DRY chemical powder.

LARGE FIRE: Use alcohol foam, water spray or fog.

**Special Remarks on Fire Hazards:**

Explosive in the form of vapor when exposed to heat or flame. May form explosive mixtures with air. Vapor may



travel considerable distance to source of ignition and flash back. CAUTION: MAY BURN WITH NEAR INVISIBLE FLAME (Isopropyl alcohol)

**Special Remarks on Explosion Hazards:** Not available.

## Section 6: Accidental Release Measures

### Small Spill:

Dilute with water and mop up, or absorb with an inert dry material and place in an appropriate waste disposal container.

### Large Spill:

Flammable liquid.

Keep away from heat. Keep away from sources of ignition. Stop leak if without risk. Absorb with DRY earth, sand or other non-combustible material. Do not touch spilled material. Prevent entry into sewers, basements or confined areas; dike if needed. 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 locked up.. Keep away from heat. Keep away from sources of ignition. Ground all equipment containing material. Do not ingest. Do not breathe gas/fumes/ vapor/spray. In case of insufficient ventilation, wear suitable respiratory equipment. If ingested, seek medical advice immediately and show the container or the label. Avoid contact with skin and eyes.

### Storage:

Store in a segregated and approved area. Keep container in a cool, well-ventilated area. Keep container tightly closed and sealed until ready for use. Avoid all possible sources of ignition (spark or flame).

## 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:

Splash goggles. Lab coat. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Gloves.

### Personal Protection in Case of a Large Spill:

Splash goggles. Full suit. Vapor 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:

Isopropyl alcohol

TWA: 400 STEL: 500 from ACGIH (TLV) [United States] [1995]

TWA: 980 STEL: 1230 from ACGIH (TLV) [United States] [1995]

TWA: 400 (ppm) [United Kingdom (UK)]

Consult local authorities for acceptable exposure limits.

## Section 9: Physical and Chemical Properties

**Physical state and appearance:** Liquid.

**Odor:** Not available.

**Taste:** Not available.

**Molecular Weight:** Not applicable.

**Color:** Not available.

**pH (1% soln/water):** Neutral.

**Boiling Point:** The lowest known value is 82.22°C (180°F) (Isopropyl alcohol).

**Melting Point:** May start to solidify at -89.5°C (-129.1°F) based on data for: Isopropyl alcohol.

**Critical Temperature:** The lowest known value is 235°C (455°F) (Isopropyl alcohol).

**Specific Gravity:** The only known value is 0.7855 (Water = 1) (Isopropyl alcohol).

**Vapor Pressure:** The highest known value is 4.4 kPa (@ 20°C) (Isopropyl alcohol).

**Vapor Density:** The highest known value is 2.07 (Air = 1) (Isopropyl alcohol).

**Volatility:** Not available.

**Odor Threshold:** The highest known value is 43 ppm (Isopropyl alcohol)

**Water/Oil Dist. Coeff.:** The product is equally soluble in oil and water.

**Ionicity (in Water):** Not available.

**Dispersion Properties:** See solubility in water, methanol, diethyl ether, n-octanol, acetone.

**Solubility:** Easily soluble in cold water, hot water, methanol, diethyl ether, n-octanol, acetone.

## 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:** Will not occur.

## Section 11: Toxicological Information

**Routes of Entry:** Absorbed through skin. Dermal contact. Eye contact. Inhalation. Ingestion.

### Toxicity to Animals:

Acute oral toxicity (LD50): 3600 mg/kg [Mouse]. (Isopropyl alcohol).

Acute dermal toxicity (LD50): 12800 mg/kg [Rabbit]. (Isopropyl alcohol).

**Chronic Effects on Humans:**

CARCINOGENIC EFFECTS: Classified 3 (Not classifiable for human.) by IARC [Isopropyl alcohol].

DEVELOPMENTAL TOXICITY: Classified Reproductive system/toxin/female, Development toxin [POSSIBLE] [Isopropyl alcohol].

**Other Toxic Effects on Humans:**

Very hazardous in case of ingestion.

Hazardous in case of inhalation.

Slightly hazardous in case of skin contact (irritant, permeator).

**Special Remarks on Toxicity to Animals:** Not available.

**Special Remarks on Chronic Effects on Humans:** Detected in maternal milk in human. (Isopropyl alcohol)

**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 more toxic.

**Special Remarks on the Products of Biodegradation:** Not available.

**Section 13: Disposal Considerations**

**Waste Disposal:**

**Section 14: Transport Information**

**DOT Classification:** CLASS 3: Flammable liquid.

**Identification:** : Isopropanol, solution (Isopropyl alcohol) UNNA: UN1219 PG: II

**Special Provisions for Transport:** Not available.

**Section 15: Other Regulatory Information****Federal and State Regulations:**

Rhode Island RTK hazardous substances: Isopropyl alcohol

Pennsylvania RTK: Isopropyl alcohol

Florida: Isopropyl alcohol

Minnesota: Isopropyl alcohol

Massachusetts RTK: Isopropyl alcohol

New Jersey: Isopropyl alcohol

TSCA 8(b) inventory: Bromocresol green; Methyl red; Isopropyl alcohol

TSCA 8(a) PAIR: Isopropyl alcohol

TSCA 8(d) H and S data reporting: Isopropyl alcohol: 12/15/86

TSCA 12(b) one time export: Isopropyl alcohol

SARA 313 toxic chemical notification and release reporting: Isopropyl alcohol 99.88%

**Other Regulations:** OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200).

**Other Classifications:**

**WHMIS (Canada):**

CLASS B-2: Flammable liquid with a flash point lower than 37.8°C (100°F).

CLASS D-2A: Material causing other toxic effects (VERY TOXIC).

**DSCL (EEC):**

R11- Highly flammable.

R36- Irritating to eyes.

**HMIS (U.S.A.):**

**Health Hazard:** 2

**Fire Hazard:** 3

**Reactivity:** 0

**Personal Protection:** h

**National Fire Protection Association (U.S.A.):**

**Health:** 1

**Flammability:** 3

**Reactivity:** 0

**Specific hazard:**

**Protective Equipment:**

Gloves.

Lab coat.

Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate.

Splash goggles.

## Section 16: Other Information



**References:** Not available.

**Other Special Considerations:** Not available.

**Created:** 10/10/2005 12:53 AM

**Last Updated:** 11/06/2008 12:00 PM

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<b>MSDS</b> <i>Material Safety Data Sheet</i>	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
 	<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.
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:** C<sub>21</sub>H<sub>16</sub>Br<sub>2</sub>O<sub>5</sub>S

**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)

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## Potential Health Effects

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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---		IARC Category
	Known	Anticipated	
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\-----

--Canada--



Ingredient	Korea	DSL	NDSL	Phil.
Bromocresol Purple Indicator grade (115-40-2)	No	Yes	No	Yes
-----\Federal, State & International Regulations - Part 1\-----				
	-SARA 302-		-----SARA 313-----	
Ingredient	RQ	TPQ	List	Chemical Catg.
Bromocresol Purple Indicator grade (115-40-2)	No	No	No	No
-----\Federal, State & International Regulations - Part 2\-----				
	-RCRA-		-TSCA-	
Ingredient	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:**

No Changes.

**Disclaimer:**

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



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.

# 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.

```
-----\Cancer Lists\-----
Ingredient                ---NTP Carcinogen---
                          Known   Anticipated   IARC Category
-----
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

```
-----\Chemical Inventory Status - Part 1\-----
Ingredient                TSCA   EC   Japan  Australia
-----
Bromophenol Blue (115-39-9)  Yes   Yes  Yes    Yes
```

```
-----\Chemical Inventory Status - Part 2\-----
Ingredient                Korea  --Canada--
                          DSL   NDSL  Phil.
-----
Bromophenol Blue (115-39-9)  Yes   Yes   No    Yes
```

```
-----\Federal, State & International Regulations - Part 1\-----
Ingredient                -SARA 302-   -SARA 313-
                          RQ   TPQ   List  Chemical Catg.
-----
Bromophenol Blue (115-39-9)  No   No    No    No
```

```
-----\Federal, State & International Regulations - Part 2\-----
Ingredient                CERCLA   -RCRA-   -TSCA-
                          261.33  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:**

\*\*\*\*\*

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

**MSDS** Material Safety Data Sheet

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



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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 (1-800-582-2537) for assistance.

# CALCIUM CARBONATE

## 1. Product Identification

**Synonyms:** Carbonic acid calcium salt; calcite; aragonite; limestone

**CAS No.:** 471-34-1

**Molecular Weight:** 100.09

**Chemical Formula:** CaCO<sub>3</sub>

**Product Codes:**

J.T. Baker: 1288, 1294, 1300, 1301, 4485, 4918

Mallinckrodt: 1281, 1282, 1390, 2939, 4052, 4061, 4071, 4072, 6210, 6895

## 2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
Calcium Carbonate	471-34-1	90 - 100%	Yes

## 3. Hazards Identification

### Emergency Overview

**CAUTION! MAY CAUSE IRRITATION TO SKIN, EYES, AND RESPIRATORY TRACT. NUISANCE DUST.**

**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; VENT HOOD; PROPER GLOVES

Storage Color Code: Green (General Storage)



## Potential Health Effects

---

### **Inhalation:**

Excessive concentrations of a nuisance dust may cause nuisance condition such as coughing, sneezing, and nasal irritation.

### **Ingestion:**

Non-toxic.

### **Skin Contact:**

Not expected to be a health hazard from skin exposure.

### **Eye Contact:**

No information found, but presumed to cause mechanical irritation.

### **Chronic Exposure:**

Excessive oral doses of calcium carbonate may produce alkalosis and hypercalcemia.

### **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:**

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:**

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:**

- 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:**

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

### **Appearance:**

Fine, white powder.

### **Odor:**

Odorless.

### **Solubility:**

0.001 gm in 100 ml water, soluble in dilute acids.

### **Density:**

2.7 - 2.95

### **pH:**

No information found.

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

0

### **Boiling Point:**

Not applicable.

### **Melting Point:**

825C (1517F)

### **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 (825C), emits calcium oxide fumes and liberates carbon dioxide.

**Hazardous Polymerization:**

Will not occur.

**Incompatibilities:**

Acids, fluorine, magnesium with hydrogen.

**Conditions to Avoid:**

Heat, 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	
Calcium Carbonate (471-34-1)	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
Calcium Carbonate (471-34-1)	Yes	Yes	Yes	Yes

-----\Chemical Inventory Status - Part 2\-----				
Ingredient	Korea	--Canada--		Phil.
		DSL	NDSL	
Calcium Carbonate (471-34-1)	Yes	Yes	No	Yes

-----\Federal, State & International Regulations - Part 1\-----				
Ingredient	-SARA 302-		-----SARA 313-----	
	RQ	TPQ	List	Chemical Catg.
Calcium Carbonate (471-34-1)	No	No	No	No

-----\Federal, State & International Regulations - Part 2\-----				
---	--	--	--	--

Ingredient	CERCLA	-RCRA-	-TSCA-
-----	-----	261.33	8(d)
Calcium Carbonate (471-34-1)	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: **0** Reactivity: **0**

**Label Hazard Warning:**

CAUTION! MAY CAUSE IRRITATION TO SKIN, EYES, AND RESPIRATORY TRACT. NUISANCE DUST.

**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:**

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:**

No Changes.

**Disclaimer:**

\*\*\*\*\*

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\*\*\*\*\*

**Prepared by:** Environmental Health & Safety

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

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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.

# CALCIUM CHLORIDE

## 1. Product Identification

**Synonyms:** calcium dichloride; calcium chloride anhydrous; Caltac®; Dowflake

**CAS No.:** 10043-52-4

**Molecular Weight:** 110.98

**Chemical Formula:** CaCl<sub>2</sub>

**Product Codes:**

J.T. Baker: 1311

Mallinckrodt: 0771, 3266, 3630, 4225, 4748, 4777, 4822, 4870, 4875, 4880

## 2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
Calcium Chloride	10043-52-4	93 - 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: 1 - Slight

Flammability Rating: 0 - None

Reactivity Rating: 2 - Moderate

Contact Rating: 3 - Severe

Lab Protective Equip: GOGGLES; LAB COAT

Storage Color Code: Green (General Storage)

## Potential Health Effects

---

### **Inhalation:**

Granular material does not pose a significant inhalation hazard, but inhalation of dust may cause irritation to the respiratory tract, with symptoms of coughing and shortness of breath.

### **Ingestion:**

Low toxicity material but ingestion may cause serious irritation of the mucous membrane due to heat of hydrolysis. Large amounts can cause gastrointestinal upset, vomiting, abdominal pain.

### **Skin Contact:**

Solid may cause mild irritation on dry skin; strong solutions or solid in contact with moist skin may cause severe irritation, even burns.

### **Eye Contact:**

Hazard may be either mechanical abrasion or, more serious, burns from heat of hydrolysis and chloride irritation.

### **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:**

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.

### **Note to Physician:**

Oral ingestion may cause serum acidosis.

---

## 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. At high temperatures or when moistened under fire conditions, calcium chloride may produce toxic or irritating fumes.

---

## 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.

---

## 7. Handling and Storage

Keep in a tightly closed container, stored in a cool, dry, ventilated area. Protect against physical damage. Moist calcium chloride and concentrated solutions can corrode steel. When exposed to the atmosphere, calcium chloride will absorb water and form a solution. 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.

### **Other Control Measures:**

Maintain good housekeeping in work area. Dust deposits on floors and other surfaces may pick up moisture and cause the surfaces to become slippery and present safety hazards.

---

## 9. Physical and Chemical Properties

### **Appearance:**

White or gray-white granules.

### **Odor:**

Odorless.

### **Solubility:**

Freely soluble in water, exothermic.

### **Density:**

2.15

### **pH:**

8 - 9 Aqueous solution

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

0

### **Boiling Point:**

> 1600C (> 2912F)

### **Melting Point:**

772C (1422F)

**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. Substance will pick up moisture from the air and go into solution if exposed in open containers.

**Hazardous Decomposition Products:**

Emits toxic chlorine fumes when heated to decomposition. May form hydrogen chloride in presence of sulfuric or phosphoric acids or with water at elevated temperatures.

**Hazardous Polymerization:**

Will not occur.

**Incompatibilities:**

Methyl vinyl ether, water, zinc, bromine trifluoride, mixtures of lime and boric acid, barium chloride, and 2-furan percarboxylic acid. Metals will slowly corrode in aqueous calcium chloride solutions. Aluminum (and alloys) and yellow brass will be attacked by calcium chloride.

**Conditions to Avoid:**

Incompatibles.

## 11. Toxicological Information

Oral rat LD50: 1000 mg/kg. Investigated as a tumorigen and mutagen.

-----\Cancer Lists\-----			
Ingredient	---NTP Carcinogen---		IARC Category
	Known	Anticipated	
Calcium Chloride (10043-52-4)	No	No	None

## 12. Ecological Information

**Environmental Fate:**

Based on available information for Calcium Chloride anhydrous, this material will not biodegrade or bioaccumulate.

**Environmental Toxicity:**

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 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
-----
Calcium Chloride (10043-52-4)                 Yes   Yes   Yes    Yes
```

```
-----\Chemical Inventory Status - Part 2\-----
Ingredient                                     Korea  DSL   --Canada--  Phil.
-----
Calcium Chloride (10043-52-4)                 Yes   Yes   No       Yes
```

```
-----\Federal, State & International Regulations - Part 1\-----
Ingredient                                     -SARA 302-  -SARA 313-
RQ   TPQ   List  Chemical Catg.
-----
Calcium Chloride (10043-52-4)                 No    No    No       No
```

```
-----\Federal, State & International Regulations - Part 2\-----
Ingredient                                     CERCLA  -RCRA-  -TSCA-
                                           261.33  8(d)
-----
Calcium Chloride (10043-52-4)                 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: **1**

### 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.

Wash thoroughly after handling.

Avoid breathing dust.

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. 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. 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.)

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**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.

# Calcium Sulfate, Dihydrate, Powder

## 1. Product Identification

**Synonyms:** Gypsum; Alabaster; C.I. 77231; C.I. Pigment White 25

**CAS No.:** 7778-18-9 (Anhydrous); 10101-41-4 (Dihydrate)

**Molecular Weight:** 172.17

**Chemical Formula:** CaSO<sub>4</sub> · 2H<sub>2</sub>O

**Product Codes:**

J.T. Baker: 1452

Mallinckrodt: 4300

## 2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
Calcium Sulfate (anhydrous)	7778-18-9	98 - 100%	Yes

## 3. Hazards Identification

### Emergency Overview

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

**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

---

### **Inhalation:**

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

### **Ingestion:**

May cause obstruction in stomach, as it hardens with moisture. Symptoms include stomach pain, distress.

### **Skin Contact:**

Causes irritation, redness, 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 lower and upper eyelids occasionally. Get medical attention immediately.

### **Note to Physician:**

Drinking glycerin, gelatin solutions, or large volumes of water may delay the hardening of calcium sulfate in the stomach. Surgical relief of obstruction, particularly at the pylorus, may be necessary.

---

## 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:**

-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 powder.

### **Odor:**

Odorless.

### **Solubility:**

Slight (0.1-1%)

### **Specific Gravity:**

2.32

### **pH:**

No information found.

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

0

### **Boiling Point:**

No information found.

### **Melting Point:**

1450C (2642F)

### **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 sulfur oxides.

**Hazardous Polymerization:**

Will not occur.

**Incompatibilities:**

Diazomethane, aluminum, phosphorous.

**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	
Calcium Sulfate (anhydrous) (7778-18-9)	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
Calcium Sulfate (anhydrous) (7778-18-9)	Yes	Yes	Yes	Yes

-----\Chemical Inventory Status - Part 2\-----				
Ingredient	Korea	--Canada--		Phil.
		DSL	NDSL	
Calcium Sulfate (anhydrous) (7778-18-9)	Yes	Yes	No	Yes
-----\Federal, State & International Regulations - Part 1\-----				
Ingredient	-SARA 302-		-SARA 313-	
	RQ	TPQ	List	Chemical Catg.
Calcium Sulfate (anhydrous) (7778-18-9)	No	No	No	No
-----\Federal, State & International Regulations - Part 2\-----				
Ingredient	CERCLA	-RCRA-		-TSCA-
		261.33	8(d)	
Calcium Sulfate (anhydrous) (7778-18-9)	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: 2 Flammability: 0 Reactivity: 0

**Label Hazard Warning:**

WARNING! CAUSES IRRITATION TO SKIN, EYES AND RESPIRATORY TRACT. MAY BE HARMFUL IF SWALLOWED.

**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, 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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**RELIANCE UPON THIS INFORMATION.**

\*\*\*\*\*

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





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.

## CALCIUM, 1,000 ug/ml or 10,000 ug/ml

### 1. Product Identification

**Synonyms:** None

**CAS No.:** Not applicable to mixtures.

**Molecular Weight:** Not applicable to mixtures.

**Chemical Formula:** CaCO<sub>3</sub> and HNO<sub>3</sub> in H<sub>2</sub>O

**Product Codes:** 5710, 5724, 6448

### 2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
Calcium Carbonate	471-34-1	0.1 - 3%	Yes
Nitric Acid	7697-37-2	< 4%	Yes
Water	7732-18-5	> 93%	No

### 3. Hazards Identification

#### Emergency Overview

**DANGER! CORROSIVE. LIQUID AND MIST CAUSE SEVERE BURNS TO ALL BODY TISSUE. MAY BE FATAL IF SWALLOWED OR INHALED. VAPOR IRRITATING TO EYES AND RESPIRATORY TRACT. INHALATION MAY CAUSE LUNG AND TOOTH DAMAGE.**

**J.T. Baker 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: 3 - Severe (Corrosive)

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

Storage Color Code: White (Corrosive)

## Potential Health Effects

---

Nitric acid is extremely hazardous; it is corrosive, reactive, an oxidizer, and a poison.

### **Inhalation:**

Corrosive! Inhalation of vapors can cause breathing difficulties and lead to pneumonia and pulmonary edema, which may be fatal. Other symptoms may include coughing, choking, and irritation of the nose, throat, and respiratory tract.

### **Ingestion:**

Corrosive! Swallowing nitric acid can cause immediate pain and burns of the mouth, throat, esophagus and gastrointestinal tract.

### **Skin Contact:**

Corrosive! Can cause redness, pain, and severe skin burns. Concentrated solutions cause deep ulcers and stain skin a yellow or yellow-brown color.

### **Eye Contact:**

Corrosive! Vapors are irritating and may cause damage to the eyes. Contact may cause severe burns and permanent eye damage.

### **Chronic Exposure:**

Long-term exposure to concentrated vapors may cause erosion of teeth and lung damage. Long-term exposures seldom occur due to the corrosive properties of the acid.

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

Persons with pre-existing skin disorders, eye disease, or cardiopulmonary diseases may be more susceptible to the effects of this substance.

---

## 4. First Aid Measures

Immediate first aid treatment reduces the health effects of this substance.

### **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:**

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. Thoroughly clean shoes before reuse. Get medical attention immediately.

### **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 concentrated material is a strong oxidizer and its heat of reaction with reducing agents or combustibles may cause ignition.

### **Explosion:**

Concentrated material reacts explosively with combustible organic or readily oxidizable materials such as: alcohols, turpentine, charcoal, organic refuse, metal powder, hydrogen sulfide, etc. Reacts with most metals to release hydrogen gas which can form explosive mixtures with air.

### **Fire Extinguishing Media:**

If involved in a fire, use water spray.

### **Special Information:**

Increases the flammability of combustible, organic and readily oxidizable materials. 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. Isolate hazard area. Keep unnecessary and unprotected personnel from entering. Contain and recover liquid when possible. Neutralize with alkaline material (soda ash, lime), then 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.

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

---

## 7. Handling and Storage

Store in a cool, dry, ventilated storage area with acid resistant floors and good drainage. Protect from physical damage. Keep out of direct sunlight and away from heat, water, and incompatible materials. Do not wash out container and use it for other purposes. When diluting, the acid should always be added slowly to water and in small amounts. Never use hot water and never add water to the acid. Water added to acid can cause uncontrolled boiling and splashing. 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 Nitric Acid:

OSHA Permissible Exposure Limit (PEL):

2 ppm (TWA)

ACGIH Threshold Limit Value (TLV):

2 ppm (TWA); 4 ppm (STEL)

-OSHA Permissible Exposure Limit (PEL):

15 mg/m<sup>3</sup> total dust, 5 mg/m<sup>3</sup> respirable dust for calcium carbonate

### **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, wear a supplied air, full-facepiece respirator, airtight hood, or full-facepiece self-contained breathing apparatus. Breathing air quality must meet the requirements of the OSHA respiratory protection standard (29CFR1910.134). Canister-type respirators using sorbents are ineffective.

### **Skin Protection:**

Rubber or neoprene gloves and additional protection including impervious boots, apron, or coveralls, as needed in areas of unusual exposure 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:**

Completely soluble in water.

**Specific Gravity:**

No information found.

**pH:**

No information found.

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

> 95

**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:**

When heated to decomposition, emits toxic nitrogen oxides fumes and hydrogen nitrate. Caustic fumes of calcium oxide may form when heated to decomposition.

**Hazardous Polymerization:**

Will not occur.

**Incompatibilities:**

A dangerously powerful oxidizing agent, concentrated nitric acid is incompatible with most substances, especially strong bases, metallic powders, carbides, hydrogen sulfide, turpentine, and combustible organics.

**Conditions to Avoid:**

Heat, incompatibles.

---

## 11. Toxicological Information

For Nitric Acid: Investigated as a mutagen and reproductive effector.

-----\Cancer Lists\-----			
Ingredient	---NTP Known	Carcinogen Anticipated	IARC Category
Calcium Carbonate (471-34-1)	No	No	None
Nitric Acid (7697-37-2)	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 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:** CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (NITRIC ACID)

**Hazard Class:** 8

**UN/NA:** UN3264

**Packing Group:** III

**Information reported for product/size:** 150ML

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

**Proper Shipping Name:** CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (NITRIC ACID)

**Hazard Class:** 8

**UN/NA:** UN3264

**Packing Group:** III

**Information reported for product/size:** 150ML

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

**Proper Shipping Name:** CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (NITRIC ACID)

**Hazard Class:** 8

**UN/NA:** UN3264

**Packing Group:** III

**Information reported for product/size:** 150ML

## 15. Regulatory Information

-----\Chemical Inventory Status - Part 1\-----				
Ingredient	TSCA	EC	Japan	Australia
Calcium Carbonate (471-34-1)	Yes	Yes	Yes	Yes
Nitric Acid (7697-37-2)	Yes	Yes	Yes	Yes
Water (7732-18-5)	Yes	Yes	Yes	Yes

-----\Chemical Inventory Status - Part 2\-----				
Ingredient	Korea	--Canada--		Phil.
		DSL	NDSL	
Calcium Carbonate (471-34-1)	Yes	Yes	No	Yes
Nitric Acid (7697-37-2)	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.
Calcium Carbonate (471-34-1)	No	No	No	No
Nitric Acid (7697-37-2)	1000	1000	Yes	No
Water (7732-18-5)	No	No	No	No

-----\Federal, State & International Regulations - Part 2\-----			
Ingredient	CERCLA	-TSCA-	
		-RCRA-	8(d)
		261.33	
Calcium Carbonate (471-34-1)	No	No	No
Nitric Acid (7697-37-2)	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:** 2PE

**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: 0 Reactivity: 0 Other: **Oxidizer**

**Label Hazard Warning:**

DANGER! CORROSIVE. LIQUID AND MIST CAUSE SEVERE BURNS TO ALL BODY TISSUE. MAY BE FATAL IF SWALLOWED OR INHALED. VAPOR IRRITATING TO EYES AND RESPIRATORY TRACT. INHALATION MAY CAUSE LUNG AND TOOTH DAMAGE.

**Label Precautions:**

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

Do not breathe vapor or mist.

Use only with adequate ventilation.

Wash thoroughly after handling.

Keep container closed.

**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 get medical attention immediately.

**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.)



## Material Safety Data Sheet Chlorophenol Red, Sodium Salt

### Section 1 - Chemical Product and Company Identification

**MSDS Name:**

Chlorophenol Red, Sodium Salt

**Catalog Numbers:**

LC13070

**Synonyms:**

3', 3''-Dichlorophenolsulfonephthalein, sodium salt; CPR

**Company Identification:**

LabChem Inc

200 William Pitt Way

Pittsburgh, PA 15238

**Company Phone Number:**

(412) 826-5230

**Emergency Phone Number:**

(800) 424-9300

**CHEMTREC Phone Number:**

(800) 424-9300

### Section 2 – Composition, Information on Ingredients

CAS#	Chemical Name:	Percent
123333-64-2	Chlorophenol Red sodium salt	100

### Section 3 - Hazards Identification

#### Emergency Overview

**Appearance:** *Red-brown powder***Caution.** May cause eye and skin irritation. May cause respiratory and digestive tract irritation.**Target Organs:** *None.*

#### Potential Health Effects

**Eye:**

May cause eye irritation.

**Skin:**

May cause skin irritation.

**Ingestion:**

May cause gastrointestinal irritation with nausea, vomiting and diarrhea.

**Inhalation:**

May cause respiratory tract irritation.

**Chronic:**

No information found.



## Material Safety Data Sheet Chlorophenol Red, Sodium Salt

### Section 4 - First Aid Measures

**Eyes:**

Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.

**Skin:**

Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse.

**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:**

Remove from exposure and move to fresh air immediately. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical aid.

**Notes to Physician:**

Treat symptomatically and supportively.

### Section 5 - Fire Fighting Measures

**General Information:**

As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.

**Extinguishing Media:**

Substance is noncombustible; use agent most appropriate to extinguish surrounding fire.

**Autoignition Temperature:**

Not applicable.

**Flash Point:**

Not applicable.

**NFPA Rating:**

Not available.

**Explosion Limits:**

Lower: n/a      Upper: n/a

### Section 6 - Accidental Release Measures

**General Information:**

Use proper personal protective equipment as indicated in Section 8.

**Spills/Leaks:**

Clean up spills immediately, observing precautions in the Protective Equipment section. Sweep up or absorb material, then place into a suitable clean, dry, closed container for disposal. Avoid generating dusty conditions. Provide ventilation.





## Material Safety Data Sheet Chlorophenol Red, Sodium Salt

### Section 7 - Handling and Storage

**Handling:**

Wash thoroughly after handling. Use with adequate ventilation. Minimize dust generation and accumulation. Avoid contact with skin and eyes. Avoid ingestion and inhalation.

**Storage:**

Store in a cool, dry, well-ventilated area away from incompatible substances. Keep containers tightly closed.

### Section 8 - Exposure Controls, Personal Protection

**Engineering Controls:**

Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use adequate ventilation to keep airborne concentrations low.

**Exposure Limits:**

Chemical Name:	ACGIH	NIOSH	OSHA
Chlorophenol Red sodium salt	none listed	none listed	none listed

**OSHA Vacated PELs:**

Chlorophenol Red Sodium Salt: 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 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. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

### Section 9 - Physical and Chemical Properties

<b>Physical State:</b>	Solid
<b>Color:</b>	Red-brown
<b>Odor:</b>	Odorless
<b>pH:</b>	Not available
<b>Vapor Pressure:</b>	Not available
<b>Vapor Density:</b>	Not available
<b>Evaporation Rate:</b>	Not available
<b>Viscosity:</b>	Not available
<b>Boiling Point:</b>	Not available
<b>Freezing/Melting Point:</b>	Not available
<b>Decomposition Temperature:</b>	Not available



## Material Safety Data Sheet Chlorophenol Red, Sodium Salt

**Solubility in water:** Soluble  
**Specific Gravity/Density:** Not available  
**Molecular Formula:** C<sub>19</sub>H<sub>11</sub>Cl<sub>2</sub>O<sub>5</sub>SSNa  
**Molecular Weight:** 445.25

### Section 10 - Stability and Reactivity

**Chemical Stability:**

Stable under normal temperatures and pressures.

**Conditions to Avoid:**

Incompatible materials, dust generation, strong oxidants.

**Incompatibilities with Other Materials:**

Oxidizing agents.

**Hazardous Decomposition Products:**

Carbon monoxide, oxides of sulfur, carbon dioxide, hydrogen chloride.

**Hazardous Polymerization:**

Has not been reported.

### Section 11 - Toxicological Information

**RTECS:**

CAS# 123333-64-2: unlisted.

**LD50/LC50:**

Not available.

**Carcinogenicity:**

CAS# 123333-64-2: Not listed by ACGIH, IARC, NTP, or CA Prop 65.

**Epidemiology:**

No information found

**Teratogenicity:**

No information found

**Reproductive:**

No information found

**Mutagenicity:**

No information found

**Neurotoxicity:**

No information found

### Section 12 - Ecological Information

No information found

### Section 13 - Disposal Considerations

Dispose of in accordance with Federal, State, and local regulations.



**Material Safety Data Sheet**  
**Chlorophenol Red, Sodium Salt**

**Section 14 - Transport Information**

**US DOT**

**Shipping Name:** Not regulated  
**Hazard Class:**  
**UN Number:**  
**Packing Group:**

**Section 15 - Regulatory Information**

**US Federal**

**TSCA:**

CAS# 123333-64-2 is not listed on the TSCA inventory.

**SARA Reportable Quantities (RQ):**

None of the chemicals in this material have an RQ.

**CERCLA/SARA Section 313:**

No chemicals are reportable under Section 313.

**OSHA - Highly Hazardous:**

None of the chemicals in this product are considered highly hazardous by OSHA.

**US State**

**State Right to Know:**

CAS# 123333-64-2 is not present on state lists from CA, PA, MN, MA, FL, or NJ.

**California Regulations:**

None.

**European/International Regulations**

**Canadian DSL/NDSL:**

CAS# 123333-64-2 is not listed on Canada's DSL or NDSL List.

**Canada Ingredient Disclosure List:**

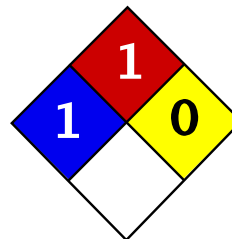
CAS# 123333-64-2 is not listed on the Canadian Ingredient Disclosure List.

**Section 16 - Other Information**

MSDS Creation Date: October 24, 2007

Revision Date: November 19, 2007

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Health	1
Fire	1
Reactivity	0
Personal Protection	E

## Material Safety Data Sheet Clayton yellow MSDS

### Section 1: Chemical Product and Company Identification

**Product Name:** Clayton yellow

**Catalog Codes:** SLC2599

**CAS#:** 1829-00-1

**RTECS:** DL6423000

**TSCA:** TSCA 8(b) inventory: Clayton yellow

**CI#:** 19540

**Synonym:** Direct Yellow 9; Thiazol Yellow G Titan Yellow;  
2,2'-(1-triazene-1,3-diyl-di-4,1-phenylene)bis(6-methyl-7-benzothiazosulfonic  
acid disodium salt

**Chemical Name:** Not available.

**Chemical Formula:** C<sub>28</sub>H<sub>19</sub>N<sub>5</sub>O<sub>6</sub>S<sub>4</sub>Na<sub>2</sub>

**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
Clayton yellow	1829-00-1	100

**Toxicological Data on Ingredients:** Not applicable.

### 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:**

Hazardous in case of ingestion.

Slightly hazardous in case of skin contact (irritant), of eye contact (irritant), of inhalation.

CARCINOGENIC EFFECTS: Not available.

MUTAGENIC EFFECTS: Not available.

TERATOGENIC EFFECTS: Not available.

DEVELOPMENTAL TOXICITY: Not available.

## Section 4: First Aid Measures

**Eye Contact:** No known effect on eye contact, rinse with water for a few minutes.

**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. Wash contaminated clothing before reusing.

**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:** May be combustible at high temperature.

**Auto-Ignition Temperature:** Not available.

**Flash Points:** Not available.

**Flammable Limits:** Not available.

**Products of Combustion:**

These products are carbon oxides (CO, CO<sub>2</sub>), nitrogen oxides (NO, NO<sub>2</sub>...), sulfur oxides (SO<sub>2</sub>, SO<sub>3</sub>...). Some metallic oxides.

**Fire Hazards in Presence of Various Substances:** Not available.

**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:**

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:

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 dust.

### Storage:

Keep container dry. Keep in a cool place. Ground all equipment containing material. Keep container tightly closed. Keep in a cool, well-ventilated place. Combustible materials should be stored away from extreme heat and away from strong oxidizing agents.

## 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:** Not available.

## Section 9: Physical and Chemical Properties

**Physical state and appearance:** Solid.

**Odor:** Not available.

**Taste:** Not available.

**Molecular Weight:** 695.73 g/mole

**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:** 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.

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:** 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 more toxic.

**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: Clayton yellow

**Other Regulations:** Not available..

**Other Classifications:**

**WHMIS (Canada):** Not controlled under WHMIS (Canada).

**DSCL (EEC):**

This product is not classified according to the EU regulations.

**HMIS (U.S.A.):**

**Health Hazard:** 1

**Fire Hazard:** 1

**Reactivity:** 0

**Personal Protection:** E

**National Fire Protection Association (U.S.A.):**

**Health:** 1

**Flammability:** 1

**Reactivity:** 0

**Specific hazard:**

**Protective Equipment:**

Gloves.

Lab coat.

Dust respirator. Be sure to use an approved/certified respirator or equivalent.

Safety glasses.

### Section 16: Other Information

**References:** Not available.

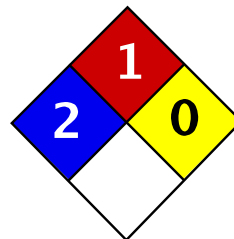
**Other Special Considerations:** Not available.



**Created:** 10/09/2005 04:56 PM

**Last Updated:** 11/06/2008 12:00 PM

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Health	2
Fire	1
Reactivity	0
Personal Protection	E

## Material Safety Data Sheet Cresol red MSDS

### Section 1: Chemical Product and Company Identification

**Product Name:** Cresol red

**Catalog Codes:** SLC2326

**CAS#:** 1733-12-6

**RTECS:** Not available.

**TSCA:** TSCA 8(b) inventory: Cresol red

**CI#:** Not available.

**Synonym:** o-Cresolsulfonphthalein

**Chemical Formula:** C21H18O5S

**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
Cresol red	1733-12-6	100

**Toxicological Data on Ingredients:** Cresol red LD50: Not available. LC50: Not available.

### Section 3: Hazards Identification

**Potential Acute Health Effects:**

Very hazardous in case of ingestion. Hazardous in case of skin contact (irritant), of eye contact (irritant), of inhalation. Slightly hazardous in case of skin contact (permeator).

**Potential Chronic Health Effects:**

CARCINOGENIC EFFECTS: Not available.

MUTAGENIC EFFECTS: Not available.

TERATOGENIC EFFECTS: Not available.

DEVELOPMENTAL TOXICITY: Not available.

The substance is toxic to lungs, mucous membranes.

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. 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. Wash contaminated clothing before reusing.

**Serious Skin Contact:**

Wash with a disinfectant soap and cover the contaminated skin with an anti-bacterial cream. Seek medical attention.

**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:** May be combustible at high temperature.

**Auto-Ignition Temperature:** Not available.

**Flash Points:** Not available.

**Flammable Limits:** Not available.

**Products of Combustion:** These products are carbon oxides (CO, CO<sub>2</sub>).

**Fire Hazards in Presence of Various Substances:** Not available.

**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:**

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:**

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 dust. 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. Avoid contact with skin and eyes.

**Storage:**

Keep container dry. Keep in a cool place. Ground all equipment containing material. Keep container tightly closed. Keep in a cool, well-ventilated place. Combustible materials should be stored away from extreme heat and away from strong oxidizing agents.

## 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:** 382.43 g/mole

**Color:** Not available.

**pH (1% soln/water):** Not available.

**Boiling Point:** Decomposes.

**Melting Point:** 300°C (572°F)

**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:** The substance is toxic to lungs, mucous membranes.

**Other Toxic Effects on Humans:**

Very hazardous in case of ingestion.

Hazardous in case of skin contact (irritant), of inhalation.

Slightly hazardous in case of skin contact (permeator).

**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 more toxic.

**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: Cresol red

**Other Regulations:** OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200).

**Other Classifications:**

**WHMIS (Canada):** CLASS D-2A: Material causing other toxic effects (VERY TOXIC).

**DSCL (EEC):** R36/38- Irritating to eyes and skin.

**HMIS (U.S.A.):**

**Health Hazard:** 2

**Fire Hazard:** 1

**Reactivity:** 0

**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.

Splash goggles.

### Section 16: Other Information

**References:** Not available.

**Other Special Considerations:** Not available.

**Created:** 10/09/2005 05:00 PM

**Last Updated:** 11/06/2008 12:00 PM

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## Material Safety Data Sheet

### o-Cresolphthalein, 0.2% Alcoholic

#### Section 1 - Chemical Product and Company Identification

**MSDS Name:**

o-Cresolphthalein, 0.2% Alcoholic

**Catalog Numbers:**

LC13539

**Synonyms:****Company Identification:**LabChem, Inc.  
200 William Pitt Way  
Pittsburgh, PA 15238**Company Phone Number:**

(412) 826-5230

**Emergency Phone Number:**

(800) 424-9300

**CHEMTREC Phone Number:**

(800) 424-9300

#### Section 2 - Composition, Information on Ingredients

CAS#	Chemical Name:	Percent
596-27-0	o-Cresolphthalein	0.2
64-17-5	Ethyl alcohol	balance

#### Section 3 - Hazards Identification

##### Emergency Overview

**Appearance:** Colorless liquid.**Caution!** Flammable liquid and vapor. Warning! May cause eye and skin irritation. May cause respiratory and digestive tract irritation. Flash Point: > 73°F.**Target Organs:** Eyes, skin, respiratory system, central nervous system, liver, blood and reproductive system.

##### Potential Health Effects

**Eye:**

May cause eye irritation, Stinging, burning sensation, and lacrymation.

**Skin:**

May cause irritation and defatting.

**Ingestion:**

Ingestion can result in toxic intoxication, poisoning, headache, nausea, diarrhea and fever. Large doses can cause hemolysis, hemoglobinuria, hyperglycemia, glycosuria, renal failure, convulsions, narcosis, and paralysis.





## Material Safety Data Sheet

### **o-Cresolphthalein, 0.2% Alcoholic**

**Inhalation:**

May cause central nervous system effects including vertigo, anxiety, depression, muscle incoordination, emotional instability, respiratory irritation, dizziness, weakness, fatigue, nausea, headache, unconsciousness, asphyxiation (effects of narcotic). May cause irritation and dehydration of mucous membranes.

**Chronic:**

Repeated or excessive exposure may result in respiratory irritation, cough, headache, dermatitis, conjunctivitis, with possible liver and kidney damage, weight loss, neurological disorders (tremors, amnesia, myocardial and circulatory failure).

### Section 4 - First Aid Measures

**Eyes:**

Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower lids until no evidence of chemical remains. Get medical aid at once.

**Skin:**

Get medical aid. Immediately flush skin with plenty of soap and water for at least 15 minutes while removing contaminated clothing and shoes. Remove contaminated clothing and shoes.

**Ingestion:**

Give conscious victim 2-4 cupfuls of milk or water. Get medical aid at once. Give oxygen if respiration is depressed. Induce vomiting (touch finger to back of throat) keeping head lower than hips (prevent aspiration into lungs).

**Inhalation:**

Give artificial respiration if necessary. Get medical aid. Keep victim warm, at rest. Move victim to fresh air.

**Notes to Physician:**

Treat symptomatically and supportively.

### Section 5 - Fire Fighting Measures

**General Information:**

Vapors heavier than air, may travel considerable distance and flash back from source of ignition. Move container if possible, avoid breathing vapors or dust. Dangerous fire/negligible explosion hazard when exposed to heat or flame.

**Extinguishing Media:**

For small fires, use dry chemical, carbon dioxide, water spray or alcohol-resistant foam.

**Autoignition Temperature:**

No information found.

**Flash Point:**

> 73°F

**NFPA Rating:**

CAS# 596-27-0: health - 1; flammability - 0; reactivity - 0.

CAS# 64-17-5: health-0; flammability-3; reactivity-0

**Explosion Limits:**

Lower: Not available      Upper: Not available



## Material Safety Data Sheet o-Cresolphthalein, 0.2% Alcoholic

### Section 6 - Accidental Release Measures

**General Information:**

Use proper personal protective equipment as indicated in Section 8.

**Spills/Leaks:**

Absorb spills with absorbent (vermiculite, sand, fuller's earth) and place in plastic bags for later disposal. Keep out of sewers/drains.

### Section 7 - Handling and Storage

**Handling:**

Wash thoroughly after handling. Avoid breathing dust, vapor, mist, or gas.

**Storage:**

Store container tightly closed at room temperature. Protect from heat and incompatibles.

### Section 8 - Exposure Controls, Personal Protection

**Engineering Controls:**

Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Provide local exhaust or general dilution ventilation.

**Exposure Limits:**

Chemical Name:	ACGIH	NIOSH	OSHA
o-Cresolphthalein	none listed	none listed	none listed
Ethyl alcohol	1000 ppm TWA	1000 ppm TWA; 1900 mg/m <sup>3</sup> TWA	1000 ppm TWA; 1900 mg/m <sup>3</sup> TWA;

**OSHA Vacated PELs:**

Ethyl alcohol: 1000 ppm TWA; 1900 mg/m<sup>3</sup> TWA

**Personal Protective Equipment****Eyes:**

Do not wear contact lenses when working with chemicals. An eye wash fountain should be available in the immediate work area. Wear splash-proof safety goggles.

**Skin:**

Wear appropriate protective gloves to prevent skin exposure.

**Clothing:**

Wear appropriate protective clothing to prevent skin exposure.

**Respirators:**

Firefighting-- any self-contained breathing apparatus with full facepiece operated in pressure-demand mode. High Levels- CCROV/SAR/SCBA. Firefighting- SCBAF:PP,PD. (Respirator Codes: (NIOSH) Publication No. 78-210).



## Material Safety Data Sheet

### o-Cresolphthalein, 0.2% Alcoholic

#### Section 9 - Physical and Chemical Properties

<b>Physical State:</b>	Liquid
<b>Color:</b>	Colorless
<b>Odor:</b>	Alcohol-like
<b>pH:</b>	Neutral
<b>Vapor Pressure:</b>	Not available
<b>Vapor Density:</b>	Not available
<b>Evaporation Rate:</b>	< ether
<b>Viscosity:</b>	Not available
<b>Boiling Point:</b>	Not available
<b>Freezing/Melting Point:</b>	Not available
<b>Decomposition Temperature:</b>	Not available
<b>Solubility in water:</b>	Soluble.
<b>Specific Gravity/Density:</b>	Not available
<b>Molecular Formula:</b>	Not applicable
<b>Molecular Weight:</b>	Not applicable

#### Section 10 - Stability and Reactivity

**Chemical Stability:**

Stable under normal temperatures and pressures.

**Conditions to Avoid:**

Incompatible materials, excess heat.

**Incompatibilities with Other Materials:**

Strong oxidizing agents, alkali metals, nitric acid, perchloric acid, sulfuric acid, chlorine, hypochlorites, hydrochloric acid.

**Hazardous Decomposition Products:**

Oxides of carbon, formaldehyde, corrosive fumes of acrolein.

**Hazardous Polymerization:**

Has not been reported

#### Section 11 - Toxicological Information

**RTECS:**

CAS# 596-27-0: SM8390000.

CAS# 64-17-5: KQ6300000.

**LD50/LC50:**

CAS# 596-27-0:

Not available

CAS# 64-17-5:

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.



## Material Safety Data Sheet

### o-Cresolphthalein, 0.2% Alcoholic

#### **Carcinogenicity:**

CAS# 596-27-0: Not listed as a carcinogen by ACGIH, IARC, NIOSH, NTP, OSHA, or CA Prop 65.

CAS# 64-17-5

ACGIH: A4 - Not Classifiable as a Human Carcinogen

California: Not listed.

NIOSH: Not listed.

NTP: Not listed.

OSHA: Not listed.

IARC: Not listed.

#### **Epidemiology:**

Toxicity: Reagent alcohol (90% ethanol, 5% methanol, 5% isopropanol) is considered an irritant/narcotic; mutagenic/-teratogenic data. Isopropanol manufactured by the strong acid process is listed in group 1 by IARC. Workers manufacturing isopropanol by this process showed increased sinus and laryngeal cancer.

#### **Teratogenicity:**

No information found.

#### **Reproductive:**

No information found.

#### **Mutagenicity:**

No information found.

#### **Neurotoxicity:**

No information found.

### Section 12 - Ecological Information

No information found.

### Section 13 - Disposal Considerations

Dispose of in accordance with Federal, State, and local regulations.

### Section 14 - Transport Information

#### **US DOT**

**Shipping Name:** Ethanol solution

**Hazard Class:** 3

**UN Number:** UN1170

**Packing Group:** PG III

### Section 15 - Regulatory Information

#### **US Federal**

##### **TSCA:**

CAS# 596-27-0 is listed on the TSCA Inventory.

CAS# 64-17-5 is listed on the TSCA Inventory.



## Material Safety Data Sheet o-Cresolphthalein, 0.2% Alcoholic

**SARA Reportable Quantities (RQ):**

None of the components are on this list.

**CERCLA/SARA Section 313:**

None of the components are on this list.

**OSHA - Highly Hazardous:**

None of the components are on this list.

### US State

**State Right to Know:**

Ethyl alcohol can be found on the following state Right-to-Know lists: California, New Jersey, Florida, Pennsylvania, Minnesota, Massachusetts.

**California Regulations:**

WARNING: This product contains Ethyl alcohol, a chemical known to the state of California to cause birth defects or other reproductive harm.

### European/International Regulations

**Canadian DSL/NDSL:**

CAS# 596-27-0 is listed on Canada's DSL List.

CAS# 64-17-5 is listed on Canada's DSL List.

**Canada Ingredient Disclosure List:**

CAS# 596-27-0 is not listed on Canada's Ingredient Disclosure List.

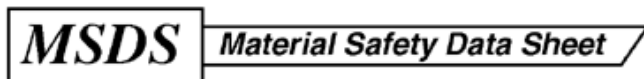
CAS# 64-17-5 is listed on Canada's Ingredient Disclosure List.

## Section 16 - Other Information

MSDS Creation Date: November 26, 2007

Revision Date: November 27, 2007

*Information in this MSDS is from available published sources and is believed to be accurate. No warranty, express or implied, is made and LabChem Inc. assumes no liability resulting from the use of this MSDS. The user must determine suitability of this information for his application.*



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 (1-800-582-2537) for assistance.

# 1,5-DIPHENYLCARBOHYDRAZIDE

## 1. Product Identification

**Synonyms:** 1,5-Diphenylcarbazine; S-diphenylcarbazine; DPC

**CAS No.:** 140-22-7

**Molecular Weight:** 242.29

**Chemical Formula:** C<sub>6</sub>H<sub>5</sub>NHNHCONHNHC<sub>6</sub>H<sub>5</sub>

**Product Codes:**

J.T. Baker: K620

Mallinckrodt: 1842

## 2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
1,5-Diphenylcarbazine	140-22-7	90 - 100%	Yes

## 3. Hazards Identification

### Emergency Overview

**WARNING! 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: 2 - Moderate

Flammability Rating: 1 - Slight

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

---

Information on the human health effects from exposure to this substance is limited.

### **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 soap and water for at least 15 minutes while removing contaminated clothing and shoes. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention.

### **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. 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:**

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 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 to pinkish white crystalline powder.

### **Odor:**

No information found.

### **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:**

168 - 171C (334 - 340F)

### **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:**

Strong oxidizers.

**Conditions to Avoid:**

Heat, light, 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	
1,5-Diphenylcarbazide (140-22-7)	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
1,5-Diphenylcarbazide (140-22-7)	Yes	Yes	Yes	Yes

-----\Chemical Inventory Status - Part 2\-----				
Ingredient	Korea	--Canada--		Phil.
		DSL	NDSL	
1,5-Diphenylcarbazide (140-22-7)	Yes	Yes	No	Yes

-----\Federal, State & International Regulations - Part 1\-----				
Ingredient	-SARA 302-		-----SARA 313-----	
	RQ	TPQ	List	Chemical Catg.
1,5-Diphenylcarbazide (140-22-7)	No	No	No	No

-----\Federal, State & International Regulations - Part 2\-----			
Ingredient	CERCLA	-RCRA-	-TSCA-
		261.33	8(d)
1,5-Diphenylcarbazide (140-22-7)	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:**

WARNING! MAY BE HARMFUL IF SWALLOWED, INHALED OR ABSORBED THROUGH SKIN.  
 MAY CAUSE IRRITATION TO SKIN, EYES, AND RESPIRATORY TRACT.

**Label Precautions:**

- Avoid breathing dust.
- Avoid contact with eyes, skin and clothing.
- Keep container closed.
- Use 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 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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\*\*\*\*\*

**Prepared by:** Environmental Health & Safety

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

# Material Safety Data Sheet

## alpha, alpha'-Dipyridyl

ACC# 08235

### Section 1 - Chemical Product and Company Identification

**MSDS Name:** alpha, alpha'-Dipyridyl

**Catalog Numbers:** D95-5, ZZD9550015

**Synonyms:** 2, 2'-Dipyridyl; 2,2'-Bipyridine.

**Company Identification:**

Fisher Scientific

1 Reagent Lane

Fair Lawn, NJ 07410

**For information, call:** 201-796-7100

**Emergency Number:** 201-796-7100

**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
366-18-7	2,2'-Dipyridyl	100	206-674-4

### Section 3 - Hazards Identification

#### EMERGENCY OVERVIEW

Appearance: light cream to yellow solid.

**Warning!** Toxic if swallowed. Harmful if absorbed through skin or if inhaled. Causes eye, skin, and respiratory tract irritation.

**Target Organs:** Eyes, skin, mucous membranes.

#### Potential Health Effects

**Eye:** Causes eye irritation.

**Skin:** Causes skin irritation. Harmful if absorbed through the skin.

**Ingestion:** May be harmful if swallowed. Causes digestive tract irritation. Toxic if swallowed.

**Inhalation:** Harmful if inhaled. Causes respiratory tract irritation.

**Chronic:** No information found.

### Section 4 - First Aid Measures

**Eyes:** Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.

**Skin:** Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Get medical aid if irritation develops or persists.

**Ingestion:** If victim is conscious and alert, give 2-4 cupfuls of milk or water. Never give anything by mouth to an unconscious person. Get medical aid.

**Inhalation:** Remove from exposure and move to fresh air immediately. Get medical aid if cough or

other symptoms appear.

**Notes to Physician:** Treat symptomatically and supportively.

## Section 5 - Fire Fighting Measures

**General Information:** As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. This material in sufficient quantity and reduced particle size is capable of creating a dust explosion.

**Extinguishing Media:** Use water spray, dry chemical, carbon dioxide, or chemical foam.

**Flash Point:** Not applicable.

**Autoignition Temperature:** Not applicable.

**Explosion Limits, Lower:** Not available.

**Upper:** Not available.

**NFPA Rating:** (estimated) Health: 2; Flammability: 1; 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. Avoid generating dusty conditions. Provide ventilation.

## Section 7 - Handling and Storage

**Handling:** Wash thoroughly after handling. Use with adequate ventilation. Minimize dust generation and accumulation. Avoid contact with eyes, skin, and clothing. Keep container tightly closed. Avoid breathing dust.

**Storage:** 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:** Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use adequate ventilation to keep airborne concentrations low.

### Exposure Limits

Chemical Name	ACGIH	NIOSH	OSHA - Final PELs
2,2'-Dipyridyl	none listed	none listed	none listed

**OSHA Vacated PELs:** 2,2'-Dipyridyl: 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. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

## Section 9 - Physical and Chemical Properties

**Physical State:** Solid  
**Appearance:** light cream to yellow  
**Odor:** Not available.  
**pH:** Not available.  
**Vapor Pressure:** Negligible.  
**Vapor Density:** Not available.  
**Evaporation Rate:** Negligible.  
**Viscosity:** 1.51 cSt 90C  
**Boiling Point:** 273 deg C  
**Freezing/Melting Point:** 69 - 70 deg C  
**Decomposition Temperature:** Not available.  
**Solubility:** 0.5%  
**Specific Gravity/Density:** Not available.  
**Molecular Formula:** C<sub>10</sub>H<sub>8</sub>N<sub>2</sub>  
**Molecular Weight:** 156.19

## Section 10 - Stability and Reactivity

**Chemical Stability:** Stable. Stable under normal temperatures and pressures.  
**Conditions to Avoid:** High temperatures, dust generation.  
**Incompatibilities with Other Materials:** Strong oxidizers.  
**Hazardous Decomposition Products:** Nitrogen oxides, carbon monoxide, carbon dioxide.  
**Hazardous Polymerization:** Has not been reported.

## Section 11 - Toxicological Information

**RTECS#:**  
**CAS#** 366-18-7: DW1750000  
**LD50/LC50:**  
**CAS#** 366-18-7:  
Oral, mouse: LD50 = 330 mg/kg;  
Oral, rat: LD50 = 100 mg/kg;

**Carcinogenicity:**  
**CAS#** 366-18-7: Not listed by ACGIH, IARC, NTP, or CA Prop 65.

**Epidemiology:** No information found  
**Teratogenicity:** This chelator for ferrous iron was given intraperitoneally to rats on days 11.5 through 14.5 in doses of 60-75 mg per kg. Skeletal defects especially of the limbs were found.  
**Reproductive Effects:** See actual entry in RTECS for complete information.  
**Mutagenicity:** See actual entry in RTECS for complete information.  
**Neurotoxicity:** No information found  
**Other Studies:**

## 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:** None listed.

## Section 14 - Transport Information

	US DOT	Canada TDG
<b>Shipping Name:</b>	DOT regulated - small quantity provisions apply (see 49CFR173.4)	No information available.
<b>Hazard Class:</b>		
<b>UN Number:</b>		
<b>Packing Group:</b>		

## Section 15 - Regulatory Information

### US FEDERAL

#### TSCA

CAS# 366-18-7 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.

#### CERCLA Hazardous Substances and corresponding RQs

None of the chemicals in this material have an RQ.

#### SARA Section 302 Extremely Hazardous Substances

None of the chemicals in this product have a TPO.

#### SARA Codes

CAS # 366-18-7: immediate.

**Section 313** No chemicals are reportable under Section 313.

#### Clean Air Act:

This material does not contain any hazardous air pollutants.

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# 366-18-7 is not present on state lists from CA, PA, MN, MA, FL, or NJ.

#### California Prop 65

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:**

T

**Risk Phrases:**

- R 20/21 Harmful by inhalation and in contact with skin.
- R 25 Toxic if swallowed.
- R 36/37/38 Irritating to eyes, respiratory system and skin.

**Safety Phrases:**

- S 26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
- S 36/37/39 Wear suitable protective clothing, gloves and eye/face protection.
- S 45 In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

**WGK (Water Danger/Protection)**

CAS# 366-18-7: 2

**Canada - DSL/NDSL**

CAS# 366-18-7 is listed on Canada's DSL List.

**Canada - WHMIS**

This product has a WHMIS classification of D1B, D2B.

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all of the information required by those regulations.

**Canadian Ingredient Disclosure List**

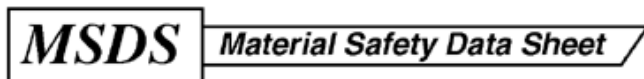
**Section 16 - Additional Information**

**MSDS Creation Date:** 12/12/1997

**Revision #8 Date:** 5/17/2007

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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.

# ERIOCHROME BLACK T

## 1. Product Identification

**Synonyms:** Moderate Black II; CI 14645; Eriochrome Black T Supra

**CAS No.:** 1787-61-7

**Molecular Weight:** 461.38

**Chemical Formula:** C<sub>20</sub>H<sub>12</sub>O<sub>7</sub>N<sub>3</sub>Na

**Product Codes:**

J.T. Baker: L126

Mallinckrodt: 2419

## 2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
Eriochrome Black T	1787-61-7	90 - 100%	Yes

## 3. Hazards Identification

### Emergency Overview

**WARNING! TOXICOLOGICAL PROPERTIES UNKNOWN.** 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

---

The toxicological properties of this material have not been investigated.

**Inhalation:**

No information found.

**Ingestion:**

No information found.

**Skin Contact:**

No information found.

**Eye Contact:**

No information found.

**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:**

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:**

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.

---

## 9. Physical and Chemical Properties

### **Appearance:**

Black powder.

### **Odor:**

Odorless.

### **Solubility:**

Moderate solubility in water.

### **Specific Gravity:**

No information found.

### **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:**

Burning may produce carbon monoxide, carbon dioxide, sulfur oxides, and nitrogen oxides.

### **Hazardous Polymerization:**

Will not occur.  
**Incompatibilities:**  
 Strong oxidizers.  
**Conditions to Avoid:**  
 Incompatibles.

## 11. Toxicological Information

LD50 Oral Rat: 17590 mg/kg

-----\Cancer Lists\-----			
Ingredient	---NTP Carcinogen---		IARC Category
	Known	Anticipated	
Erichrome Black T (1787-61-7)	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
Erichrome Black T (1787-61-7)	Yes	Yes	Yes	Yes

-----\Chemical Inventory Status - Part 2\-----				
Ingredient	Korea	--Canada--		Phil.
		DSL	NDSL	
Erichrome Black T (1787-61-7)	Yes	Yes	No	Yes

-----\Federal, State & International Regulations - Part 1\-----				
Ingredient	-SARA 302-		-----SARA 313-----	
	RQ	TPQ	List	Chemical Catg.
Erichrome Black T (1787-61-7)	No	No	No	No

-----\Federal, State & International Regulations - Part 2\-----			
Ingredient	CERCLA	-RCRA-	-TSCA-
		261.33	8(d)
Erichrome Black T (1787-61-7)	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:**

WARNING! TOXICOLOGICAL PROPERTIES UNKNOWN. 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:**

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

**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.)

# MATERIAL SAFETY DATA SHEET



Date-Issued: 09/25/2000  
MSDS Ref. No: 213110  
Date-Revised: 02/21/2001  
Revision No: 1

Ethyl Alcohol <95%>

## 1. PRODUCT AND COMPANY IDENTIFICATION

**PRODUCT NAME:** Ethyl Alcohol <95%>  
**PRODUCT DESCRIPTION:** Ethyl Alcohol <95%>  
**PRODUCT CODE:** Ethyl Alcohol <95%>  
**PRODUCT FORMULATION NAME:** Ethyl Alcohol <95%>  
**CHEMICAL FAMILY:** Alcohols, Ketones  
**GENERIC NAME:** Special Industrial Solvent

### MANUFACTURER

Americhem Sales Corporation  
340 North Street  
Mason, MI 48854  
**Contact:** Americhem Sales Corporation  
**Product Stewardship:** 517-676-9363  
**Transportation:** 517-676-9363

### 24 HR. EMERGENCY TELEPHONE NUMBERS

**CHEMTREC (U.S.):** (800) 424-9300  
**Canutec** (613) 996-6666  
**Emergency Phone:** 800-424-9300

## 2. COMPOSITION / INFORMATION ON INGREDIENTS

<u>Chemical Name</u>	<u>Wt.%</u>	<u>CAS# EINECS#</u>
Ethanol	~90	64-17-5 200-578-6
Methyl isobutyl ketone	~4	108-10-1
n-Heptane	<1	142-82-5
Water	~6	7732-18-5 231-791-2

## 3. HAZARDS IDENTIFICATION

### EMERGENCY OVERVIEW

IMMEDIATE CONCERNS: CAUTION! May cause eye and skin irritation.

### POTENTIAL HEALTH EFFECTS

EYES: May cause moderate burning, tearing, redness and swelling.

**SKIN:** Moderate irritation and discomfort possible. Defatting of skin, redness and chemical dermatitis possible. Toxic systemic effects from absorption are possible.

**INGESTION:** Gastrointestinal tract irritation and/or discomfort is possible.

**INHALATION:** Dizziness, impaired coordination, headaches and loss of consciousness. Severe respiratory tract irritation. Toxic systemic effects are possible.

**ROUTES OF ENTRY:** Absorption, Inhalation, Ingestion

**TARGET ORGAN STATEMENT:** Liver, Heart, Kidney and CNS toxin.

---

## 4. FIRST AID MEASURES

**EYES:** Immediately flush eyes with plenty of water for 15 minutes. If irritation persists, seek medical attention.

**SKIN:** Wash exposed area with mild soap and water. Get medical attention if irritation develops or persists.

**INGESTION:** Do not induce vomiting, only if victim is conscious. Get immediate medical attention.

**INHALATION:** Remove victim from area of exposure. If unconscious, give oxygen. Give artificial respiration if not breathing. Get immediate medical attention.

---

## 5. FIRE FIGHTING MEASURES

**FLASHPOINT AND METHOD:** ~ (69°F) ASTM D56

**FLAMMABLE LIMITS:** 3.3 to 19.0

**AUTOIGNITION TEMPERATURE:** Not Available

**EXTINGUISHING MEDIA:** Use dry chemical, foam, or carbon dioxide.

**EXPLOSION HAZARDS:** Vapor accumulations may flash and/or explode if ignited. Keep ignition sources, open flames, ect., away from these fumes.

**FIRE FIGHTING PROCEDURES:** Proper respiratory equipment to protect against the hazardous effects of combustion products is recommended. Water in a straight hose stream may cause fire to spread and should be used as a cooling medium only.

---

## 6. ACCIDENTAL RELEASE MEASURES

**SMALL SPILL:**

Extinguish all ignition sources and ventilate area. Evacuate all non-essential personnel. Blanket spill with alcohol resistant foam to limit evaporation. Dike area to contain spill and clean up by absorbing on inert absorbent or by other means. Liquid may be flammable even when mixed with water unless heavily diluted (>5:1). Do not flush into sewers or natural waterways.

### **LARGE SPILL:**

Contain material as described above and call the local fire or police department for immediate emergency assistance.

---

## **7. HANDLING AND STORAGE**

### **HANDLING:**

Use appropriate personal protective equipment as specified in Section 8. Handle in a well ventilated area.

### **STORAGE:**

Store unopened containers under cool, dry and ventilated conditions. Keep away from heat, sparks and flame.

**ELECTROSTATIC ACCUMULATION HAZARD:** When transferring this product, there is potential for the accumulation of static electricity. Consideration should be given to bonding and grounding of equipment during loading, unloading, and transfer of this product.

---

## **8. EXPOSURE CONTROLS / PERSONAL PROTECTION**

### **EXPOSURE GUIDELINES:**

#### **OSHA HAZARDOUS COMPONENTS (29 CFR 1910.1200)**

	<b>EXPOSURE LIMITS</b>						
	<b>OSHA PEL</b>		<b>ACGIH TLV</b>		<b>Supplier OEL</b>		
	<b>ppm</b>	<b>mg/m<sup>3</sup></b>	<b>ppm</b>	<b>mg/m<sup>3</sup></b>	<b>ppm</b>	<b>mg/m<sup>3</sup></b>	
Ethanol	<b>TWA</b>	1000	1900	1000	1880	NL	NL
	<b>STEL</b>	NL	NL	NL	NL	NL	NL
Methyl isobutyl ketone	<b>TWA</b>	50		50			
	<b>STEL</b>			75			
n-Heptane	<b>TWA</b>	500		400			
	<b>STEL</b>			500			

**ENGINEERING CONTROLS:** If current ventilation practices are not adequate to maintain airborne concentrations below the established exposure guidelines, additional ventilation or exhaust systems may be required. Where explosive mixtures may be present, electrical systems safe for such locations must be used.



## PERSONAL PROTECTIVE EQUIPMENT

**EYES AND FACE:** Wear safety glasses with side shields or goggles when handling this material.

**SKIN:** To prevent any contact, wear impervious protective clothing such as neoprene or butyl rubber gloves, apron, boots or whole bodysuit, as appropriate.

**RESPIRATORY:** Use NIOSH/MSHA approved respirators when vapors or mist concentrations exceed permissible exposure limits.

**PROTECTIVE CLOTHING:** Chemical resistant boots, apron, etc. as necessary to prevent contamination of clothing and skin contact.

---

## 9. PHYSICAL AND CHEMICAL PROPERTIES

**PHYSICAL STATE:** Liquid

**ODOR:** Mild alcohol odor

**APPEARANCE:** Clear

**COLOR:** Colorless

**pH:** Not Available

**PERCENT VOLATILE:** 100

**VAPOR PRESSURE:** 44 mmHg at 20°C

**VAPOR DENSITY:** 1.6 (Air=1)

**BOILING POINT:** ~(173°F)

**SOLUBILITY IN WATER:** Complete

**EVAPORATION RATE:** 2.0 (n-Butyl Acetate=1)

**SPECIFIC GRAVITY:** 0.82 at 20°C

**MOLECULAR FORMULA:** Mixture

---

## 10. STABILITY AND REACTIVITY

**STABLE:** YES

**HAZARDOUS POLYMERIZATION:** NO

**CONDITIONS TO AVOID:** Exposure to excessive heat, open flames and sparks. Avoid conditions that favor the formation of excessive mists and/or fumes.

**STABILITY:** Stable

**POLYMERIZATION:** Will not occur

**HAZARDOUS DECOMPOSITION PRODUCTS:** Oxides of Carbon when burned.

**INCOMPATIBLE MATERIALS:** Strong oxidizing agents.

---

## 11. TOXICOLOGICAL INFORMATION

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## 12. ECOLOGICAL INFORMATION

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## 13. DISPOSAL CONSIDERATIONS

**DISPOSAL METHOD:** Conditions of use may cause this material to become a hazardous waste as defined by state or federal law. Use approved treatment, transporters and disposal sites.

**EMPTY CONTAINER:** Keep containers closed when not in use. Do not reuse empty containers.

---

## 14. TRANSPORT INFORMATION

### DOT (DEPARTMENT OF TRANSPORTATION)

**PROPER SHIPPING NAME:** Denatured Alcohol

**PRIMARY HAZARD CLASS/DIVISION:** 3

**UN/NA NUMBER:** NA1987

**PACKING GROUP:** II

**LABEL:** Flammable Liquid

---

## 15. REGULATORY INFORMATION

### UNITED STATES

### SARA TITLE III (SUPERFUND AMENDMENTS AND REAUTHORIZATION

ACT)

**311/312 HAZARD CATEGORIES:**

**FIRE: YES PRESSURE GENERATING: NO REACTIVITY: NO ACUTE: YES  
CHRONIC: YES**

**313 REPORTABLE INGREDIENTS:** Methyl Isobutyl Ketone (108-10-1) - 3 to 4% Wt.

**TSCA (TOXIC SUBSTANCE CONTROL ACT)**

**TSCA REGULATORY:** All intentional ingredients are listed on the TSCA Inventory.

---

**16. OTHER INFORMATION**

**REVISION SUMMARY**

Revision #: 1

This MSDS replaces the September 25, 2000 MSDS. Any changes in information are as follows:

In Section 1

Prepared By

**HMIS CODES**

**HEALTH: \*2 FIRE: 3 REACTIVITY: 0 PROTECTION: c**

**MANUFACTURER DISCLAIMER:** The information in this MSDS was obtained from sources which we believe are reliable. However, the above information is provided without warranty, expressed or implied, regarding its correctness. The conditions or methods of handling, storage, use and disposal of the product are beyond our control 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 the product.

**ADDITIONAL MSDS INFORMATION:** Treat as an OSHA Class IB Flammable Liquid.

# MATERIAL SAFETY DATA SHEET



Date-Issued: 09/25/2000  
MSDS Ref. No: 213110  
Date-Revised: 02/21/2001  
Revision No: 1

Ethyl Alcohol <95%>

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**PRODUCT CODE:** Ethyl Alcohol <95%>  
**PRODUCT FORMULATION NAME:** Ethyl Alcohol <95%>  
**CHEMICAL FAMILY:** Alcohols, Ketones  
**GENERIC NAME:** Special Industrial Solvent

### MANUFACTURER

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<u>Chemical Name</u>	<u>Wt.%</u>	<u>CAS# EINECS#</u>
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Water	~6	7732-18-5 231-791-2

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### POTENTIAL HEALTH EFFECTS

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**SKIN:** Moderate irritation and discomfort possible. Defatting of skin, redness and chemical dermatitis possible. Toxic systemic effects from absorption are possible.

**INGESTION:** Gastrointestinal tract irritation and/or discomfort is possible.

**INHALATION:** Dizziness, impaired coordination, headaches and loss of consciousness. Severe respiratory tract irritation. Toxic systemic effects are possible.

**ROUTES OF ENTRY:** Absorption, Inhalation, Ingestion

**TARGET ORGAN STATEMENT:** Liver, Heart, Kidney and CNS toxin.

---

## 4. FIRST AID MEASURES

**EYES:** Immediately flush eyes with plenty of water for 15 minutes. If irritation persists, seek medical attention.

**SKIN:** Wash exposed area with mild soap and water. Get medical attention if irritation develops or persists.

**INGESTION:** Do not induce vomiting, only if victim is conscious. Get immediate medical attention.

**INHALATION:** Remove victim from area of exposure. If unconscious, give oxygen. Give artificial respiration if not breathing. Get immediate medical attention.

---

## 5. FIRE FIGHTING MEASURES

**FLASHPOINT AND METHOD:** ~ (69°F) ASTM D56

**FLAMMABLE LIMITS:** 3.3 to 19.0

**AUTOIGNITION TEMPERATURE:** Not Available

**EXTINGUISHING MEDIA:** Use dry chemical, foam, or carbon dioxide.

**EXPLOSION HAZARDS:** Vapor accumulations may flash and/or explode if ignited. Keep ignition sources, open flames, ect., away from these fumes.

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---

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Extinguish all ignition sources and ventilate area. Evacuate all non-essential personnel. Blanket spill with alcohol resistant foam to limit evaporation. Dike area to contain spill and clean up by absorbing on inert absorbent or by other means. Liquid may be flammable even when mixed with water unless heavily diluted (>5:1). Do not flush into sewers or natural waterways.

### **LARGE SPILL:**

Contain material as described above and call the local fire or police department for immediate emergency assistance.

---

## **7. HANDLING AND STORAGE**

### **HANDLING:**

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### **STORAGE:**

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---

## **8. EXPOSURE CONTROLS / PERSONAL PROTECTION**

### **EXPOSURE GUIDELINES:**

#### **OSHA HAZARDOUS COMPONENTS (29 CFR 1910.1200)**

	<b>EXPOSURE LIMITS</b>						
		<b>OSHA PEL</b>		<b>ACGIH TLV</b>		<b>Supplier OEL</b>	
		<b>ppm</b>	<b>mg/m<sup>3</sup></b>	<b>ppm</b>	<b>mg/m<sup>3</sup></b>	<b>ppm</b>	<b>mg/m<sup>3</sup></b>
Ethanol	<b>TWA</b>	1000	1900	1000	1880	NL	NL
	<b>STEL</b>	NL	NL	NL	NL	NL	NL
Methyl isobutyl ketone	<b>TWA</b>	50		50			
	<b>STEL</b>			75			
n-Heptane	<b>TWA</b>	500		400			
	<b>STEL</b>			500			

**ENGINEERING CONTROLS:** If current ventilation practices are not adequate to maintain airborne concentrations below the established exposure guidelines, additional ventilation or exhaust systems may be required. Where explosive mixtures may be present, electrical systems safe for such locations must be used.

## PERSONAL PROTECTIVE EQUIPMENT

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**SKIN:** To prevent any contact, wear impervious protective clothing such as neoprene or butyl rubber gloves, apron, boots or whole bodysuit, as appropriate.

**RESPIRATORY:** Use NIOSH/MSHA approved respirators when vapors or mist concentrations exceed permissible exposure limits.

**PROTECTIVE CLOTHING:** Chemical resistant boots, apron, etc. as necessary to prevent contamination of clothing and skin contact.

---

## 9. PHYSICAL AND CHEMICAL PROPERTIES

**PHYSICAL STATE:** Liquid

**ODOR:** Mild alcohol odor

**APPEARANCE:** Clear

**COLOR:** Colorless

**pH:** Not Available

**PERCENT VOLATILE:** 100

**VAPOR PRESSURE:** 44 mmHg at 20°C

**VAPOR DENSITY:** 1.6 (Air=1)

**BOILING POINT:** ~(173°F)

**SOLUBILITY IN WATER:** Complete

**EVAPORATION RATE:** 2.0 (n-Butyl Acetate=1)

**SPECIFIC GRAVITY:** 0.82 at 20°C

**MOLECULAR FORMULA:** Mixture

---

## 10. STABILITY AND REACTIVITY

**STABLE:** YES

**HAZARDOUS POLYMERIZATION:** NO

**CONDITIONS TO AVOID:** Exposure to excessive heat, open flames and sparks. Avoid conditions that favor the formation of excessive mists and/or fumes.

**STABILITY:** Stable

**POLYMERIZATION:** Will not occur

**HAZARDOUS DECOMPOSITION PRODUCTS:** Oxides of Carbon when burned.

**INCOMPATIBLE MATERIALS:** Strong oxidizing agents.

---

## 11. TOXICOLOGICAL INFORMATION

---

## 12. ECOLOGICAL INFORMATION

---

## 13. DISPOSAL CONSIDERATIONS

**DISPOSAL METHOD:** Conditions of use may cause this material to become a hazardous waste as defined by state or federal law. Use approved treatment, transporters and disposal sites.

**EMPTY CONTAINER:** Keep containers closed when not in use. Do not reuse empty containers.

---

## 14. TRANSPORT INFORMATION

### DOT (DEPARTMENT OF TRANSPORTATION)

**PROPER SHIPPING NAME:** Denatured Alcohol

**PRIMARY HAZARD CLASS/DIVISION:** 3

**UN/NA NUMBER:** NA1987

**PACKING GROUP:** II

**LABEL:** Flammable Liquid

---

## 15. REGULATORY INFORMATION

### UNITED STATES

### SARA TITLE III (SUPERFUND AMENDMENTS AND REAUTHORIZATION



ACT)

**311/312 HAZARD CATEGORIES:**

**FIRE: YES PRESSURE GENERATING: NO REACTIVITY: NO ACUTE: YES  
CHRONIC: YES**

**313 REPORTABLE INGREDIENTS:** Methyl Isobutyl Ketone (108-10-1) - 3 to 4% Wt.

**TSCA (TOXIC SUBSTANCE CONTROL ACT)**

**TSCA REGULATORY:** All intentional ingredients are listed on the TSCA Inventory.

---

## **16. OTHER INFORMATION**

### **REVISION SUMMARY**

Revision #: 1

This MSDS replaces the September 25, 2000 MSDS. Any changes in information are as follows:

In Section 1

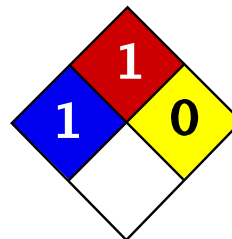
Prepared By

### **HMIS CODES**

**HEALTH: \*2 FIRE: 3 REACTIVITY: 0 PROTECTION: c**

**MANUFACTURER DISCLAIMER:** The information in this MSDS was obtained from sources which we believe are reliable. However, the above information is provided without warranty, expressed or implied, regarding its correctness. The conditions or methods of handling, storage, use and disposal of the product are beyond our control 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 the product.

**ADDITIONAL MSDS INFORMATION:** Treat as an OSHA Class IB Flammable Liquid.



Health	1
Fire	1
Reactivity	0
Personal Protection	E

## Material Safety Data Sheet

### Ethylenediamine tetraacetic acid MSDS

#### Section 1: Chemical Product and Company Identification

**Product Name:** Ethylenediamine tetraacetic acid

**Catalog Codes:** SLE1045

**CAS#:** 60-00-4

**RTECS:** AH4025000

**TSCA:** TSCA 8(b) inventory: Ethylenediamine tetraacetic acid

**CI#:** Not available.

**Synonym:** EDTA; Edetic acid

**Chemical Name:** Ethylenediamine tetraacetic acid

**Chemical Formula:** C10H16N2O8

**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
Ethylenediamine tetraacetic acid	60-00-4	100

**Toxicological Data on Ingredients:** Ethylenediamine tetraacetic acid: ORAL (LD50): Acute: 30 mg/kg [Mouse].

#### Section 3: Hazards Identification

**Potential Acute Health Effects:**

Slightly hazardous in case of skin contact (irritant), of eye contact (irritant), of ingestion, of inhalation. Severe over-exposure can result in death.

**Potential Chronic Health Effects:**

CARCINOGENIC EFFECTS: Not available.

MUTAGENIC EFFECTS: Mutagenic for mammalian somatic cells.

TERATOGENIC EFFECTS: Classified POSSIBLE for human.

DEVELOPMENTAL TOXICITY: Not available.

The substance may be toxic to kidneys.

Repeated or prolonged exposure to the substance can produce target organs damage. Repeated exposure to a highly toxic material may produce general deterioration of health by an accumulation in one or many human organs.

## 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. Cold water may be used. WARM water MUST be used. 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:

If swallowed, do not induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention immediately.

**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:** Not available.

**Flammable Limits:** Not available.

**Products of Combustion:** These products are carbon oxides (CO, CO<sub>2</sub>), nitrogen oxides (NO, NO<sub>2</sub>...).

### Fire Hazards in Presence of Various Substances:

Slightly flammable to flammable in presence of open flames and sparks, 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, of heat.

### 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:

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:

Poisonous solid.

Stop leak if without risk. Do not get water inside container. Do not touch spilled material. Use water spray to reduce vapors. Prevent entry into sewers, basements or confined areas; dike if needed. Eliminate all ignition sources. Call for assistance on disposal.

## Section 7: Handling and Storage

### Precautions:

Keep locked up.. 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 ingest. Do not breathe dust. Wear suitable protective clothing. If ingested, seek medical advice immediately and show the container or the label.

**Storage:** Keep container tightly closed. Keep container in a cool, well-ventilated area. Do not store above 24°C (75.2°F).

## 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:** Not available.

## Section 9: Physical and Chemical Properties

**Physical state and appearance:** Solid. (crystalline powder.)

**Odor:** Not available.

**Taste:** Not available.

**Molecular Weight:** 292.28 g/mole

**Color:** White.

**pH (1% soln/water):** Not available.

**Boiling Point:** Not available.

**Melting Point:** Decomposition temperature: 220-240°C (464°F)

**Critical Temperature:** Not available.

**Specific Gravity:** 0.72 (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:** Not available.

**Solubility:**

Very slightly soluble in cold water.

Insoluble in common organic solvents.

## Section 10: Stability and Reactivity Data

**Stability:** The product is stable.

**Instability Temperature:** Not available.

**Conditions of Instability:** Excess heat, incompatible materials

**Incompatibility with various substances:** Not available.

**Corrosivity:** Non-corrosive in presence of glass.

**Special Remarks on Reactivity:**

Neutralized by alkali metal hydroxides to form a series of water-soluble salts containing from one to four alkali metal cations. No other information at this time.

**Special Remarks on Corrosivity:** Not available.

**Polymerization:** Will not occur.

## Section 11: Toxicological Information

**Routes of Entry:** Inhalation. Ingestion.

**Toxicity to Animals:** Acute oral toxicity (LD50): 30 mg/kg [Mouse].

**Chronic Effects on Humans:**

MUTAGENIC EFFECTS: Mutagenic for mammalian somatic cells.

TERATOGENIC EFFECTS: Classified POSSIBLE for human.

May cause damage to the following organs: kidneys.

**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:**

May cause adverse reproductive effects (fertility and fetotoxicity) and birth defects based on animal data.

May affect genetic material based on animal data.

**Special Remarks on other Toxic Effects on Humans:**

Acute Potential Health Effects:

Skin: Can cause skin irritation.

Eyes: Can cause eye irritation.

Inhalation: Can irritate the nose, throat/respiratory tract, and mucous membranes.

Ingestion: May cause gastrointestinal tract irritation. May affect behavior.

Chronic Potential Health Effects:

Long term exposure via inhalation or ingestion may damage the kidneys.

## 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 less toxic than the product itself.

**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 available. UNNA: NA9117 PG: III

**Special Provisions for Transport:** Not available.

## Section 15: Other Regulatory Information

**Federal and State Regulations:**

Connecticut carcinogen reporting list.: Ethylenediamine tetraacetic acid  
Illinois toxic substances disclosure to employee act: Ethylenediamine tetraacetic acid  
Illinois chemical safety act: Ethylenediamine tetraacetic acid  
New York release reporting list: Ethylenediamine tetraacetic acid  
Pennsylvania RTK: Ethylenediamine tetraacetic acid  
Massachusetts RTK: Ethylenediamine tetraacetic acid  
Massachusetts spill list: Ethylenediamine tetraacetic acid  
New Jersey: Ethylenediamine tetraacetic acid  
New Jersey spill list: Ethylenediamine tetraacetic acid  
California Director's List of Hazardous Substances: Ethylenediamine tetraacetic acid  
TSCA 8(b) inventory: Ethylenediamine tetraacetic acid  
CERCLA: Hazardous substances.: Ethylenediamine tetraacetic acid: 5000 lbs. (2268 kg)

**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):** Not controlled under WHMIS (Canada).

**DSCL (EEC):**

R40- Possible risks of irreversible effects.  
R63- Possible risk of harm to the unborn child.  
S2- Keep out of the reach of children.

World Headquarters  
Hach Company  
P.O.Box 389  
Loveland, CO USA 80539  
(970) 669-3050

MSDS No: M00690

# MATERIAL SAFETY DATA SHEET

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## 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

**Product Name:** Alkaline EDTA Solution  
**Catalog Number:** 2268732

Hach Company  
P.O.Box 389  
Loveland, CO USA 80539  
(970) 669-3050

Emergency Telephone Numbers:  
(Medical and Transportation)  
(303) 623-5716 24 Hour Service  
(515)232-2533 8am - 4pm CST

**MSDS Number:** M00690  
**Chemical Name:** Not applicable  
**CAS No.:** Not applicable  
**Chemical Formula:** Not applicable  
**Chemical Family:** Not applicable  
**Hazard:** Causes severe burns.  
**Date of MSDS Preparation:**  
**Day:** 29  
**Month:** March  
**Year:** 2007

---

## 2. COMPOSITION / INFORMATION ON INGREDIENTS

### Demineralized Water

**CAS No.:** 7732-18-5  
**TSCA CAS Number:** 7732-18-5  
**Percent Range:** 90.0 - 100.0  
**Percent Range Units:** volume / volume  
**LD50:** None reported  
**LC50:** None reported  
**TLV:** Not established  
**PEL:** Not established  
**Hazard:** No effects anticipated.

### EDTA Tetrasodium Salt

**CAS No.:** 64-02-8  
**TSCA CAS Number:** 64-02-8  
**Percent Range:** 1.0 - 5.0  
**Percent Range Units:** weight / volume  
**LD50:** None reported  
**LC50:** None reported  
**TLV:** Not established  
**PEL:** Not established  
**Hazard:** May cause irritation.

### Lithium Hydroxide

**CAS No.:** 1310-65-2  
**TSCA CAS Number:** 1310-65-2

**Percent Range:** 1.0 - 10.0

**Percent Range Units:** weight / volume

**LD50:** Oral rat LD50 = 225 mg/kg

**LC50:** Inhalation rat LC50 = 980 mg/m<sup>3</sup>/4H

**TLV:** 3mg/m<sup>3</sup> Respirable Particles; 10 mg/m<sup>3</sup> Inhalable particles

**PEL:** 5 mg/m<sup>3</sup> Respirable Fraction; 15 mg/m<sup>3</sup> Total Dust

**Hazard:** Toxic. Causes severe burns.

---

### 3. HAZARDS IDENTIFICATION

**Emergency Overview:**

**Appearance:** Clear, colorless liquid

**Odor:** None

CAUSES SEVERE BURNS

MAY CAUSE KIDNEY OR LIVER DAMAGE BASED ON ANIMAL DATA

**HMIS:**

**Health:** 3

**Flammability:** 0

**Reactivity:** 0

**Protective Equipment:** X - See protective equipment, Section 8.

**NFPA:**

**Health:** 3

**Flammability:** 0

**Reactivity:** 0

**Symbol:** Not applicable

**Potential Health Effects:**

**Eye Contact:** Causes severe burns

**Skin Contact:** Causes severe burns

**Skin Absorption:** None reported

**Target Organs:** None reported

**Ingestion:** Causes: severe burns May cause: kidney damage central nervous system effects dizziness nausea vomiting liver damage coma death

**Target Organs:** Central nervous system Kidneys Liver Bone marrow

**Inhalation:** Causes: severe burns May cause: shortness of breath coughing

**Target Organs:** None reported

**Medical Conditions Aggravated:** Pre-existing: Respiratory conditions Skin conditions Eye conditions

**Chronic Effects:** Lithium compounds have been implicated in development of aplastic anemia. Signs of lithium poisoning include dehydration, extreme weight loss, fine tremor of hands, nausea, vomiting and diarrhea, Chronic overexposure may cause central nervous system effects kidney damage liver damage

**Cancer / Reproductive Toxicity Information:**

This product does NOT contain any OSHA listed carcinogens.

This product does NOT contain any IARC listed chemicals.

This product does NOT contain any NTP listed chemicals.

**Additional Cancer / Reproductive Toxicity Information:** None reported

**Toxicologically Synergistic Products:** None reported

---

### 4. FIRST AID

**Eye Contact:** Immediately flush eyes with water for 15 minutes. Call physician.



**Skin Contact (First Aid):** Wash skin with plenty of water for 15 minutes. Remove contaminated clothing. Call physician immediately.

**Ingestion (First Aid):** Do not induce vomiting. Give 1-2 glasses of water. Call physician immediately. Never give anything by mouth to an unconscious person.

**Inhalation:** Remove to fresh air. Give artificial respiration if necessary. Call physician.

---

## 5. FIRE FIGHTING MEASURES

**Flammable Properties:** Material will not burn.

**Flash Point:** Not applicable

**Method:** Not applicable

**Flammability Limits:**

**Lower Explosion Limits:** Not applicable

**Upper Explosion Limits:** Not applicable

**Autoignition Temperature:** Not applicable

**Hazardous Combustion Products:** This material will not burn.

**Fire / Explosion Hazards:** None reported

**Static Discharge:** None reported.

**Mechanical Impact:** None reported

**Extinguishing Media:** Use media appropriate to surrounding fire conditions

**Fire Fighting Instruction:** As in any fire, wear self-contained breathing apparatus pressure-demand and full protective gear.

---

## 6. ACCIDENTAL RELEASE MEASURES

**Spill Response Notice:**

Only persons properly qualified to respond to an emergency involving hazardous substances may respond to a spill according to federal regulations (OSHA 29 CFR 1910.120(a)(v)) and per your company's emergency response plan and guidelines/procedures. See Section 13, Special Instructions for disposal assistance.

**Containment Technique:** Stop spilled material from being released to the environment.

**Clean-up Technique:** Cover spilled material with a dry acid, such as citric or boric. Scoop up slurry into a large beaker. Dilute with a large excess of water. Adjust to a pH between 6 and 9 with an acid, such as sulfuric or citric. Flush reacted material to the drain with a large excess of water. Decontaminate the area of the spill with a soap solution.

**Evacuation Procedure:** Evacuate local area (15 foot radius or as directed by your facility's emergency response plan) when: any quantity is spilled. If conditions warrant, increase the size of the evacuation.

**Special Instructions (for accidental release):** Mixture contains a component which is regulated as hazardous waste.

**304 EHS RQ (40 CFR 355):** Not applicable

**D.O.T. Emergency Response Guide Number:** 154

---

## 7. HANDLING / STORAGE

**Handling:** Avoid contact with eyes skin clothing Do not breathe mist or vapors. Wash thoroughly after handling. Maintain general industrial hygiene practices when using this product.

**Storage:** Keep container tightly closed when not in use.

**Flammability Class:** Not applicable

---

## 8. EXPOSURE CONTROLS / PROTECTIVE EQUIPMENT

**Engineering Controls:** Have an eyewash station nearby. Have a safety shower nearby. Use general ventilation to minimize exposure to mist, vapor or dust. Maintain general industrial hygiene practices when using this product.

**Personal Protective Equipment:**

**Eye Protection:** chemical splash goggles  
**Skin Protection:** disposable latex gloves  
**Inhalation Protection:** adequate ventilation  
**Precautionary Measures:** Avoid contact with: eyes skin clothing Do not breathe: mist/vapor Wash thoroughly after handling.  
**TLV:** Not established  
**PEL:** Not established

---

## 9. PHYSICAL / CHEMICAL PROPERTIES

**Appearance:** Clear, colorless liquid  
**Physical State:** Liquid  
**Molecular Weight:** Not applicable  
**Odor:** None  
**pH:** 12.82  
**Vapor Pressure:** Not determined  
**Vapor Density (air = 1):** Not determined  
**Boiling Point:** ~100° C (~212° F)  
**Melting Point:** Not determined  
**Specific Gravity (water = 1):** 1.052  
**Evaporation Rate (water = 1):** 0.781  
**Volatile Organic Compounds Content:** Not applicable  
**Partition Coefficient (n-octanol / water):** Not applicable  
**Solubility:**  
**Water:** Soluble  
**Acid:** Soluble  
**Other:** Not determined  
**Metal Corrosivity:**  
**Steel:** 0.197 in/yr  
**Aluminum:** <0.001 in/yr

---

## 10. STABILITY / REACTIVITY

**Chemical Stability:** Stable when stored under proper conditions.  
**Conditions to Avoid:** Heating to decomposition.  
**Reactivity / Incompatibility:** Incompatible with: potassium ammonium acids oxidizers  
**Hazardous Decomposition:** None reported  
**Hazardous Polymerization:** Will not occur.

---

## 11. TOXICOLOGICAL INFORMATION

**Product Toxicological Data:**  
**LD50:** None reported  
**LC50:** None reported  
**Dermal Toxicity Data:** None reported  
**Skin and Eye Irritation Data:** None reported  
**Mutation Data:** None reported  
**Reproductive Effects Data:** None reported  
**Ingredient Toxicological Data:** Lithium Hydroxide: Oral rat LD50 = 225 mg/kg

---

## 12. ECOLOGICAL INFORMATION

**Product Ecological Information:** --

No ecological data available for this product.

**Ingredient Ecological Information:** EDTA: BOD 0.02 g/g, COD 0.54 g/g, Fish toxicity: Bluegill LC50 = 410 mg/l for 96 hours

---

## 13. DISPOSAL CONSIDERATIONS

**EPA Waste ID Number:** D002

**Special Instructions (Disposal):** Dilute to 3 to 5 times the volume with cold water. Adjust to a pH between 6 and 9 with an acid, such as sulfuric or citric. Open cold water tap completely, slowly pour the reacted material to the drain. Allow cold water to run for 5 minutes to completely flush the system.

**Empty Containers:** Rinse three times with an appropriate solvent. Dispose of empty container as normal trash.

**NOTICE (Disposal):** These disposal guidelines are based on federal regulations and may be superseded by more stringent state or local requirements. Please consult your local environmental regulators for more information.

---

## 14. TRANSPORT INFORMATION

**D.O.T.:**

**D.O.T. Proper Shipping Name:** Lithium Hydroxide, Solution

--

**DOT Hazard Class:** 8

**DOT Subsidiary Risk:** NA

**DOT ID Number:** UN2679

**DOT Packing Group:** II

**I.C.A.O.:**

**I.C.A.O. Proper Shipping Name:** Lithium Hydroxide Solution

--

**ICAO Hazard Class:** 8

**ICAO Subsidiary Risk:** NA

**ICAO ID Number:** UN2679

**ICAO Packing Group:** II

**I.M.O.:**

**I.M.O. Proper Shipping Name:** Lithium Hydroxide, Solution

--

**I.M.O. Hazard Class:** 8

**I.M.O. Subsidiary Risk:** NA

**I.M.O. ID Number:** UN2679

**I.M.O. Packing Group:** II

**Additional Information:** There is a possibility that this product could be contained in a reagent set or kit composed of various compatible dangerous goods. If the item is NOT in a set or kit, the classification given above applies. If the item IS part of a set or kit, the classification would change to the following: UN3316 Chemical Kit, Class 9, PG II or III. If the item is not regulated, the Chemical Kit classification does not apply.

---

## 15. REGULATORY INFORMATION

**U.S. Federal Regulations:**

**O.S.H.A.:** This product meets the criteria for a hazardous substance as defined in the Hazard Communication Standard. (29 CFR 1910.1200)

**E.P.A.:**

**S.A.R.A. Title III Section 311/312 Categorization (40 CFR 370):** Immediate (Acute) Health Hazard

**S.A.R.A. Title III Section 313 (40 CFR 372):** This product does NOT contain any chemical subject to the reporting requirements of Section 313 of Title III of SARA.

--

302 (EHS) TPQ (40 CFR 355): Not applicable  
304 CERCLA RQ (40 CFR 302.4): Not applicable  
304 EHS RQ (40 CFR 355): Not applicable  
Clean Water Act (40 CFR 116.4): Not applicable  
RCRA: Contains RCRA regulated substances. See Section 13, EPA Waste ID Number.  
C.P.S.C.: Not applicable

**State Regulations:**

**California Prop. 65:** No Prop. 65 listed chemicals are present in this product.

**Identification of Prop. 65 Ingredient(s):** None

**California Perchlorate Rule CCR Title 22 Chap 33:**

**Trade Secret Registry:** Not applicable

**National Inventories:**

**U.S. Inventory Status:** All ingredients in this product are listed on the TSCA 8(b) Inventory (40 CFR 710).

**TSCA CAS Number:** Not applicable

---

## 16. OTHER INFORMATION

**Intended Use:** Determination of potassium

**References:** Air Contaminants, Federal Register, Vol. 54, No. 12. Thursday, January 19, 1989. pp. 2332-2983. TLV's Threshold Limit Values and Biological Exposure Indices for 1992-1993. American Conference of Governmental Industrial Hygienists, 1992. Technical Judgment. In-house information.

**Revision Summary:** Updates in Section(s) 14,

---

### Legend:

NA - Not Applicable	w/w - weight/weight
ND - Not Determined	w/v - weight/volume
NV - Not Available	v/v - volume/volume

**USER RESPONSIBILITY:** Each user should read and understand this information and incorporate it in individual site safety programs in accordance with applicable hazard communication standards and regulations.

**THE INFORMATION CONTAINED HEREIN IS BASED ON DATA CONSIDERED TO BE ACCURATE. HOWEVER, NO WARRANTY IS EXPRESSED OR IMPLIED REGARDING THE ACCURACY OF THESE DATA OR THE RESULTS TO BE OBTAINED FROM THE USE THEREOF.**

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Hach Company  
P.O.Box 389  
Loveland, CO USA 80539  
(970) 669-3050

MSDS No: M01326

# MATERIAL SAFETY DATA SHEET

---

## 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

**Product Name:** Ammonium Chloride Reference Electrolyte Cartridge

**Catalog Number:** 2595802

Hach Company  
P.O.Box 389  
Loveland, CO USA 80539  
(970) 669-3050

Emergency Telephone Numbers:  
(Medical and Transportation)  
(303) 623-5716 24 Hour Service  
(515)232-2533 8am - 4pm CST

**MSDS Number:** M01326

**Chemical Name:** Not applicable

**CAS No.:** Not applicable

**Chemical Formula:** Not applicable

**Chemical Family:** Not applicable

**Hazard:** May cause irritation.

**Date of MSDS Preparation:**

**Day:** 28

**Month:** August

**Year:** 2008

---

## 2. COMPOSITION / INFORMATION ON INGREDIENTS

### Ammonium Chloride

**CAS No.:** 12125-02-9

**TSCA CAS Number:** 12125-02-9

**Percent Range:** 5.0 - 15.0

**Percent Range Units:** weight / volume

**LD50:** Oral rat LD<sub>50</sub> = 1650 mg/kg

**LC50:** None reported

**TLV:** 10 mg/m<sup>3</sup>

**PEL:** 10 mg/m<sup>3</sup>

**Hazard:** Causes severe eye irritation.

### Glycerin

**CAS No.:** 56-81-5

**TSCA CAS Number:** 56-81-5

**Percent Range:** 35.0 - 45.0

**Percent Range Units:** volume / volume

**LD50:** Oral rat LD<sub>50</sub> = 12.6 g/kg

**LC50:** None reported

**TLV:** 10 mg/m<sup>3</sup> (mist)

**PEL:** 10 mg/m<sup>3</sup> (mist)

**Hazard:** May cause eye irritation.

### Hydroxyethyl Cellulose

**CAS No.:** 9004-62-0

**TSCA CAS Number:** 9004-62-0

**Percent Range:** 1.0 - 5.0  
**Percent Range Units:** weight / volume  
**LD50:** None reported  
**LC50:** None reported  
**TLV:** None established  
**PEL:** None established  
**Hazard:** May cause irritation.

**Demineralized Water**

**CAS No.:** 7732-18-5  
**TSCA CAS Number:** 7732-18-5  
**Percent Range:** 40.0 - 50.0  
**Percent Range Units:** volume / volume  
**LD50:** None reported  
**LC50:** None reported  
**TLV:** Not established  
**PEL:** Not established  
**Hazard:** No effects anticipated.

**Other component**

**CAS No.:** Not applicable  
**TSCA CAS Number:** Not applicable  
**Percent Range:** < 1.0  
**Percent Range Units:** weight / volume  
**LD50:** Not applicable  
**LC50:** Not applicable  
**TLV:** Not established  
**PEL:** Not established  
**Hazard:** Any ingredient(s) of this product listed as "Other component(s)" is not considered a health hazard to the user of this product.

**Silver Chloride**

**CAS No.:** 7783-90-6  
**TSCA CAS Number:** 7783-90-6  
**Percent Range:** < 0.1  
**Percent Range Units:** weight / volume  
**LD50:** Oral mouse LD50 > 10 g/kg; Oral guinea pig LD50 > 5 g/kg  
**LC50:** None reported  
**TLV:** 0.01 mg/m<sup>3</sup> (as Ag soluble salts)  
**PEL:** Not established  
**Hazard:** May cause irritation.

---

### 3. HAZARDS IDENTIFICATION

***Emergency Overview:***

***Appearance:*** Colorless  
***Odor:*** Not determined

***HMIS:***

***Health:*** 1  
***Flammability:*** 1

**Reactivity:** 0

**Protective Equipment:** X - See protective equipment, Section 8.

**NFPA:**

**Health:** 1

**Flammability:** 1

**Reactivity:** 0

**Symbol:** Not applicable

**Potential Health Effects:**

**Eye Contact:** May cause irritation

**Skin Contact:** May cause irritation

**Skin Absorption:** No effects anticipated

**Target Organs:** Not applicable

**Ingestion:** May cause: gastrointestinal irritation nausea vomiting diarrhea muscular weakness blood pressure changes fever cardiac depression

**Target Organs:** Blood Heart

**Inhalation:** No effects anticipated

**Target Organs:** Not applicable

**Medical Conditions Aggravated:** Pre-existing: Kidney conditions Liver conditions

**Chronic Effects:** Chronic overexposure may cause kidney damage

**Cancer / Reproductive Toxicity Information:**

This product does NOT contain any OSHA listed carcinogens.

This product does NOT contain any IARC listed chemicals.

This product does NOT contain any NTP listed chemicals.

**Additional Cancer / Reproductive Toxicity Information:** None reported

**Toxicologically Synergistic Products:** None reported

---

## 4. FIRST AID

**Eye Contact:** Flush eyes with water. Call physician if irritation develops.

**Skin Contact (First Aid):** Wash skin with plenty of water for 15 minutes.

**Ingestion (First Aid):** Give large quantities of water. Call physician immediately.

**Inhalation:** None required.

---

## 5. FIRE FIGHTING MEASURES

**Flammable Properties:** During a fire, corrosive and toxic gases may be generated by thermal decomposition.

**Flash Point:** Not applicable

**Method:** Not applicable

**Flammability Limits:**

**Lower Explosion Limits:** Not applicable

**Upper Explosion Limits:** Not applicable

**Autoignition Temperature:** Not determined

**Hazardous Combustion Products:** None reported

**Fire / Explosion Hazards:** None reported

**Static Discharge:** None reported.

**Mechanical Impact:** None reported

**Extinguishing Media:** Use media appropriate to surrounding fire conditions

**Fire Fighting Instruction:** As in any fire, wear self-contained breathing apparatus pressure-demand and full protective gear.

---

## 6. ACCIDENTAL RELEASE MEASURES

**Spill Response Notice:**

Only persons properly qualified to respond to an emergency involving hazardous substances may respond to a spill according to federal regulations (OSHA 29 CFR 1910.120(a)(v)) and per your company's emergency response plan and guidelines/procedures. See Section 13, Special Instructions for disposal assistance.

**Containment Technique:** Absorb spilled liquid with non-reactive sorbent material. Dike large spills to keep spilled material from entering sewage and drainage systems or bodies of water.

**Clean-up Technique:** Absorb spilled liquid with non-reactive sorbent material. Sweep up material. Dispose of material in an E.P.A. approved hazardous waste facility. Decontaminate the area of the spill with a soap solution.

**Evacuation Procedure:** Evacuate as needed to perform spill clean-up. If conditions warrant, increase the size of the evacuation.

**Special Instructions (for accidental release):** Not applicable

**304 EHS RQ (40 CFR 355):** Not applicable

**D.O.T. Emergency Response Guide Number:** None

---

## 7. HANDLING / STORAGE

**Handling:** Avoid contact with eyes skin Wash thoroughly after handling. Maintain general industrial hygiene practices when using this product.

**Storage:** Store between 10° and 25°C. Keep away from: oxidizers

**Flammability Class:** Not applicable

---

## 8. EXPOSURE CONTROLS / PROTECTIVE EQUIPMENT

**Engineering Controls:** Maintain general industrial hygiene practices when using this product.

**Personal Protective Equipment:**

**Eye Protection:** safety glasses with top and side shields

**Skin Protection:** disposable latex gloves

**Inhalation Protection:** adequate ventilation

**Precautionary Measures:** Avoid contact with: eyes skin Wash thoroughly after handling. Protect from: oxidizers

**TLV:** Not established

**PEL:** Not established

---

## 9. PHYSICAL / CHEMICAL PROPERTIES

**Appearance:** Colorless

**Physical State:** Gel

**Molecular Weight:** Not applicable

**Odor:** Not determined

**pH:** Not determined

**Vapor Pressure:** Not determined

**Vapor Density (air = 1):** Not determined

**Boiling Point:** Not determined

**Melting Point:** Not determined

**Specific Gravity (water = 1):** Not determined

**Evaporation Rate (water = 1):** Not determined

**Volatile Organic Compounds Content:** Not available

**Partition Coefficient (n-octanol / water):** Not applicable

**Solubility:**

**Water:** Soluble

**Acid:** Not determined

**Other:** Not determined

**Metal Corrosivity:**

**Steel:** Not determined



*Aluminum:* Not determined

---

## 10. STABILITY / REACTIVITY

**Chemical Stability:** Stable when stored under proper conditions.

**Conditions to Avoid:** Extreme temperatures Heating to decomposition.

**Reactivity / Incompatibility:** Incompatible with: oxidizers chromates perchlorates

**Hazardous Decomposition:** Heating to decomposition releases toxic and/or corrosive fumes of: acrolein carbon dioxide carbon monoxide ammonia

**Hazardous Polymerization:** Will not occur.

---

## 11. TOXICOLOGICAL INFORMATION

**Product Toxicological Data:**

**LD50:** None reported

**LC50:** None reported

**Dermal Toxicity Data:** None reported

**Skin and Eye Irritation Data:** Ammonium Chloride: Eye rabbit 500 mg/24H - MILD, Eye rabbit 100 mg - SEVERE

**Mutation Data:** None reported

**Reproductive Effects Data:** None reported

**Ingredient Toxicological Data:** Ammonium Chloride: Oral rat LD50 = 1650 mg/kg; Glycerin: Oral rat LD50 = 7930 mg/kg

---

## 12. ECOLOGICAL INFORMATION

**Product Ecological Information:** --

No ecological data available for this product.

**Ingredient Ecological Information:** --

No ecological data available for the ingredients of this product.

---

## 13. DISPOSAL CONSIDERATIONS

**EPA Waste ID Number:** D011

**Special Instructions (Disposal):** Dispose of material in an E.P.A. approved hazardous waste facility.

**Empty Containers:** Rinse three times with an appropriate solvent. Dispose of empty container as normal trash. Rinsate from empty containers may contain sufficient product to require disposal as hazardous waste.

**NOTICE (Disposal):** These disposal guidelines are based on federal regulations and may be superseded by more stringent state or local requirements. Please consult your local environmental regulators for more information.

---

## 14. TRANSPORT INFORMATION

**D.O.T.:**

**D.O.T. Proper Shipping Name:** Not Currently Regulated

--

**DOT Hazard Class:** NA

**DOT Subsidiary Risk:** NA

**DOT ID Number:** NA

**DOT Packing Group:** NA

**I.C.A.O.:**

**I.C.A.O. Proper Shipping Name:** Not Currently Regulated

--

**ICAO Hazard Class:** NA  
**ICAO Subsidiary Risk:** NA  
**ICAO ID Number:** NA  
**ICAO Packing Group:** NA

**I.M.O.:**

**I.M.O. Proper Shipping Name:** Not Currently Regulated

--

**I.M.O. Hazard Class:** NA  
**I.M.O. Subsidiary Risk:** NA  
**I.M.O. ID Number:** NA  
**I.M.O. Packing Group:** NA

**Additional Information:** There is a possibility that this product could be contained in a reagent set or kit composed of various compatible dangerous goods. If the item is NOT in a set or kit, the classification given above applies. If the item IS part of a set or kit, the classification would change to the following: UN3316 Chemical Kit, Class 9, PG II or III. If the item is not regulated, the Chemical Kit classification does not apply.

---

## 15. REGULATORY INFORMATION

**U.S. Federal Regulations:**

**O.S.H.A.:** This product meets the criteria for a hazardous substance as defined in the Hazard Communication Standard. (29 CFR 1910.1200)

**E.P.A.:**

**S.A.R.A. Title III Section 311/312 Categorization (40 CFR 370):** Immediate (Acute) Health Hazard  
**S.A.R.A. Title III Section 313 (40 CFR 372):** This product contains a chemical(s) subject to the reporting requirements of Section 313 of Title III of SARA.

Ammonium Chloride (Soluble Ammonia salt)

**302 (EHS) TPQ (40 CFR 355):** Not applicable

**304 CERCLA RQ (40 CFR 302.4):** Ammonium chloride: 5000 lbs.

**304 EHS RQ (40 CFR 355):** Not applicable

**Clean Water Act (40 CFR 116.4):** Ammonium chloride - RQ 5000 lbs.

**RCRA:** Contains RCRA regulated substances. See Section 13, EPA Waste ID Number.

**C.P.S.C.:** Not applicable

**State Regulations:**

**California Prop. 65:** Not applicable

**Identification of Prop. 65 Ingredient(s):**

**California Perchlorate Rule CCR Title 22 Chap 33:**

**Trade Secret Registry:** Not applicable

**National Inventories:**

**U.S. Inventory Status:** All ingredients in this product are listed on the TSCA 8(b) Inventory (40 CFR 710).

**TSCA CAS Number:** Not applicable

---

## 16. OTHER INFORMATION

**Intended Use:** Reference electrode solution

**References:** Air Contaminants, Federal Register, Vol. 54, No. 12. Thursday, January 19, 1989. pp. 2332-2983. TLV's Threshold Limit Values and Biological Exposure Indices for 1992-1993. American Conference of Governmental Industrial Hygienists, 1992. Technical Judgment. In-house information.

**Revision Summary:** Updates in Section(s) 14,

---

**Legend:**

NA - Not Applicable	w/w - weight/weight
ND - Not Determined	w/v - weight/volume
NV - Not Available	v/v - volume/volume

**USER RESPONSIBILITY:** Each user should read and understand this information and incorporate it in individual site safety programs in accordance with applicable hazard communication standards and regulations.

**THE INFORMATION CONTAINED HEREIN IS BASED ON DATA CONSIDERED TO BE ACCURATE. HOWEVER, NO WARRANTY IS EXPRESSED OR IMPLIED REGARDING THE ACCURACY OF THESE DATA OR THE RESULTS TO BE OBTAINED FROM THE USE THEREOF.**

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World Headquarters  
Hach Company  
P.O.Box 389  
Loveland, CO USA 80539  
(970) 669-3050

MSDS No: M00305

# MATERIAL SAFETY DATA SHEET

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## 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

**Product Name:** Buffer Solution Hardness 1 pH 10.1 ± 0.1  
**Catalog Number:** 42432

Hach Company  
P.O.Box 389  
Loveland, CO USA 80539  
(970) 669-3050

Emergency Telephone Numbers:  
(Medical and Transportation)  
(303) 623-5716 24 Hour Service  
(515)232-2533 8am - 4pm CST

**MSDS Number:** M00305  
**Chemical Name:** Not applicable  
**CAS No.:** Not applicable  
**Chemical Formula:** Not applicable  
**Chemical Family:** Not applicable  
**Hazard:** Causes eye burns. May cause irritation.  
**Date of MSDS Preparation:**  
**Day:** 18  
**Month:** May  
**Year:** 2009

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## 2. COMPOSITION / INFORMATION ON INGREDIENTS

### Acetic Acid

**CAS No.:** 64-19-7  
**TSCA CAS Number:** 64-19-7  
**Percent Range:** 1.0 - 10.0  
**Percent Range Units:** volume / volume  
**LD50:** Oral rat LD50 = 3310 mg/kg  
**LC50:** Human TClO = 816 ppm / 3 minutes (Irritant) ; Mouse LC50 = 5620 ppm / 1 hour  
**TLV:** 10 ppm (15 ppm STEL)  
**PEL:** 10 ppm  
**Hazard:** Flammable. Causes severe burns.

### Demineralized Water

**CAS No.:** 7732-18-5  
**TSCA CAS Number:** 7732-18-5  
**Percent Range:** 35.0 - 45.0  
**Percent Range Units:** volume / volume  
**LD50:** None reported  
**LC50:** None reported  
**TLV:** Not established  
**PEL:** Not established  
**Hazard:** No effects anticipated.

### Other component

**CAS No.:** Not applicable  
**TSCA CAS Number:** Not applicable  
**Percent Range:** < 1.0  
**Percent Range Units:** volume / volume  
**LD50:** Not applicable  
**LC50:** Not applicable  
**TLV:** Not established  
**PEL:** Not established

**Hazard:** Any ingredient(s) of this product listed as "Other component(s)" is not considered a health hazard to the user of this product.

**Aminomethylpropanol**

**CAS No.:** 124-68-5

**TSCA CAS Number:** 124-68-5

**Percent Range:** 50.0 - 60.0

**Percent Range Units:** volume / volume

**LD50:** Oral rat LD50 = 2900 mg/kg

**LC50:** None reported

**TLV:** Not established

**PEL:** Not established

**Hazard:** Causes burns. Combustible.

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### 3. HAZARDS IDENTIFICATION

**Emergency Overview:**

**Appearance:** Clear, yellow liquid

**Odor:** Vinegar

CAUSES EYE BURNS HARMFUL IF ABSORBED THROUGH SKIN MAY CAUSE RESPIRATORY TRACT IRRITATION

**HMIS:**

**Health:** 2

**Flammability:** 1

**Reactivity:** 0

**Protective Equipment:** X - See protective equipment, Section 8.

**NFPA:**

**Health:** 2

**Flammability:** 1

**Reactivity:** 0

**Symbol:** Not applicable

**Potential Health Effects:**

**Eye Contact:** Causes eye burns.

**Skin Contact:** Causes mild irritation

**Skin Absorption:** Will be absorbed through the skin.

**Target Organs:** None reported

**Ingestion:** May cause: abdominal pain

**Target Organs:** None reported

**Inhalation:** May cause: respiratory tract irritation

**Target Organs:** None reported

**Medical Conditions Aggravated:** Pre-existing: Eye conditions Skin conditions Respiratory conditions

**Chronic Effects:** None reported

**Cancer / Reproductive Toxicity Information:**

This product does NOT contain any OSHA listed carcinogens.

This product does NOT contain any IARC listed chemicals.

This product does NOT contain any NTP listed chemicals.

**Additional Cancer / Reproductive Toxicity Information:** Contains: an experimental mutagen.

**Toxicologically Synergistic Products:** None reported

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### 4. FIRST AID

**Eye Contact:** Immediately flush eyes with water for 15 minutes. Call physician.

**Skin Contact (First Aid):** Wash skin with plenty of water. Call physician if irritation develops.

**Ingestion (First Aid):** Give large quantities of water. Call physician immediately.

**Inhalation:** Remove to fresh air.

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## 5. FIRE FIGHTING MEASURES

**Flammable Properties:** Can burn in fire, releasing toxic vapors.

**Flash Point:** >97.2°C (>207°F)

**Method:** Closed cup

**Flammability Limits:**

**Lower Explosion Limits:** Not determined

**Upper Explosion Limits:** Not determined

**Autoignition Temperature:** Not determined

**Hazardous Combustion Products:** Toxic fumes of: nitrogen oxides, carbon monoxide, carbon dioxide.

**Fire / Explosion Hazards:** May react violently with: strong oxidizers

**Static Discharge:** None reported.

**Mechanical Impact:** None reported

**Extinguishing Media:** Water, Dry chemical, Carbon dioxide, Alcohol foam.

**Fire Fighting Instruction:** As in any fire, wear self-contained breathing apparatus pressure-demand and full protective gear.

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## 6. ACCIDENTAL RELEASE MEASURES

**Spill Response Notice:**

Only persons properly qualified to respond to an emergency involving hazardous substances may respond to a spill according to federal regulations (OSHA 29 CFR 1910.120(a)(v)) and per your company's emergency response plan and guidelines/procedures. See Section 13, Special Instructions for disposal assistance.

**Containment Technique:** Absorb spilled liquid with non-reactive sorbent material. Dike large spills to keep spilled material from entering sewage and drainage systems or bodies of water.

**Clean-up Technique:** Cover spilled material with a dry acid, such as citric or boric. Scoop up slurry into a large beaker. Dilute with a large excess of water. Adjust to a pH between 6 and 9 with an acid, such as sulfuric or citric. Flush reacted material to the drain with a large excess of water. Decontaminate the area of the spill with a weak acid solution.

**Evacuation Procedure:** Evacuate as needed to perform spill clean-up. If conditions warrant, increase the size of the evacuation.

**Special Instructions (for accidental release):** Mixture contains a component which is regulated as a water pollutant.

**304 EHS RQ (40 CFR 355):** Not applicable

**D.O.T. Emergency Response Guide Number:** None

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## 7. HANDLING / STORAGE

**Handling:** Avoid contact with eyes, skin, clothing. Do not breathe mist or vapors. Wash thoroughly after handling. Maintain general industrial hygiene practices when using this product.

**Storage:** Store away from: oxidizers. Protect from: heat

**Flammability Class:** Class IIIB

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## 8. EXPOSURE CONTROLS / PROTECTIVE EQUIPMENT

**Engineering Controls:** Have an eyewash station nearby. Maintain general industrial hygiene practices when using this product.

**Personal Protective Equipment:**

**Eye Protection:** chemical splash goggles

**Skin Protection:** lab coat, disposable latex gloves

**Inhalation Protection:** adequate ventilation

**Precautionary Measures:** Avoid contact with: eyes, skin, clothing. Do not breathe: mist/vapor. Wash thoroughly after handling. Keep away from: oxidizers

**TLV:** Not established

**PEL:** Not established

---

## 9. PHYSICAL / CHEMICAL PROPERTIES

**Appearance:** Clear, yellow liquid

**Physical State:** Liquid

**Molecular Weight:** Not applicable  
**Odor:** Vinegar  
**pH:** of 2% solution = 10.0  
**Vapor Pressure:** Not determined  
**Vapor Density (air = 1):** Not determined  
**Boiling Point:** 104.5°C (220°F)  
**Melting Point:** Not determined  
**Specific Gravity (water = 1):** 1.033  
**Evaporation Rate (water = 1):** 0.36  
**Volatile Organic Compounds Content:** Not determined  
**Partition Coefficient (n-octanol / water):** Not determined  
**Solubility:**  
    **Water:** Soluble  
    **Acid:** Soluble  
    **Other:** Not determined  
**Metal Corrosivity:**  
    **Steel:** 0.002 in/yr  
    **Aluminum:** Not determined

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## 10. STABILITY / REACTIVITY

**Chemical Stability:** Stable when stored under proper conditions.  
**Conditions to Avoid:** Extreme temperatures  
**Reactivity / Incompatibility:** May react violently in contact with: oxidizers  
**Hazardous Decomposition:** Toxic fumes of: nitrogen oxides carbon dioxide carbon monoxide  
**Hazardous Polymerization:** Will not occur.

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## 11. TOXICOLOGICAL INFORMATION

**Product Toxicological Data:**  
    **LD50:** None reported  
    **LC50:** None reported  
**Dermal Toxicity Data:** None reported  
**Skin and Eye Irritation Data:** Aminomethylpropanol: Skin at 1 hour exposure: erythema score of 1 @ 1hour, edema score of 0.67 @ 1hour - MILD; Skin at 4 hours exposure: erythema score of 1.33 @ 1 hour, edema score of 1.67 @ 1 hour - MILD  
**Mutation Data:** Acetic Acid: Human sister chromatid exchange in Lymphocytes at 5 mmol/l  
**Reproductive Effects Data:** None reported  
**Ingredient Toxicological Data:** Aminomethylpropanol: Oral rat LD50 = 2900 mg/kg; Acetic Acid: Oral rat LD50 = 3310 mg/kg

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## 12. ECOLOGICAL INFORMATION

**Product Ecological Information:** --  
No ecological data available for this product.  
**Ingredient Ecological Information:** --  
No ecological data available for the ingredients of this product.

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## 13. DISPOSAL CONSIDERATIONS

**EPA Waste ID Number:** None  
**Special Instructions (Disposal):** Dilute to 3 to 5 times the volume with cold water. Adjust to a pH between 6 and 9 with an acid, such as sulfuric or citric. Open cold water tap completely, slowly pour the reacted material to the drain. Allow cold water to run for 5 minutes to completely flush the system.  
**Empty Containers:** Rinse three times with an appropriate solvent. Dispose of empty container as normal trash.  
**NOTICE (Disposal):** These disposal guidelines are based on federal regulations and may be superseded by more stringent state or local requirements. Please consult your local environmental regulators for more information.

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## 14. TRANSPORT INFORMATION

**D.O.T.:**

**D.O.T. Proper Shipping Name:** Not Currently Regulated

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**DOT Hazard Class:** NA

**DOT Subsidiary Risk:** NA

**DOT ID Number:** NA

**DOT Packing Group:** NA

**I.C.A.O.:**

**I.C.A.O. Proper Shipping Name:** Not Currently Regulated

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**ICAO Hazard Class:** NA

**ICAO Subsidiary Risk:** NA

**ICAO ID Number:** NA

**ICAO Packing Group:** NA

**I.M.O.:**

**I.M.O. Proper Shipping Name:** Not Currently Regulated

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**I.M.O. Hazard Class:** NA

**I.M.O. Subsidiary Risk:** NA

**I.M.O. ID Number:** NA

**I.M.O. Packing Group:** NA

**Additional Information:** There is a possibility that this product could be contained in a reagent set or kit composed of various compatible dangerous goods. If the item is NOT in a set or kit, the classification given above applies. If the item IS part of a set or kit, the classification would change to the following: UN3316 Chemical Kit, Class 9, PG II or III. If the item is not regulated, the Chemical Kit classification does not apply.

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## 15. REGULATORY INFORMATION

**U.S. Federal Regulations:**

**O.S.H.A.:** This product meets the criteria for a hazardous substance as defined in the Hazard Communication Standard. (29 CFR 1910.1200)

**E.P.A.:**

**S.A.R.A. Title III Section 311/312 Categorization (40 CFR 370):** Immediate (Acute) Health Hazard

**S.A.R.A. Title III Section 313 (40 CFR 372):** This product does NOT contain any chemical subject to the reporting requirements of Section 313 of Title III of SARA.

--

**302 (EHS) TPQ (40 CFR 355):** Not applicable

**304 CERCLA RQ (40 CFR 302.4):** Acetic acid 5000 lbs.

**304 EHS RQ (40 CFR 355):** Not applicable

**Clean Water Act (40 CFR 116.4):** Acetic acid - RQ 5000 lbs.

**RCRA:** Contains no RCRA regulated substances.

**C.P.S.C.:** Not applicable

**State Regulations:**

**California Prop. 65:** No Prop. 65 listed chemicals are present in this product.

**Identification of Prop. 65 Ingredient(s):** Not applicable

**California Perchlorate Rule CCR Title 22 Chap 33:**

**Trade Secret Registry:** Not applicable

**National Inventories:**

**U.S. Inventory Status:** All ingredients in this product are listed on the TSCA 8(b) Inventory (40 CFR 710).

**TSCA CAS Number:** Not applicable

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## 16. OTHER INFORMATION

**Intended Use:** Hardness determination

**References:** 29 CFR 1900 - 1910 (Code of Federal Regulations - Labor). Air Contaminants, Federal Register, Vol. 54, No. 12. Thursday, January 19, 1989. pp. 2332-2983. Fire Protection Guide on Hazardous Materials, 10th Ed. Quincy, MA: National Fire Protection Fire Protection Guide on Hazardous Materials, 10th Ed. Quincy, MA: National Fire Protection Association, 1991. In-house information. List of Dangerous Substances Classified in Annex I of the EEC Directive (67/548) - Classification, Packaging and Labeling of Dangerous Substances, Amended July 1992. Technical



Judgment. TLV's Threshold Limit Values and Biological Exposure Indices for 1992-1993. American Conference of Governmental Industrial Hygienists, 1992.

**Revision Summary:** Updates in Section(s) 14,

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**Legend:**

NA - Not Applicable	w/w - weight/weight
ND - Not Determined	w/v - weight/volume
NV - Not Available	v/v - volume/volume

**USER RESPONSIBILITY:** Each user should read and understand this information and incorporate it in individual site safety programs in accordance with applicable hazard communication standards and regulations.

**THE INFORMATION CONTAINED HEREIN IS BASED ON DATA CONSIDERED TO BE ACCURATE. HOWEVER, NO WARRANTY IS EXPRESSED OR IMPLIED REGARDING THE ACCURACY OF THESE DATA OR THE RESULTS TO BE OBTAINED FROM THE USE THEREOF.**

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(970) 669-3050

MSDS No: M00928

# MATERIAL SAFETY DATA SHEET

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## 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

**Product Name:** Calcium Sulfate  
**Catalog Number:** 1232120

Hach Company  
P.O.Box 389  
Loveland, CO USA 80539  
(970) 669-3050

Emergency Telephone Numbers:  
(Medical and Transportation)  
(303) 623-5716 24 Hour Service  
(515)232-2533 8am - 4pm CST

**MSDS Number:** M00928  
**Chemical Name:** Sulfuric acid, calcium salt  
**CAS No.:** 10101-41-4  
**Chemical Formula:** CaSO<sub>4</sub> · 2H<sub>2</sub>O  
**Chemical Family:** Inorganic Salt  
**Hazard:** Practically non-toxic.  
**Date of MSDS Preparation:**  
**Day:** 11  
**Month:** December  
**Year:** 2007

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## 2. COMPOSITION / INFORMATION ON INGREDIENTS

### Calcium Sulfate

**CAS No.:** 10101-41-4  
**TSCA CAS Number:** 7778-18-9  
**Percent Range:** 100.0  
**Percent Range Units:** weight / weight  
**LD50:** None reported  
**LC50:** None reported  
**TLV:** 10 mg/m<sup>3</sup> (total dust)  
**PEL:** 15 mg/m<sup>3</sup> (total dust)  
**Hazard:** Practically non-toxic.

---

## 3. HAZARDS IDENTIFICATION

**Emergency Overview:**  
**Appearance:** White powder  
**Odor:** None

**HMIS:**  
**Health:** 0  
**Flammability:** 0  
**Reactivity:** 0

**Protective Equipment:** X - See protective equipment, Section 8.

**NFPA:**

**Health:** 0

**Flammability:** 0

**Reactivity:** 0

**Symbol:** Not applicable

**Potential Health Effects:**

**Eye Contact:** No effects are anticipated

**Skin Contact:** No effects are anticipated

**Skin Absorption:** No effects anticipated

**Target Organs:** Not applicable

**Ingestion:** No Effects Anticipated

**Target Organs:** Not applicable

**Inhalation:** May cause: coughing sneezing

**Target Organs:** None reported

**Medical Conditions Aggravated:** Pre-existing: Respiratory conditions

**Chronic Effects:** No effects anticipated

**Cancer / Reproductive Toxicity Information:**

O.S.H.A. Listed: No

IARC Listed: No

NTP Listed: No

**Additional Cancer / Reproductive Toxicity Information:** None reported

**Toxicologically Synergistic Products:** None reported

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## 4. FIRST AID

**Eye Contact:** Flush eyes with water. Call physician if irritation develops.

**Skin Contact (First Aid):** Wash skin with plenty of water.

**Ingestion (First Aid):** Give large quantities of water. Call physician immediately.

**Inhalation:** Remove to fresh air.

---

## 5. FIRE FIGHTING MEASURES

**Flammable Properties:** Material will not burn.

**Flash Point:** Not applicable

**Method:** Not applicable

**Flammability Limits:**

**Lower Explosion Limits:** Not applicable

**Upper Explosion Limits:** Not applicable

**Autoignition Temperature:** Not applicable

**Hazardous Combustion Products:** None reported

**Fire / Explosion Hazards:** None reported

**Static Discharge:** None reported.

**Mechanical Impact:** None reported

**Extinguishing Media:** Use media appropriate to surrounding fire conditions

**Fire Fighting Instruction:** As in any fire, wear self-contained breathing apparatus pressure-demand and full protective gear. Evacuate area and fight fire from a safe distance.

---

## 6. ACCIDENTAL RELEASE MEASURES

**Spill Response Notice:**

Only persons properly qualified to respond to an emergency involving hazardous substances may respond to a spill according to federal regulations (OSHA 29 CFR 1910.120(a)(v)) and per your company's emergency response plan and guidelines/procedures. See Section 13, Special Instructions for disposal assistance.

**Containment Technique:** Stop spilled material from being released to the environment.

**Clean-up Technique:** Sweep up material. Place material in a plastic bag. Mark bag 'Non-hazardous trash', and dispose of as normal refuse. Decontaminate the area of the spill with a soap solution.

**Evacuation Procedure:** Evacuate as needed to perform spill clean-up. If conditions warrant, increase the size of the evacuation.

**Special Instructions (for accidental release):** Not applicable

**304 EHS RQ (40 CFR 355):** Not applicable

**D.O.T. Emergency Response Guide Number:** Not applicable

---

## 7. HANDLING / STORAGE

**Handling:** Avoid contact with eyes Wash thoroughly after handling. Maintain general industrial hygiene practices when using this product.

**Storage:** Keep container tightly closed when not in use.

**Flammability Class:** Not applicable

---

## 8. EXPOSURE CONTROLS / PROTECTIVE EQUIPMENT

**Engineering Controls:** Maintain general industrial hygiene practices when using this product. Maintain adequate ventilation to keep vapor level below TWA for chemicals in this product.

**Personal Protective Equipment:**

**Eye Protection:** safety glasses with top and side shields

**Skin Protection:** Not applicable

**Inhalation Protection:** adequate ventilation

**Precautionary Measures:** Avoid contact with: eyes Wash thoroughly after handling.

**TLV:** 10 mg/m<sup>3</sup> (total dust)

**PEL:** 15 mg/m<sup>3</sup> (total dust)

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## 9. PHYSICAL / CHEMICAL PROPERTIES

**Appearance:** White powder

**Physical State:** Solid

**Molecular Weight:** 172.1

**Odor:** None

**pH:** ~ 7 (in solution)

**Vapor Pressure:** Not applicable

**Vapor Density (air = 1):** Not applicable

**Boiling Point:** Not applicable

**Melting Point:** decomposes @ 1450°C (2642°F)

**Specific Gravity (water = 1):** 2.32

**Evaporation Rate (water = 1):** Not applicable

**Volatile Organic Compounds Content:** None

**Partition Coefficient (n-octanol / water):** Not applicable

**Solubility:**

**Water:** Slightly soluble (240mg/100ml @ 25°C)

**Acid:** Not determined

**Other:** Slightly soluble in glycerol; Insoluble in most organic solvents.

**Metal Corrosivity:**

**Steel:** Not determined

**Aluminum:** Not determined

---

## 10. STABILITY / REACTIVITY

**Chemical Stability:** Stable when stored under proper conditions.

**Conditions to Avoid:** Heating to decomposition.

**Reactivity / Incompatibility:** May react violently in contact with: aluminum diazomethane

**Hazardous Decomposition:** Heating to decomposition releases toxic and/or corrosive fumes of: sulfur oxides

**Hazardous Polymerization:** Will not occur.

---

## 11. TOXICOLOGICAL INFORMATION

**Product Toxicological Data:**

**LD50:** None reported

**LC50:** None reported

**Dermal Toxicity Data:** None reported

**Skin and Eye Irritation Data:** None reported

**Mutation Data:** None reported

**Reproductive Effects Data:** None reported

**Ingredient Toxicological Data:** Not applicable

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## 12. ECOLOGICAL INFORMATION

**Product Ecological Information:** --

No ecological data available for this product.

**Ingredient Ecological Information:** --

Not applicable

---

## 13. DISPOSAL CONSIDERATIONS

**EPA Waste ID Number:** Not applicable

**Special Instructions (Disposal):** Place material in a plastic bag. Mark bag 'Non-hazardous trash', and dispose of as normal refuse.

**Empty Containers:** Rinse three times with an appropriate solvent. Dispose of empty container as normal trash.

**NOTICE (Disposal):** These disposal guidelines are based on federal regulations and may be superseded by more stringent state or local requirements. Please consult your local environmental regulators for more information.

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## 14. TRANSPORT INFORMATION

**D.O.T.:**

**D.O.T. Proper Shipping Name:** Not Currently Regulated

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**DOT Hazard Class:** NA

**DOT Subsidiary Risk:** NA

**DOT ID Number:** NA

**DOT Packing Group:** NA

**I.C.A.O.:**

**I.C.A.O. Proper Shipping Name:** Not Currently Regulated

--

**ICAO Hazard Class:** NA

**ICAO Subsidiary Risk:** NA

**ICAO ID Number:** NA

**ICAO Packing Group:** NA

**I.M.O.:**

**I.M.O. Proper Shipping Name:** Not Currently Regulated

--

**I.M.O. Hazard Class:** NA

**I.M.O. Subsidiary Risk:** NA

**I.M.O. ID Number:** NA

**I.M.O. Packing Group:** NA

**Additional Information:** There is a possibility that this product could be contained in a reagent set or kit composed of various compatible dangerous goods. If the item is NOT in a set or kit, the classification given above applies. If the item IS part of a set or kit, the classification would change to the following: UN3316 Chemical Kit, Class 9, PG II or III. If the item is not regulated, the Chemical Kit classification does not apply.

---

## 15. REGULATORY INFORMATION

**U.S. Federal Regulations:**

**O.S.H.A.:** This product does not meet the criteria for a hazardous substance as defined in the Hazard Communication Standard. (29 CFR 1910.1200)

**E.P.A.:**

**S.A.R.A. Title III Section 311/312 Categorization (40 CFR 370):** This product is not hazardous under 29 CFR.1910.1200 and therefore is not covered by Title III under SARA.

**S.A.R.A. Title III Section 313 (40 CFR 372):** This product does NOT contain any chemical subject to the reporting requirements of Section 313 of Title III of SARA.

--

**302 (EHS) TPQ (40 CFR 355):** Not applicable

**304 CERCLA RQ (40 CFR 302.4):** Not applicable

**304 EHS RQ (40 CFR 355):** Not applicable

**Clean Water Act (40 CFR 116.4):** Not applicable

**RCRA:** Contains no RCRA regulated substances.

**C.P.S.C.:** Not applicable

**State Regulations:**

**California Prop. 65:** No Prop. 65 listed chemicals are present in this product.

**Identification of Prop. 65 Ingredient(s):** None

**California Perchlorate Rule CCR Title 22 Chap 33:**

**Trade Secret Registry:** Not applicable

**National Inventories:**

**U.S. Inventory Status:** TSCA Listed: Yes

**TSCA CAS Number:** 7778-18-9

---

## 16. OTHER INFORMATION

**Intended Use:** Laboratory Reagent

**References:** 29 CFR 1900 - 1910 (Code of Federal Regulations - Labor). Air Contaminants, Federal Register, Vol. 54, No. 12. Thursday, January 19, 1989. pp. 2332-2983. Technical Judgment. CCINFO CHEM Source/Références CHIMIE. Canadian Centre for Occupational Health and Safety. Hamilton, Ontario Canada: 30 June 1993. The Merck Index, 11th Ed. Rahway, New Jersey: Merck and Co., Inc., 1989. TLV's Threshold Limit Values and Biological Exposure Indices for 1992-1993. American Conference of Governmental Industrial Hygienists, 1992.

**Revision Summary:** Updates in Section(s) 14,

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**Legend:**

NA - Not Applicable	w/w - weight/weight
ND - Not Determined	w/v - weight/volume
NV - Not Available	v/v - volume/volume

**USER RESPONSIBILITY:** Each user should read and understand this information and incorporate it in individual site safety programs in accordance with applicable hazard communication standards and regulations.

**THE INFORMATION CONTAINED HEREIN IS BASED ON DATA CONSIDERED TO BE ACCURATE. HOWEVER, NO WARRANTY IS EXPRESSED OR IMPLIED REGARDING THE ACCURACY OF THESE DATA OR THE RESULTS TO BE OBTAINED FROM THE USE THEREOF.**

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(970) 669-3050

MSDS No: M01016

# MATERIAL SAFETY DATA SHEET

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## 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

**Product Name:** EDTA Standard Solution, 0.0075 N  
**Catalog Number:** 2498132

Hach Company  
P.O.Box 389  
Loveland, CO USA 80539  
(970) 669-3050

Emergency Telephone Numbers:  
(Medical and Transportation)  
(303) 623-5716 24 Hour Service  
(515)232-2533 8am - 4pm CST

**MSDS Number:** M01016  
**Chemical Name:** Not applicable  
**CAS No.:** Not applicable  
**Chemical Formula:** Not applicable  
**Chemical Family:** Not applicable  
**Hazard:** Practically non-toxic.  
**Date of MSDS Preparation:**  
**Day:** 12  
**Month:** December  
**Year:** 2007

---

## 2. COMPOSITION / INFORMATION ON INGREDIENTS

### Propylene Glycol

**CAS No.:** 57-55-6  
**TSCA CAS Number:** 57-55-6  
**Percent Range:** 20.0 - 30.0  
**Percent Range Units:** volume / volume  
**LD50:** Oral rat LD50 = 20 g/kg  
**LC50:** None reported  
**TLV:** Not established  
**PEL:** Not established  
**Hazard:** No effects anticipated.

### Demineralized Water

**CAS No.:** 7732-18-5  
**TSCA CAS Number:** 7732-18-5  
**Percent Range:** 70.0 - 80.0  
**Percent Range Units:** volume / volume  
**LD50:** None reported  
**LC50:** None reported  
**TLV:** Not established  
**PEL:** Not established  
**Hazard:** No effects anticipated.

### Other component

**CAS No.:** Not applicable  
**TSCA CAS Number:** Not applicable



**Percent Range:** < 1.0

**Percent Range Units:** weight / weight

**LD50:** Not applicable

**LC50:** Not applicable

**TLV:** Not established

**PEL:** Not established

**Hazard:** Any ingredient(s) of this product listed as "Other component(s)" is not considered a health hazard to the user of this product.

### **EDTA Tetrasodium Salt**

**CAS No.:** 64-02-8

**TSCA CAS Number:** 64-02-8

**Percent Range:** < 1.0

**Percent Range Units:** weight / volume

**LD50:** None reported

**LC50:** None reported

**TLV:** Not established

**PEL:** Not established

**Hazard:** May cause irritation.

---

## **3. HAZARDS IDENTIFICATION**

### ***Emergency Overview:***

**Appearance:** Clear, colorless liquid

**Odor:** Not determined

### ***HMIS:***

**Health:** 0

**Flammability:** 1

**Reactivity:** 0

**Protective Equipment:** X - See protective equipment, Section 8.

### ***NFPA:***

**Health:** 0

**Flammability:** 1

**Reactivity:** 0

**Symbol:** Not applicable

### ***Potential Health Effects:***

**Eye Contact:** May cause irritation

**Skin Contact:** No effects are anticipated

**Skin Absorption:** No effects anticipated

**Target Organs:** Not applicable

**Ingestion:** Very large doses may cause: rapid pulse and respirations kidney damage convulsions blood changes central nervous system depression

**Target Organs:** Red blood cells Central nervous system Kidneys

**Inhalation:** No effects anticipated

**Target Organs:** Not applicable

**Medical Conditions Aggravated:** None reported

**Chronic Effects:** No effects anticipated

### ***Cancer / Reproductive Toxicity Information:***

This product does NOT contain any OSHA listed carcinogens.

This product does NOT contain any IARC listed chemicals.

This product does NOT contain any NTP listed chemicals.

**Additional Cancer / Reproductive Toxicity Information:** None reported  
**Toxicologically Synergistic Products:** None reported

---

#### 4. FIRST AID

**Eye Contact:** Flush eyes with water. Call physician if irritation develops.

**Skin Contact (First Aid):** Wash skin with plenty of water.

**Ingestion (First Aid):** Give large quantities of water. Call physician immediately.

**Inhalation:** None required.

---

#### 5. FIRE FIGHTING MEASURES

**Flammable Properties:** During a fire, this product decomposes to form toxic gases.

**Flash Point:** >100°C; 212°F

**Method:** Closed cup

**Flammability Limits:**

**Lower Explosion Limits:** Not available

**Upper Explosion Limits:** Not available

**Autoignition Temperature:** Not available

**Hazardous Combustion Products:** This material will not burn.

**Fire / Explosion Hazards:** This product will not burn or explode.

**Static Discharge:** None reported.

**Mechanical Impact:** None reported

**Extinguishing Media:** Use media appropriate to surrounding fire conditions

**Fire Fighting Instruction:** As in any fire, wear self-contained breathing apparatus pressure-demand and full protective gear.

---

#### 6. ACCIDENTAL RELEASE MEASURES

**Spill Response Notice:**

Only persons properly qualified to respond to an emergency involving hazardous substances may respond to a spill according to federal regulations (OSHA 29 CFR 1910.120(a)(v)) and per your company's emergency response plan and guidelines/procedures. See Section 13, Special Instructions for disposal assistance.

**Containment Technique:** Absorb spilled liquid with non-reactive sorbent material.

**Clean-up Technique:** Cover spilled material with an alkali, such as soda ash or sodium bicarbonate. Scoop up slurry into a large beaker. Dilute with a large excess of water. Adjust to a pH between 6 and 9. Use sulfuric or citric acid to lower pH. Use soda ash or sodium bicarbonate to increase pH. Flush reacted material to the drain with a large excess of water. Decontaminate the area of the spill with a soap solution.

**Evacuation Procedure:** Evacuate as needed to perform spill clean-up. If conditions warrant, increase the size of the evacuation.

**Special Instructions (for accidental release):** Not applicable

**304 EHS RQ (40 CFR 355):** Not applicable

**D.O.T. Emergency Response Guide Number:** None

---

#### 7. HANDLING / STORAGE

**Handling:** Avoid contact with eyes. Wash thoroughly after handling. Maintain general industrial hygiene practices when using this product.

**Storage:** Store in a cool place. Keep away from: oxidizers

**Flammability Class:** Not applicable

---

## 8. EXPOSURE CONTROLS / PROTECTIVE EQUIPMENT

**Engineering Controls:** Maintain general industrial hygiene practices when using this product.

**Personal Protective Equipment:**

**Eye Protection:** safety glasses with top and side shields

**Skin Protection:** lab coat disposable latex gloves

**Inhalation Protection:** adequate ventilation

**Precautionary Measures:** Avoid contact with: eyes Wash thoroughly after handling. Keep away from: oxidizers

**TLV:** Not established

**PEL:** Not established

---

## 9. PHYSICAL / CHEMICAL PROPERTIES

**Appearance:** Clear, colorless liquid

**Physical State:** Liquid

**Molecular Weight:** Not applicable

**Odor:** Not determined

**pH:** 5

**Vapor Pressure:** Not available

**Vapor Density (air = 1):** Not available

**Boiling Point:** 100°C; 212°F

**Melting Point:** Not available

**Specific Gravity (water = 1):** 1.022

**Evaporation Rate (water = 1):** 0.8

**Volatile Organic Compounds Content:** Not available

**Partition Coefficient (n-octanol / water):** Not applicable

**Solubility:**

**Water:** Miscible

**Acid:** Miscible

**Other:** Not determined

**Metal Corrosivity:**

**Steel:** 0.014 in/yr

**Aluminum:** 0.002 in/yr

---

## 10. STABILITY / REACTIVITY

**Chemical Stability:** Stable when stored under proper conditions.

**Conditions to Avoid:** Heating to decomposition.

**Reactivity / Incompatibility:** Incompatible with: oxidizers

**Hazardous Decomposition:** Heating to decomposition releases toxic fumes of carbon monoxide and carbon dioxide.

**Hazardous Polymerization:** Will not occur.

---

## 11. TOXICOLOGICAL INFORMATION

**Product Toxicological Data:**

**LD50:** None reported

**LC50:** None reported

**Dermal Toxicity Data:** Propylene Glycol Skin rabbit LD50 = 20.8 g/kg

**Skin and Eye Irritation Data:** Propylene Glycol: Skin human 500 mg/7D - MILD; Eye rabbit 500 mg/24H - MILD

**Mutation Data:** Propylene Glycol: Cytogenetic analysis - DNA inhibition - mouse - subcutaneous - 8000 mg/kg

**Reproductive Effects Data:** Propylene Glycol: Intraperitoneal mouse TDLo = 100 mg/kg - fetotoxicity - post-implantation mortality

**Ingredient Toxicological Data:** Propylene Glycol Oral rat LD50 = 20 g/kg

---

## 12. ECOLOGICAL INFORMATION

**Product Ecological Information:** --

No ecological data available for this product.

**Ingredient Ecological Information:** --

No ecological data available for the ingredients of this product.

---

## 13. DISPOSAL CONSIDERATIONS

**EPA Waste ID Number:** None

**Special Instructions (Disposal):** Adjust to a pH between 6 and 9 with an alkali, such as soda ash or sodium bicarbonate. Open cold water tap completely, slowly pour the reacted material to the drain. Allow cold water to run for 5 minutes to completely flush the system.

**Empty Containers:** Rinse three times with an appropriate solvent. Dispose of empty container as normal trash.

**NOTICE (Disposal):** These disposal guidelines are based on federal regulations and may be superseded by more stringent state or local requirements. Please consult your local environmental regulators for more information.

---

## 14. TRANSPORT INFORMATION

**D.O.T.:**

**D.O.T. Proper Shipping Name:** Not Currently Regulated

--

**DOT Hazard Class:** NA

**DOT Subsidiary Risk:** NA

**DOT ID Number:** NA

**DOT Packing Group:** NA

**I.C.A.O.:**

**I.C.A.O. Proper Shipping Name:** Not Currently Regulated

--

**ICAO Hazard Class:** NA

**ICAO Subsidiary Risk:** NA

**ICAO ID Number:** NA

**ICAO Packing Group:** NA

**I.M.O.:**

**I.M.O. Proper Shipping Name:** Not Currently Regulated

--

**I.M.O. Hazard Class:** NA

**I.M.O. Subsidiary Risk:** NA

**I.M.O. ID Number:** NA

**I.M.O. Packing Group:** NA

**Additional Information:** There is a possibility that this product could be contained in a reagent set or kit composed of various compatible dangerous goods. If the item is NOT in a set or kit, the classification given above applies. If the item IS part of a set or kit, the classification would change to the following: UN3316 Chemical Kit, Class 9, PG II or III. If the item is not regulated, the Chemical Kit classification does not apply.

---

## 15. REGULATORY INFORMATION

### *U.S. Federal Regulations:*

**O.S.H.A.:** This product does not meet the criteria for a hazardous substance as defined in the Hazard Communication Standard. (29 CFR 1910.1200)

### *E.P.A.:*

**S.A.R.A. Title III Section 311/312 Categorization (40 CFR 370):** Not applicable

**S.A.R.A. Title III Section 313 (40 CFR 372):** This product does NOT contain any chemical subject to the reporting requirements of Section 313 of Title III of SARA.

--

**302 (EHS) TPQ (40 CFR 355):** Not applicable

**304 CERCLA RQ (40 CFR 302.4):** Not applicable

**304 EHS RQ (40 CFR 355):** Not applicable

**Clean Water Act (40 CFR 116.4):** Not applicable

**RCRA:** Contains no RCRA regulated substances.

**C.P.S.C.:** Not applicable

### *State Regulations:*

**California Prop. 65:** No Prop. 65 listed chemicals are present in this product.

**Identification of Prop. 65 Ingredient(s):** None

**California Perchlorate Rule CCR Title 22 Chap 33:**

**Trade Secret Registry:** Not applicable

### *National Inventories:*

**U.S. Inventory Status:** All ingredients in this product are listed on the TSCA 8(b) Inventory (40 CFR 710).

**TSCA CAS Number:** Not applicable

---

## 16. OTHER INFORMATION

**Intended Use:** Titrant solution

**References:** Air Contaminants, Federal Register, Vol. 54, No. 12. Thursday, January 19, 1989. pp. 2332-2983. TLV's Threshold Limit Values and Biological Exposure Indices for 1992-1993. American Conference of Governmental Industrial Hygienists, 1992. In-house information. Technical Judgment.

**Revision Summary:** Updates in Section(s) 14,

---

### **Legend:**

NA - Not Applicable	w/w - weight/weight
ND - Not Determined	w/v - weight/volume
NV - Not Available	v/v - volume/volume

**USER RESPONSIBILITY:** Each user should read and understand this information and incorporate it in individual site safety programs in accordance with applicable hazard communication standards and regulations.

**THE INFORMATION CONTAINED HEREIN IS BASED ON DATA CONSIDERED TO BE ACCURATE. HOWEVER, NO WARRANTY IS EXPRESSED OR IMPLIED REGARDING THE ACCURACY OF THESE DATA OR THE RESULTS TO BE OBTAINED FROM THE USE THEREOF.**

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Loveland, CO USA 80539  
(970) 669-3050

MSDS No: M00635

# MATERIAL SAFETY DATA SHEET

---

## 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

**Product Name:** ManVer ® Hardness Indicator  
**Catalog Number:** 42532

Hach Company  
P.O.Box 389  
Loveland, CO USA 80539  
(970) 669-3050

Emergency Telephone Numbers:  
(Medical and Transportation)  
(303) 623-5716 24 Hour Service  
(515)232-2533 8am - 4pm CST

**MSDS Number:** M00635  
**Chemical Name:** Not applicable  
**CAS No.:** Not applicable  
**Chemical Formula:** Not applicable  
**Chemical Family:** Not applicable  
**Hazard:** Causes irritation. Flammable. May cause allergic reaction.  
**Date of MSDS Preparation:**  
**Day:** 21  
**Month:** January  
**Year:** 2009

---

## 2. COMPOSITION / INFORMATION ON INGREDIENTS

### Propylene Glycol

**CAS No.:** 57-55-6  
**TSCA CAS Number:** 57-55-6  
**Percent Range:** 90.0 - 100.0  
**Percent Range Units:** volume / volume  
**LD50:** Oral rat LD50 = 20 g/kg  
**LC50:** None reported  
**TLV:** Not established  
**PEL:** Not established  
**Hazard:** No effects anticipated.

### Hydroxylamine Hydrochloride

**CAS No.:** 5470-11-1  
**TSCA CAS Number:** 5470-11-1  
**Percent Range:** 1.0 - 10.0  
**Percent Range Units:** weight / volume  
**LD50:** Oral mouse LD50 = 408 mg/kg  
**LC50:** None reported  
**TLV:** Not established  
**PEL:** Not established  
**Hazard:** Toxic. Causes irritation. May cause allergic reaction.

### Isopropanol

**CAS No.:** 67-63-0  
**TSCA CAS Number:** 67-63-0  
**Percent Range:** < 5.0  
**Percent Range Units:** volume / volume  
**LD50:** Oral rat LD50 = 5045 mg/kg Oral Human LDLo = 2770 mg/kg  
**LC50:** Inhalation rat LCLo = 12000 ppm/8hr  
**TLV:** 400 ppm (500 ppm STEL)  
**PEL:** 400 ppm

**Hazard:** Flammable. Causes moderate eye irritation.

**Calmagite**

**CAS No.:** 3147-14-6

**TSCA CAS Number:** 3147-14-6

**Percent Range:** < 1.0

**Percent Range Units:** weight / volume

**LD50:** Oral rat LD50 > 5000 mg/kg

**LC50:** None reported

**TLV:** Not established

**PEL:** Not established

**Hazard:** May cause irritation.

---

### 3. HAZARDS IDENTIFICATION

**Emergency Overview:**

**Appearance:** Dark red liquid

**Odor:** Fruity

HARMFUL IF SWALLOWED CAUSES EYE IRRITATION MAY CAUSE SKIN IRRITATION  
MAY CAUSE ALLERGIC SKIN REACTION  
FLAMMABLE

**HMIS:**

**Health:** 2

**Flammability:** 3

**Reactivity:** 0

**Protective Equipment:** X - See protective equipment, Section 8.

**NFPA:**

**Health:** 2

**Flammability:** 3

**Reactivity:** 0

**Symbol:** Not applicable

**Potential Health Effects:**

**Eye Contact:** Causes irritation

**Skin Contact:** May cause irritation May cause allergic reaction

**Skin Absorption:** Will be absorbed through the skin. Effects similar to those of ingestion

**Target Organs:** Central nervous system Red blood cells

**Ingestion:** Very large doses may cause: central nervous system depression drowsiness dizziness incoordination headache abdominal cramps rapid pulse and respirations convulsions Hydroxylamine Hydrochloride causes a decreased supply of oxygen to the tissues, blue discoloration of the skin, convulsions, drop in blood pressure and coma.

**Target Organs:** Central nervous system Red blood cells

**Inhalation:** May cause: irritation of nose and throat

**Target Organs:** None reported

**Medical Conditions Aggravated:** Pre-existing: Eye conditions Skin conditions Respiratory conditions

**Chronic Effects:** Chronic overexposure may cause damage to red blood cells

**Cancer / Reproductive Toxicity Information:**

This product does NOT contain any OSHA listed carcinogens.

This product does NOT contain any IARC listed chemicals.

This product does NOT contain any NTP listed chemicals.

**Additional Cancer / Reproductive Toxicity Information:** Contains: an experimental mutagen. an experimental teratogen.

**Toxicologically Synergistic Products:** None reported

---

### 4. FIRST AID

**Eye Contact:** Immediately flush eyes with water for 15 minutes. Call physician.

**Skin Contact (First Aid):** Wash skin with soap and plenty of water. Call physician if irritation develops.

**Ingestion (First Aid):** Do not induce vomiting. Give 1-2 glasses of water. Call physician immediately. Never give anything by mouth to an unconscious person.

**Inhalation:** Remove to fresh air.

---

## 5. FIRE FIGHTING MEASURES

**Flammable Properties:** Combustion generates toxic fumes.

**Flash Point:** 25.7°C (78.3°F)

**Method:** Closed cup

**Flammability Limits:**

**Lower Explosion Limits:** Not determined

**Upper Explosion Limits:** Not determined

**Autoignition Temperature:** Not determined

**Hazardous Combustion Products:** Toxic fumes of: chlorides carbon monoxide, carbon dioxide.

**Fire / Explosion Hazards:** May react violently with: strong oxidizers Do not expose to sparks or other ignition sources.

**Static Discharge:** None reported.

**Mechanical Impact:** None reported

**Extinguishing Media:** Alcohol foam.

**Fire Fighting Instruction:** As in any fire, wear self-contained breathing apparatus pressure-demand and full protective gear.

---

## 6. ACCIDENTAL RELEASE MEASURES

**Spill Response Notice:**

Only persons properly qualified to respond to an emergency involving hazardous substances may respond to a spill according to federal regulations (OSHA 29 CFR 1910.120(a)(v)) and per your company's emergency response plan and guidelines/procedures. See Section 13, Special Instructions for disposal assistance.

**Containment Technique:** Releases of this material may contaminate the environment. Remove all combustible material from spill area. Remove all ignition and spark-creating sources from the spill area. Cover spilled liquid with a commercially available flammable liquid sorbent such as vapor barrier blanket or activated carbon to avoid evolution of fumes. Vapors may travel to a source of ignition and flash back. May be ignited by: heat, sparks, or flames. Dike the material to create a barrier to combustibles.

**Clean-up Technique:** Eliminate all sources of ignition. Do not breathe the fumes. Use only non-sparking tools. Cover spilled material with an alkali, such as soda ash or sodium bicarbonate. Scoop up slurry into a large beaker. Dilute with a large excess of water. Filter to remove solids. Flush the spilled material to the drain with a large excess of water. Decontaminate the area of the spill with a soap solution.

**Evacuation Procedure:** Evacuate general area (50 foot radius or as directed by your facility's emergency response plan) when: any quantity is spilled. If conditions warrant, increase the size of the evacuation.

**Special Instructions (for accidental release):** Product is regulated as RCRA hazardous waste.

**304 EHS RQ (40 CFR 355):** Not applicable

**D.O.T. Emergency Response Guide Number:** 132

---

## 7. HANDLING / STORAGE

**Handling:** Avoid contact with eyes skin clothing Do not breathe mist or vapors. Wash thoroughly after handling. Maintain general industrial hygiene practices when using this product.

**Storage:** Keep away from: oxidizers Protect from: sparks, flames and other ignition sources

**Flammability Class:** Class IC

---

## 8. EXPOSURE CONTROLS / PROTECTIVE EQUIPMENT

**Engineering Controls:** Have an eyewash station nearby. Maintain general industrial hygiene practices when using this product.

**Personal Protective Equipment:**

**Eye Protection:** safety glasses with top and side shields

**Skin Protection:** disposable latex gloves lab coat

**Inhalation Protection:** adequate ventilation

**Precautionary Measures:** Avoid contact with: eyes skin clothing Do not breathe: mist/vapor Wash thoroughly after handling. Keep away from: oxidizers Protect from: sparks, flames and other ignition sources

**TLV:** Not established



PEL: Not established

---

## 9. PHYSICAL / CHEMICAL PROPERTIES

**Appearance:** Dark red liquid  
**Physical State:** Liquid  
**Molecular Weight:** Not applicable  
**Odor:** Fruity  
**pH:** 1.09  
**Vapor Pressure:** Not determined  
**Vapor Density (air = 1):** Not determined  
**Boiling Point:** 118°C  
**Melting Point:** Not determined  
**Specific Gravity (water = 1):** 1.01  
**Evaporation Rate (water = 1):** 0.05  
**Volatile Organic Compounds Content:** Not determined  
**Partition Coefficient (n-octanol / water):** Not applicable  
**Solubility:**  
    **Water:** Soluble  
    **Acid:** Soluble  
    **Other:** Not determined  
**Metal Corrosivity:**  
    **Steel:** 0.288 in/yr  
    **Aluminum:** 0.001 in/yr

---

## 10. STABILITY / REACTIVITY

**Chemical Stability:** Stable when stored under proper conditions.  
**Conditions to Avoid:** Contact with heat, sparks, open flames or other ignition sources. Heating to decomposition.  
**Reactivity / Incompatibility:** Incompatible with: oxidizers  
**Hazardous Decomposition:** Toxic fumes of: chlorides carbon monoxide carbon dioxide  
**Hazardous Polymerization:** Will not occur.

---

## 11. TOXICOLOGICAL INFORMATION

**Product Toxicological Data:**  
    **LD50:** None reported  
    **LC50:** None reported  
**Dermal Toxicity Data:** None reported  
**Skin and Eye Irritation Data:** None reported  
**Mutation Data:** Data reported in RTECS for Isopropanol, Propylene Glycol and Hydroxylamine Hydrochloride  
**Reproductive Effects Data:** Data reported in RTECS for Isopropanol  
**Ingredient Toxicological Data:** Hydroxylamine Hydrochloride: Oral mouse LD<sub>50</sub> = 400 mg/kg, Oral mouse LD<sub>50</sub> = 408 mg/kg; Propylene Glycol: Oral rat LD<sub>50</sub> = 20 g/kg; Isopropanol: Oral human LD<sub>Lo</sub> = 2770 mg/kg, Oral rat LD<sub>50</sub> = 5045 mg/kg

---

## 12. ECOLOGICAL INFORMATION

**Product Ecological Information:** --  
No ecological data available for this product.  
**Ingredient Ecological Information:** --  
No ecological data available for the ingredients of this product.

---

## 13. DISPOSAL CONSIDERATIONS

**EPA Waste ID Number:** D001, D002  
**Special Instructions (Disposal):** Dilute to 3 to 5 times the volume with cold water. Adjust to a pH between 6 and 9 with an alkali, such as soda ash or sodium bicarbonate. Open cold water tap completely, slowly pour the reacted material to the drain.

**Empty Containers:** Rinse three times with an appropriate solvent. Dispose of empty container as normal trash.

**NOTICE (Disposal):** These disposal guidelines are based on federal regulations and may be superseded by more stringent state or local requirements. Please consult your local environmental regulators for more information.

---

## 14. TRANSPORT INFORMATION

### **D.O.T.:**

**D.O.T. Proper Shipping Name:** Flammable Liquid, Corrosive, N.O.S.

(<10% Isopropanol/Hydroxylamine Hydrochloride Solution)

**DOT Hazard Class:** 3

**DOT Subsidiary Risk:** 8

**DOT ID Number:** UN2924

**DOT Packing Group:** III

### **I.C.A.O.:**

**I.C.A.O. Proper Shipping Name:** FLAMMABLE LIQUID, CORROSIVE, N.O.S.

(<10% Isopropanol/Hydroxylamine Hydrochloride Solution)

**ICAO Hazard Class:** 3

**ICAO Subsidiary Risk:** 8

**ICAO ID Number:** UN2924

**ICAO Packing Group:** III

### **I.M.O.:**

**I.M.O. Proper Shipping Name:** FLAMMABLE LIQUID, CORROSIVE, N.O.S.

(<10% Isopropanol/Hydroxylamine Hydrochloride Solution)

**I.M.O. Hazard Class:** 3

**I.M.O. Subsidiary Risk:** 8

**I.M.O. ID Number:** UN2924

**I.M.O. Packing Group:** III

**Additional Information:** There is a possibility that this product could be contained in a reagent set or kit composed of various compatible dangerous goods. If the item is NOT in a set or kit, the classification given above applies. If the item IS part of a set or kit, the classification would change to the following: UN3316 Chemical Kit, Class 9, PG II or III. If the item is not regulated, the Chemical Kit classification does not apply.

---

## 15. REGULATORY INFORMATION

### **U.S. Federal Regulations:**

**O.S.H.A.:** This product meets the criteria for a hazardous substance as defined in the Hazard Communication Standard. (29 CFR 1910.1200)

### **E.P.A.:**

**S.A.R.A. Title III Section 311/312 Categorization (40 CFR 370):** Immediate (Acute) Health Hazard Fire Hazard

**S.A.R.A. Title III Section 313 (40 CFR 372):** This product does NOT contain any chemical subject to the reporting requirements of Section 313 of Title III of SARA.

--

**302 (EHS) TPQ (40 CFR 355):** Not applicable

**304 CERCLA RQ (40 CFR 302.4):** Not applicable

**304 EHS RQ (40 CFR 355):** Not applicable

**Clean Water Act (40 CFR 116.4):** Not applicable

**RCRA:** Contains RCRA regulated substances. See Section 13, EPA Waste ID Number.

**C.P.S.C.:** Not applicable

### **State Regulations:**

**California Prop. 65:** No Prop. 65 listed chemicals are present in this product.

**Identification of Prop. 65 Ingredient(s):** None

**California Perchlorate Rule CCR Title 22 Chap 33:**

**Trade Secret Registry:** Not applicable

### **National Inventories:**

**U.S. Inventory Status:** All ingredients in this product are listed on the TSCA 8(b) Inventory (40 CFR 710).

**TSCA CAS Number:** Not applicable

---

## 16. OTHER INFORMATION

**Intended Use:** Indicator for hardness

**References:** 29 CFR 1900 - 1910 (Code of Federal Regulations - Labor). Air Contaminants, Federal Register, Vol. 54, No. 12. Thursday, January 19, 1989. pp. 2332-2983. TLV's Threshold Limit Values and Biological Exposure Indices for 1992-1993. American Conference of Governmental Industrial Hygienists, 1992. Fire Protection Guide on Hazardous Materials, 10th Ed. Quincy, MA: National Fire Protection Fire Protection Guide on Hazardous Materials, 10th Ed. Quincy, MA: National Fire Protection Association, 1991. In-house information. Technical Judgment.

**Revision Summary:** Updates in Section(s) 2, 3, European MSDS Only

---

**Legend:**

NA - Not Applicable                      w/w - weight/weight

ND - Not Determined                    w/v - weight/volume

NV - Not Available                      v/v - volume/volume

**USER RESPONSIBILITY:** Each user should read and understand this information and incorporate it in individual site safety programs in accordance with applicable hazard communication standards and regulations.

**THE INFORMATION CONTAINED HEREIN IS BASED ON DATA CONSIDERED TO BE ACCURATE. HOWEVER, NO WARRANTY IS EXPRESSED OR IMPLIED REGARDING THE ACCURACY OF THESE DATA OR THE RESULTS TO BE OBTAINED FROM THE USE THEREOF.**

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Loveland, CO USA 80539  
(970) 669-3050

MSDS No: M00998

# MATERIAL SAFETY DATA SHEET

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## 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

**Product Name:** Mehlich 2 Soil Extractant Concentrate  
**Catalog Number:** 2266349

Hach Company  
P.O.Box 389  
Loveland, CO USA 80539  
(970) 669-3050

Emergency Telephone Numbers:  
(Medical and Transportation)  
(303) 623-5716 24 Hour Service  
(515)232-2533 8am - 4pm CST

**MSDS Number:** M00998  
**Chemical Name:** Not applicable  
**CAS No.:** Not applicable  
**Chemical Formula:** Not applicable  
**Chemical Family:** Not applicable  
**Hazard:** Causes burns.  
**Date of MSDS Preparation:**  
**Day:** 12  
**Month:** December  
**Year:** 2007

---

## 2. COMPOSITION / INFORMATION ON INGREDIENTS

### Acetic Acid

**CAS No.:** 64-19-7  
**TSCA CAS Number:** 64-19-7  
**Percent Range:** 5.0 - 15.0  
**Percent Range Units:** volume / volume  
**LD50:** Oral rat LD<sub>50</sub> = 3310 mg/kg  
**LC50:** Human TCLo = 816 ppm / 3 minutes (Irritant) ; Mouse LC<sub>50</sub> = 5620 ppm / 1 hour  
**TLV:** 10 ppm (15 ppm STEL)  
**PEL:** 10 ppm  
**Hazard:** Flammable. Causes severe burns.

### Ammonium Chloride

**CAS No.:** 12125-02-9  
**TSCA CAS Number:** 12125-02-9  
**Percent Range:** 5.0 - 15.0  
**Percent Range Units:** weight / volume  
**LD50:** Oral rat LD<sub>50</sub> = 1650 mg/kg  
**LC50:** None reported  
**TLV:** 10 mg/m<sup>3</sup>  
**PEL:** 10 mg/m<sup>3</sup>  
**Hazard:** Causes severe eye irritation.

### Hydrochloric Acid

**CAS No.:** 7647-01-0  
**TSCA CAS Number:** 7647-01-0

**Percent Range:** < 20  
**Percent Range Units:** volume / volume  
**LD50:** Oral rabbit LD50 = 900 mg/kg  
**LC50:** Inhalation rat LC50 = 3124 ppm/1 hour  
**TLV:** 5 ppm ceiling  
**PEL:** 5 ppm ceiling  
**Hazard:** Causes burns.

#### **Hydrofluoric Acid**

**CAS No.:** 7664-39-3  
**TSCA CAS Number:** 7664-39-3  
**Percent Range:** 0.1 - 1.0  
**Percent Range Units:** volume / volume  
**LD50:** None reported  
**LC50:** Inhalation mouse LC<sub>50</sub> = 342 ppm/1hr; Inhalation primate (monkey) LC<sub>50</sub> = 1774 ppm/1hr  
**TLV:** 3 ppm as F  
**PEL:** C : 3 ppm as F  
**Hazard:** Causes burns. Highly toxic.

#### **Demineralized Water**

**CAS No.:** 7732-18-5  
**TSCA CAS Number:** 7732-18-5  
**Percent Range:** 75.0 - 85.0  
**Percent Range Units:** volume / volume  
**LD50:** None reported  
**LC50:** None reported  
**TLV:** Not established  
**PEL:** Not established  
**Hazard:** No effects anticipated.

---

### **3. HAZARDS IDENTIFICATION**

#### ***Emergency Overview:***

**Appearance:** Clear, colorless liquid

**Odor:** Vinegar

CAUSES BURNS HARMFUL IF SWALLOWED, INHALED OR ABSORBED THROUGH SKIN  
VAPOR HARMFUL

#### ***HMIS:***

**Health:** 3

**Flammability:** 0

**Reactivity:** 0

**Protective Equipment:** X - See protective equipment, Section 8.

#### ***NFPA:***

**Health:** 2

**Flammability:** 0

**Reactivity:** 0

**Symbol:** Not applicable

#### ***Potential Health Effects:***

**Eye Contact:** Causes eye burns.

**Skin Contact:** Causes burns.

**Skin Absorption:** Harmful if absorbed through the skin. The fluoride ion readily penetrates the skin causing destruction of deep tissue layers and even bone.

**Target Organs:** Bones

**Ingestion:** Causes: burns abdominal pain. May cause: nausea vomiting

**Target Organs:** None reported

**Inhalation:** Causes: burns. Can cause: sore throat coughing lung congestion

**Target Organs:** None reported

**Medical Conditions Aggravated:** Pre-existing: Eye conditions Skin conditions Respiratory conditions

**Chronic Effects:** Chronic overexposure may cause weight loss anemia

**Cancer / Reproductive Toxicity Information:**

This product does NOT contain any OSHA listed carcinogens.

An ingredient of this mixture is: IARC Group 3: Non-classifiable

Hydrofluoric Acid Hydrochloric acid

This product does NOT contain any NTP listed chemicals.

**Additional Cancer / Reproductive Toxicity Information:** Contains: an experimental mutagen.

**Toxicologically Synergistic Products:** None reported

---

## 4. FIRST AID

**Eye Contact:** Immediately flush eyes with water for 15 minutes. Call physician.

**Skin Contact (First Aid):** Wash skin with soap and plenty of water. Call physician immediately.

**Ingestion (First Aid):** Do not induce vomiting. Give 1-2 glasses of water. Call physician immediately.

Never give anything by mouth to an unconscious person.

**Inhalation:** Remove to fresh air.

---

## 5. FIRE FIGHTING MEASURES

**Flammable Properties:** Material will not burn.

**Flash Point:** Not applicable

**Method:** Not applicable

**Flammability Limits:**

**Lower Explosion Limits:** Not applicable

**Upper Explosion Limits:** Not applicable

**Autoignition Temperature:** Not applicable

**Hazardous Combustion Products:** This material will not burn.

**Fire / Explosion Hazards:** This product will not burn or explode.

**Static Discharge:** None reported.

**Mechanical Impact:** None reported

**Extinguishing Media:** Use media appropriate to surrounding fire conditions

**Fire Fighting Instruction:** As in any fire, wear self-contained breathing apparatus pressure-demand and full protective gear.

---

## 6. ACCIDENTAL RELEASE MEASURES

**Spill Response Notice:**

Only persons properly qualified to respond to an emergency involving hazardous substances may respond to a spill according to federal regulations (OSHA 29 CFR 1910.120(a)(v)) and per your company's emergency response plan and guidelines/procedures. See Section 13, Special Instructions for disposal assistance.

**Containment Technique:** Absorb spilled liquid with non-reactive sorbent material. Stop spilled material from being released to the environment.

**Clean-up Technique:** Cover spilled material with an alkali, such as soda ash or sodium bicarbonate. Scoop up slurry into a large beaker. Dilute with a large excess of water. Adjust to a pH between 6 and 9 with an

alkali, such as soda ash or sodium bicarbonate. Flush reacted material to the drain with a large excess of water. Decontaminate the area of the spill with a soap solution.

**Evacuation Procedure:** Evacuate as needed to perform spill clean-up. If conditions warrant, increase the size of the evacuation.

**Special Instructions (for accidental release):** Mixture contains a component which is regulated as a water pollutant. Mixture contains a component which is regulated as a hazardous air pollutant. Product is regulated as RCRA hazardous waste.

**304 EHS RQ (40 CFR 355):** Not applicable

**D.O.T. Emergency Response Guide Number:** 154

---

## 7. HANDLING / STORAGE

**Handling:** Avoid contact with eyes skin clothing Do not breathe mist or vapors. Wash thoroughly after handling. Maintain general industrial hygiene practices when using this product.

**Storage:** Store away from: alkalis Keep container tightly closed when not in use.

**Flammability Class:** Not applicable

---

## 8. EXPOSURE CONTROLS / PROTECTIVE EQUIPMENT

**Engineering Controls:** Have an eyewash station nearby. Have a safety shower nearby. Maintain general industrial hygiene practices when using this product.

**Personal Protective Equipment:**

**Eye Protection:** safety glasses with top and side shields

**Skin Protection:** disposable latex gloves lab coat

**Inhalation Protection:** laboratory fume hood

**Precautionary Measures:** Avoid contact with: eyes skin clothing Do not breathe: mist/vapor Wash thoroughly after handling. Keep away from: alkalis alkali metals

**TLV:** Not established

**PEL:** Not established

---

## 9. PHYSICAL / CHEMICAL PROPERTIES

**Appearance:** Clear, colorless liquid

**Physical State:** Liquid

**Molecular Weight:** Not applicable

**Odor:** Vinegar

**pH:** 2.58

**Vapor Pressure:** Not determined

**Vapor Density (air = 1):** Not determined

**Boiling Point:** 99°C

**Melting Point:** Not determined

**Specific Gravity (water = 1):** 1.037

**Evaporation Rate (water = 1):** Not determined

**Volatile Organic Compounds Content:** Not determined

**Partition Coefficient (n-octanol / water):** Not applicable

**Solubility:**

**Water:** Miscible

**Acid:** Miscible

**Other:** Not determined

**Metal Corrosivity:**

**Steel:** 0.399 in/yr

**Aluminum:** 6.10 in/yr

---

## 10. STABILITY / REACTIVITY

**Chemical Stability:** Stable when stored under proper conditions.  
**Conditions to Avoid:** Evaporation Extreme temperatures  
**Reactivity / Incompatibility:** Incompatible with: strong bases oxidizers  
**Hazardous Decomposition:** Toxic fumes of: carbon dioxide carbon monoxide  
**Hazardous Polymerization:** Will not occur.

---

## 11. TOXICOLOGICAL INFORMATION

**Product Toxicological Data:**

**LD50:** None reported

**LC50:** None reported

**Dermal Toxicity Data:** None reported

**Skin and Eye Irritation Data:** None reported

**Mutation Data:** Acetic Acid: Sister chromatid exchange in Human lymphocytes at 5 mmol/L

**Reproductive Effects Data:** None reported

**Ingredient Toxicological Data:** Acetic Acid: Oral rat LD<sub>50</sub> = 3310 mg/kg, Ammonium Chloride: Oral rat LD<sub>50</sub> = 1650 mg/kg, Hydrochloric Acid: Oral rabbit LD<sub>50</sub> = 900 mg/kg

---

## 12. ECOLOGICAL INFORMATION

**Product Ecological Information:** --

No ecological data available for this product.

**Ingredient Ecological Information:** --

No ecological data available for the ingredients of this product.

---

## 13. DISPOSAL CONSIDERATIONS

**EPA Waste ID Number:** D002

**Special Instructions (Disposal):** Dilute to 3 to 5 times the volume with cold water. Adjust to a pH between 6 and 9 with an alkali, such as soda ash or sodium bicarbonate. Open cold water tap completely, slowly pour the reacted material to the drain.

**Empty Containers:** Rinse three times with an appropriate solvent. Dispose of empty container as normal trash.

**NOTICE (Disposal):** These disposal guidelines are based on federal regulations and may be superseded by more stringent state or local requirements. Please consult your local environmental regulators for more information.

---

## 14. TRANSPORT INFORMATION

**D.O.T.:**

**D.O.T. Proper Shipping Name:** Corrosive Liquid, N.O.S.  
(Hydrochloric Acid/Acetic Acid Solution)

**DOT Hazard Class:** 8

**DOT Subsidiary Risk:** NA

**DOT ID Number:** UN1760

**DOT Packing Group:** II

**I.C.A.O.:**

**I.C.A.O. Proper Shipping Name:** Corrosive Liquid, N.O.S.  
(Hydrochloric Acid/Acetic Acid Solution)

**ICAO Hazard Class:** 8

**ICAO Subsidiary Risk:** NA

**ICAO ID Number:** UN1760



**ICAO Packing Group:** II

**I.M.O.:**

**I.M.O. Proper Shipping Name:** Corrosive Liquid, N.O.S.  
(Hydrochloric Acid/Acetic Acid Solution)

**I.M.O. Hazard Class:** 8

**I.M.O. Subsidiary Risk:** NA

**I.M.O. ID Number:** UN1760

**I.M.O. Packing Group:** II

**Additional Information:** There is a possibility that this product could be contained in a reagent set or kit composed of various compatible dangerous goods. If the item is NOT in a set or kit, the classification given above applies. If the item IS part of a set or kit, the classification would change to the following: UN3316 Chemical Kit, Class 9, PG II or III. If the item is not regulated, the Chemical Kit classification does not apply.

---

## 15. REGULATORY INFORMATION

**U.S. Federal Regulations:**

**O.S.H.A.:** This product meets the criteria for a hazardous substance as defined in the Hazard Communication Standard. (29 CFR 1910.1200)

**E.P.A.:**

**S.A.R.A. Title III Section 311/312 Categorization (40 CFR 370):** Immediate (Acute) Health Hazard

**S.A.R.A. Title III Section 313 (40 CFR 372):** This product contains a chemical(s) subject to the reporting requirements of Section 313 of Title III of SARA.

Ammonium Chloride

**302 (EHS) TPQ (40 CFR 355):** Hydrofluoric Acid 100 lbs.

**304 CERCLA RQ (40 CFR 302.4):** Acetic acid Ammonium chloride: Hydrochloric Acid (each) = 5000 lbs. Hydrofluoric acid 100 lbs.

**304 EHS RQ (40 CFR 355):** Not applicable

**Clean Water Act (40 CFR 116.4):** Acetic acid - RQ 5000 lbs. Ammonium chloride - RQ 5000 lbs. Hydrochloric Acid - RQ 5000 lbs. Hydrofluoric acid - RQ 100 lbs.

**RCRA:** Contains RCRA regulated substances. See Section 13, EPA Waste ID Number.

**C.P.S.C.:** Not applicable

**State Regulations:**

**California Prop. 65:** No Prop. 65 listed chemicals are present in this product.

**Identification of Prop. 65 Ingredient(s):** Not applicable

**California Perchlorate Rule CCR Title 22 Chap 33:**

**Trade Secret Registry:** Not applicable

**National Inventories:**

**U.S. Inventory Status:** All ingredients in this product are listed on the TSCA 8(b) Inventory (40 CFR 710).

**TSCA CAS Number:** Not applicable

---

## 16. OTHER INFORMATION

**Intended Use:** Soil Testing

**References:** 29 CFR 1900 - 1910 (Code of Federal Regulations - Labor). Air Contaminants, Federal Register, Vol. 54, No. 12. Thursday, January 19, 1989. pp. 2332-2983. TLV's Threshold Limit Values and Biological Exposure Indices for 1992-1993. American Conference of Governmental Industrial Hygienists, 1992.

Technical Judgment. In-house information. Fire Protection Guide on Hazardous Materials, 10th Ed. Quincy, MA: National Fire Protection Fire Protection Guide on Hazardous Materials, 10th Ed. Quincy, MA: National Fire Protection Association, 1991.

**Revision Summary:** Updates in Section(s) 14,

---

### Legend:

NA - Not Applicable

w/w - weight/weight

ND - Not Determined

w/v - weight/volume

NV - Not Available

v/v - volume/volume

**USER RESPONSIBILITY:** Each user should read and understand this information and incorporate it in individual site safety programs in accordance with applicable hazard communication standards and regulations.

**THE INFORMATION CONTAINED HEREIN IS BASED ON DATA CONSIDERED TO BE ACCURATE. HOWEVER, NO WARRANTY IS EXPRESSED OR IMPLIED REGARDING THE ACCURACY OF THESE DATA OR THE RESULTS TO BE OBTAINED FROM THE USE THEREOF.**

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P.O.Box 389  
Loveland, CO USA 80539  
(970) 669-3050

MSDS No: M01254

# MATERIAL SAFETY DATA SHEET

---

## 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

**Product Name:** Nitrite Standard Solution 250 µg/mL (mg/L) as NO<sub>2</sub>-N

**Catalog Number:** 2340249

Hach Company  
P.O.Box 389  
Loveland, CO USA 80539  
(970) 669-3050

Emergency Telephone Numbers:  
(Medical and Transportation)  
(303) 623-5716 24 Hour Service  
(515)232-2533 8am - 4pm CST

**MSDS Number:** M01254

**Chemical Name:** Not applicable

**CAS No.:** Not applicable

**Chemical Formula:** None allocated

**Chemical Family:** Not applicable

**Hazard:** Experimental carcinogen.

**Date of MSDS Preparation:**

**Day:** 10

**Month:** April

**Year:** 2007

---

## 2. COMPOSITION / INFORMATION ON INGREDIENTS

### Chloroform, ACS

**CAS No.:** 67-66-3

**TSCA CAS Number:** 67-66-3

**Percent Range:** 0.1 - 1.0

**Percent Range Units:** volume / volume

**LD50:** Oral rat LD<sub>50</sub> = 695 mg/kg; Oral mouse LD<sub>50</sub> = 36 mg/kg.

**LC50:** Inhalation rat LC<sub>50</sub> = 47,702 mg/m<sup>3</sup>/4hrs.

**TLV:** TWA = 10 ppm (49 mg/m<sup>3</sup>)

**PEL:** C: 50 ppm (C: 240 mg/m<sup>3</sup>)

**Hazard:** Toxic. Vapors harmful. Experimental carcinogen.

### Sodium Nitrite

**CAS No.:** 7632-00-0

**TSCA CAS Number:** 7632-00-0

**Percent Range:** < 1.0

**Percent Range Units:** weight / volume

**LD50:** Oral rat LD<sub>50</sub> = 85 mg/kg; Oral human LDLo = 71 mg/kg; Oral mouse LD<sub>50</sub> = 175 mg/kg.

**LC50:** Inhalation rat LC<sub>50</sub> = 5500 µg/m<sup>3</sup>

**TLV:** Not established.

**PEL:** Not established.

**Hazard:** Toxic. Oxidizer. Experimental carcinogen. Experimental mutagen. Experimental teratogen. May be embryotoxic.

### Demineralized Water

**CAS No.:** 7732-18-5

**TSCA CAS Number:** 7732-18-5  
**Percent Range:** > 99.0  
**Percent Range Units:** volume / volume  
**LD50:** None reported  
**LC50:** None reported  
**TLV:** Not established  
**PEL:** Not established  
**Hazard:** No effects anticipated.

---

### 3. HAZARDS IDENTIFICATION

**Emergency Overview:**

**Appearance:** Clear, colorless liquid  
**Odor:** None

POSSIBLE CANCER HAZARD: MAY CAUSE CANCER BASED ON ANIMAL DATA

**HMIS:**

**Health:** 2  
**Flammability:** 0  
**Reactivity:** 0  
**Protective Equipment:** X - See protective equipment, Section 8.

**NFPA:**

**Health:** 0  
**Flammability:** 0  
**Reactivity:** 0  
**Symbol:** Not applicable

**Potential Health Effects:**

**Eye Contact:** No effects are anticipated  
**Skin Contact:** No effects are anticipated  
**Skin Absorption:** None reported  
**Target Organs:** None reported  
**Ingestion:** None reported  
**Target Organs:** None reported  
**Inhalation:** No effects anticipated  
**Target Organs:** Not applicable  
**Medical Conditions Aggravated:** None reported  
**Chronic Effects:** Chronic overexposure may cause cancer  
**Cancer / Reproductive Toxicity Information:**  
This product does NOT contain any OSHA listed carcinogens.

An ingredient of this mixture is: IARC Group 2B: Experimental Carcinogen  
Chloroform

An ingredient of this mixture is: NTP Listed Group 2B: Experimental Carcinogen  
Chloroform

**Additional Cancer / Reproductive Toxicity Information:** Contains: an experimental mutagen. an experimental teratogen.

**Toxicologically Synergistic Products:** None reported

---

### 4. FIRST AID

**Eye Contact:** Flush eyes with water. Call physician if irritation develops.

**Skin Contact (First Aid):** Wash skin with plenty of water.

**Ingestion (First Aid):** Give large quantities of water. Call physician immediately.

**Inhalation:** None required.

---

## 5. FIRE FIGHTING MEASURES

**Flammable Properties:** Material will not burn.

**Flash Point:** Not applicable

**Method:** Not applicable

**Flammability Limits:**

**Lower Explosion Limits:** Not applicable

**Upper Explosion Limits:** Not applicable

**Autoignition Temperature:** Not applicable

**Hazardous Combustion Products:** This material will not burn.

**Fire / Explosion Hazards:** This product will not burn or explode.

**Static Discharge:** None reported.

**Mechanical Impact:** None reported

**Extinguishing Media:** Use media appropriate to surrounding fire conditions

**Fire Fighting Instruction:** As in any fire, wear self-contained breathing apparatus pressure-demand and full protective gear.

---

## 6. ACCIDENTAL RELEASE MEASURES

**Spill Response Notice:**

Only persons properly qualified to respond to an emergency involving hazardous substances may respond to a spill according to federal regulations (OSHA 29 CFR 1910.120(a)(v)) and per your company's emergency response plan and guidelines/procedures. See Section 13, Special Instructions for disposal assistance.

**Containment Technique:** Stop spilled material from being released to the environment.

**Clean-up Technique:** Absorb spilled liquid with non-reactive sorbent material. Sweep up material. Dispose of material in an E.P.A. approved hazardous waste facility. Decontaminate the area of the spill with a soap solution.

**Evacuation Procedure:** Evacuate as needed to perform spill clean-up. If conditions warrant, increase the size of the evacuation.

**Special Instructions (for accidental release):** Mixture contains a component which is regulated as a hazardous air pollutant. Mixture contains a component which is regulated as a water pollutant. Product is regulated as RCRA hazardous waste.

**304 EHS RQ (40 CFR 355):** Chloroform - RQ 10 lbs.

**D.O.T. Emergency Response Guide Number:** None

---

## 7. HANDLING / STORAGE

**Handling:** Avoid contact with eyes Do not breathe mist or vapors. Wash thoroughly after handling. Maintain general industrial hygiene practices when using this product.

**Storage:** Keep container tightly closed when not in use.

**Flammability Class:** Not applicable

---

## 8. EXPOSURE CONTROLS / PROTECTIVE EQUIPMENT

**Engineering Controls:** Maintain general industrial hygiene practices when using this product.

**Personal Protective Equipment:**

**Eye Protection:** safety glasses with top and side shields

**Skin Protection:** disposable latex gloves

**Inhalation Protection:** adequate ventilation

**Precautionary Measures:** Avoid contact with: eyes Do not breathe: mist/vapor Wash thoroughly after handling.

*TLV:* Not established

*PEL:* Not established

---

## 9. PHYSICAL / CHEMICAL PROPERTIES

**Appearance:** Clear, colorless liquid

**Physical State:** Liquid

**Molecular Weight:** Not applicable

**Odor:** None

**pH:** 7.01

**Vapor Pressure:** Not determined

**Vapor Density (air = 1):** Not determined

**Boiling Point:** Not determined

**Melting Point:** Not determined

**Specific Gravity (water = 1):** 0.99

**Evaporation Rate (water = 1):** Not determined

**Volatile Organic Compounds Content:** Not determined

**Partition Coefficient (n-octanol / water):** Not applicable

**Solubility:**

**Water:** Miscible

**Acid:** Not determined

**Other:** Not determined

**Metal Corrosivity:**

**Steel:** Not determined

**Aluminum:** Not determined

---

## 10. STABILITY / REACTIVITY

**Chemical Stability:** Stable when stored under proper conditions.

**Conditions to Avoid:** Extreme temperatures

**Reactivity / Incompatibility:** None reported

**Hazardous Decomposition:** None reported

**Hazardous Polymerization:** Will not occur.

---

## 11. TOXICOLOGICAL INFORMATION

**Product Toxicological Data:**

**LD50:** None reported

**LC50:** None reported

**Dermal Toxicity Data:** None reported

**Skin and Eye Irritation Data:** None reported

**Mutation Data:** Chloroform: Sister Chromatid exchange in human lymphocytes @ 10 mmol/l, Cytogenetic analysis of rat @ 597 mg/kg/5D (intermittent), DNA Damage in mammalian lymphocytes @ 1 mmol/l

**Reproductive Effects Data:** Chloroform: Oral rat TDLo = 1260 mg/kg - Fetotoxicity, Musculoskeletal abnormalities, Inhalation rat TCLo = 30 ppm/7H - Fertility effects, fetotoxicity, musculoskeletal abnormalities, Oral mouse TDLo = 2177 mg/kg - Effects on newborn

**Ingredient Toxicological Data:** Chloroform: Oral rat LD50 = 908 mg/kg, Oral mouse LD50 = 36 mg/kg, Inhalation rat LC50 = 47702 mg/m<sup>3</sup>/4H, Dermal rabbit LD50 > 20 g/kg; Sodium Nitrite: Oral rat LD50 = 85 mg/kg

---

## 12. ECOLOGICAL INFORMATION

**Product Ecological Information:** --

No ecological data available for this product.

**Ingredient Ecological Information:** --

No ecological data available for the ingredients of this product.

---

## 13. DISPOSAL CONSIDERATIONS

**EPA Waste ID Number:** D022

**Special Instructions (Disposal):** Dispose of material in an E.P.A. approved hazardous waste facility.

**Empty Containers:** Rinse three times with an appropriate solvent. Dispose of empty container as normal trash. Rinsate from empty containers may contain sufficient product to require disposal as hazardous waste.

**NOTICE (Disposal):** These disposal guidelines are based on federal regulations and may be superseded by more stringent state or local requirements. Please consult your local environmental regulators for more information.

---

## 14. TRANSPORT INFORMATION

**D.O.T.:**

**D.O.T. Proper Shipping Name:** Not Currently Regulated

--

**DOT Hazard Class:** NA

**DOT Subsidiary Risk:** NA

**DOT ID Number:** NA

**DOT Packing Group:** NA

**I.C.A.O.:**

**I.C.A.O. Proper Shipping Name:** Not Currently Regulated

--

**ICAO Hazard Class:** NA

**ICAO Subsidiary Risk:** NA

**ICAO ID Number:** NA

**ICAO Packing Group:** NA

**I.M.O.:**

**I.M.O. Proper Shipping Name:** Not Currently Regulated

--

**I.M.O. Hazard Class:** NA

**I.M.O. Subsidiary Risk:** NA

**I.M.O. ID Number:** NA

**I.M.O. Packing Group:** NA

**Additional Information:** There is a possibility that this product could be contained in a reagent set or kit composed of various compatible dangerous goods. If the item is NOT in a set or kit, the classification given above applies. If the item IS part of a set or kit, the classification would change to the following: UN3316 Chemical Kit, Class 9, PG II or III. If the item is not regulated, the Chemical Kit classification does not apply.

---

## 15. REGULATORY INFORMATION

**U.S. Federal Regulations:**

**O.S.H.A.:** This product meets the criteria for a hazardous substance as defined in the Hazard Communication Standard. (29 CFR 1910.1200)

**E.P.A.:**

**S.A.R.A. Title III Section 311/312 Categorization (40 CFR 370):** Delayed (Chronic) Health Hazard

**S.A.R.A. Title III Section 313 (40 CFR 372):** This product contains a chemical(s) subject to the reporting requirements of Section 313 of Title III of SARA.

Chloroform

**302 (EHS) TPQ (40 CFR 355):** Chloroform 10,000 lbs.

**304 CERCLA RQ (40 CFR 302.4):** Chloroform 10 lbs.

**304 EHS RQ (40 CFR 355):** Chloroform - RQ 10 lbs.

**Clean Water Act (40 CFR 116.4):** Chloroform - RQ 10 lbs.

**RCRA:** Contains RCRA regulated substances. See Section 13, EPA Waste ID Number.

**C.P.S.C.:** Not applicable

**State Regulations:**

**California Prop. 65:** WARNING - This product contains a chemical known to the State of California to cause cancer.

**Identification of Prop. 65 Ingredient(s):** Chloroform

**California Perchlorate Rule CCR Title 22 Chap 33:**

**Trade Secret Registry:** Not applicable

**National Inventories:**

**U.S. Inventory Status:** All ingredients in this product are listed on the TSCA 8(b) Inventory (40 CFR 710).

**TSCA CAS Number:** Not applicable

---

## 16. OTHER INFORMATION

**Intended Use:** Standard solution

**References:** 29 CFR 1900 - 1910 (Code of Federal Regulations - Labor). Air Contaminants, Federal Register, Vol. 54, No. 12. Thursday, January 19, 1989. pp. 2332-2983. TLV's Threshold Limit Values and Biological Exposure Indices for 1992-1993. American Conference of Governmental Industrial Hygienists, 1992.

Technical Judgment. In-house information.

**Revision Summary:** Updates in Section(s) 14,

---

### Legend:

NA - Not Applicable	w/w - weight/weight
ND - Not Determined	w/v - weight/volume
NV - Not Available	v/v - volume/volume

**USER RESPONSIBILITY:** Each user should read and understand this information and incorporate it in individual site safety programs in accordance with applicable hazard communication standards and regulations.

**THE INFORMATION CONTAINED HEREIN IS BASED ON DATA CONSIDERED TO BE ACCURATE. HOWEVER, NO WARRANTY IS EXPRESSED OR IMPLIED REGARDING THE ACCURACY OF THESE DATA OR THE RESULTS TO BE OBTAINED FROM THE USE THEREOF.**

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(970) 669-3050

MSDS No: M00049

# MATERIAL SAFETY DATA SHEET

---

## 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

**Product Name:** NitraVer ® 5 Nitrate Reagent

**Catalog Number:** 1403499

Hach Company  
P.O.Box 389  
Loveland, CO USA 80539  
(970) 669-3050

Emergency Telephone Numbers:  
(Medical and Transportation)  
(303) 623-5716 24 Hour Service  
(515)232-2533 8am - 4pm CST

**MSDS Number:** M00049

**Chemical Name:** Not applicable

**CAS No.:** Not applicable

**Chemical Formula:** Not applicable

**Chemical Family:** Not applicable

**Hazard:** Toxic. Cumulative poison. Recognized carcinogen. Experimental teratogen. May cause irritation.

**Date of MSDS Preparation:**

**Day:** 27

**Month:** January

**Year:** 2009

---

## 2. COMPOSITION / INFORMATION ON INGREDIENTS

### Potassium Phosphate, Monobasic

**CAS No.:** 7778-77-0

**TSCA CAS Number:** 7778-77-0

**Percent Range:** 30.0 - 40.0

**Percent Range Units:** weight / weight

**LD50:** Oral rat LD50 = 7100 mg/kg

**LC50:** None reported

**TLV:** Not established

**PEL:** Not established

**Hazard:** May cause irritation.

### Other components, each

**CAS No.:** Not applicable

**TSCA CAS Number:** Not applicable

**Percent Range:** < 1.0

**Percent Range Units:** weight / weight

**LD50:** Not applicable

**LC50:** Not applicable

**TLV:** Not established

**PEL:** Not established

**Hazard:** Any ingredient(s) of this product listed as "Other component(s)" is not considered a health hazard to the user of this product.

### Magnesium Sulfate

**CAS No.:** 10034-99-8

**TSCA CAS Number:** 7487-88-9  
**Percent Range:** 5.0 - 15.0  
**Percent Range Units:** weight / weight  
**LD50:** Oral mouse LDLo = 5000 mg/kg  
**LC50:** None reported  
**TLV:** Not established  
**PEL:** Not established  
**Hazard:** May cause irritation.

#### **Cadmium**

**CAS No.:** 7440-43-9  
**TSCA CAS Number:** 7440-43-9  
**Percent Range:** 10.0 - 20.0  
**Percent Range Units:** weight / weight  
**LD50:** Oral rat LD50 = 225 mg/kg  
**LC50:** Inhalation rat LC50 = 25 mg/m<sup>3</sup>/30min  
**TLV:** 0.01 mg/m<sup>3</sup>  
**PEL:** 0.005 mg/m<sup>3</sup>  
**Hazard:** Toxic. Recognized carcinogen. Cumulative poison. May cause irritation. Experimental teratogen.

#### **Gentisic Acid**

**CAS No.:** 490-79-9  
**TSCA CAS Number:** 490-79-9  
**Percent Range:** 15.0 - 25.0  
**Percent Range Units:** weight / weight  
**LD50:** Oral rat LD50 = 800 mg/kg, Oral mouse LD50 = 4500 mg/kg  
**LC50:** None reported  
**TLV:** Not established  
**PEL:** Not established  
**Hazard:** May cause irritation.

#### **Sulfanilic Acid**

**CAS No.:** 121-57-3  
**TSCA CAS Number:** 121-57-3  
**Percent Range:** 25.0 - 35.0  
**Percent Range Units:** weight / weight  
**LD50:** Oral rat LD50 = 12300 mg/kg  
**LC50:** None reported  
**TLV:** Not established  
**PEL:** Not established  
**Hazard:** May cause irritation.

---

### **3. HAZARDS IDENTIFICATION**

#### ***Emergency Overview:***

**Appearance:** Gray powder

**Odor:** None

HARMFUL IF INHALED MAY CAUSE EYE, SKIN AND RESPIRATORY TRACT IRRITATION  
CONTAINS CADMIUM: CANCER HAZARD CAN CAUSE LUNG AND KIDNEY DISEASE

#### ***HMIS:***

**Health:** 4\*

**Flammability:** 1

**Reactivity:** 0

**Protective Equipment:** X - See protective equipment, Section 8.

**NFPA:**

**Health:** 3

**Flammability:** 1

**Reactivity:** 0

**Symbol:** Not applicable

**Potential Health Effects:**

**Eye Contact:** May cause irritation

**Skin Contact:** May cause irritation

**Skin Absorption:** None reported

**Target Organs:** None reported

**Ingestion:** May cause: salivation vomiting abdominal pain anemia diarrhea kidney failure central nervous system effects cardiac depression

**Target Organs:** Kidneys Reproductive system Central nervous system

**Inhalation:** May cause: coughing headache nausea, vomiting chest pain pneumonitis respiratory tract irritation lung damage kidney damage

**Target Organs:** Kidneys Reproductive system Lungs

**Medical Conditions Aggravated:** Pre-existing: Respiratory conditions Kidney conditions Liver conditions

**Chronic Effects:** Chronic overexposure may cause cancer liver damage kidney damage bone damage (osteosclerosis)

**Cancer / Reproductive Toxicity Information:**

An ingredient of this product is an OSHA listed carcinogen.

Cadmium

An ingredient of this mixture is: IARC Group 1: Recognized Carcinogen

Cadmium

An ingredient of this mixture is: NTP Listed Group 1: Recognized Carcinogen

Cadmium

**Additional Cancer / Reproductive Toxicity Information:** Contains: an ACGIH A2 suspected human carcinogen.

**Toxicologically Synergistic Products:** None reported

---

## 4. FIRST AID

**Eye Contact:** Immediately flush eyes with water for 15 minutes. Call physician.

**Skin Contact (First Aid):** Wash skin with soap and plenty of water. Call physician if irritation develops.

**Ingestion (First Aid):** Administer milk or beaten egg whites at frequent intervals. Induce vomiting using syrup of ipecac or by sticking finger down throat. Never give anything by mouth to an unconscious person. Call physician immediately.

**Inhalation:** Remove to fresh air. Give artificial respiration if necessary. Call physician.

---

## 5. FIRE FIGHTING MEASURES

**Flammable Properties:** Can burn in fire, releasing toxic vapors.

**Flash Point:** Not applicable

**Method:** Not applicable

**Flammability Limits:**

**Lower Explosion Limits:** Not applicable

**Upper Explosion Limits:** Not applicable

**Autoignition Temperature:** Not available

**Hazardous Combustion Products:** Toxic fumes of: cadmium oxide nitrogen oxides. sulfur oxides. phosphorus oxides

**Fire / Explosion Hazards:** May react violently with: strong oxidizers hydrazoic acid ammonium nitrate

**Static Discharge:** None reported.

**Mechanical Impact:** None reported

**Extinguishing Media:** Water. Carbon dioxide Dry chemical.

**Fire Fighting Instruction:** As in any fire, wear self-contained breathing apparatus pressure-demand and full protective gear.

---

## 6. ACCIDENTAL RELEASE MEASURES

**Spill Response Notice:**

Only persons properly qualified to respond to an emergency involving hazardous substances may respond to a spill according to federal regulations (OSHA 29 CFR 1910.120(a)(v)) and per your company's emergency response plan and guidelines/procedures. See Section 13, Special Instructions for disposal assistance.

**Containment Technique:** Releases of this material may contaminate the environment. Stop spilled material from being released to the environment.

**Clean-up Technique:** Avoid breathing spilled material. Avoid contact with spilled material. Sweep up material. Dispose of material in an E.P.A. approved hazardous waste facility. Decontaminate the area of the spill with a soap solution.

**Evacuation Procedure:** Evacuate general area (50 foot radius or as directed by your facility's emergency response plan) when: any quantity is spilled. If conditions warrant, increase the size of the evacuation.

**Special Instructions (for accidental release):** Product is regulated as RCRA hazardous waste.

**304 EHS RQ (40 CFR 355):** Not applicable

**D.O.T. Emergency Response Guide Number:** None

---

## 7. HANDLING / STORAGE

**Handling:** Avoid contact with eyes skin clothing Do not breathe dust. Wash thoroughly after handling. Maintain general industrial hygiene practices when using this product. Use with adequate ventilation.

**Storage:** Store between 10° and 25°C. Keep away from: oxidizers hydrazoic acid ammonium nitrate

**Flammability Class:** Not applicable

---

## 8. EXPOSURE CONTROLS / PROTECTIVE EQUIPMENT

**Engineering Controls:** Have an eyewash station nearby. Maintain adequate ventilation to keep vapor level below TWA for chemicals in this product. Use a fume hood to avoid exposure to dust, mist or vapor.

**Personal Protective Equipment:**

**Eye Protection:** safety glasses with top and side shields

**Skin Protection:** disposable latex gloves lab coat

**Inhalation Protection:** laboratory fume hood and / or half-face respirator with HEPA filter

**Precautionary Measures:** Avoid contact with: eyes skin clothing Do not breathe: dust Wash thoroughly after handling. Keep away from: oxidizers

**TLV:** Not established

**PEL:** Not established

---

## 9. PHYSICAL / CHEMICAL PROPERTIES

**Appearance:** Gray powder

**Physical State:** Solid

**Molecular Weight:** Not applicable

**Odor:** None

**pH:** 5% solution = 2.8

**Vapor Pressure:** Not applicable

**Vapor Density (air = 1):** Not applicable

**Boiling Point:** Not applicable

**Melting Point:** 180°C; 356°F

**Specific Gravity (water = 1):** 2.0

**Evaporation Rate (water = 1):** Not applicable

**Volatile Organic Compounds Content:** Not applicable

**Partition Coefficient (n-octanol / water):** Not applicable

**Solubility:**

**Water:** Soluble

**Acid:** Soluble

**Other:** Not determined

**Metal Corrosivity:**

**Steel:** 0.081 in/yr

**Aluminum:** 0.000 in/yr

---

## 10. STABILITY / REACTIVITY

**Chemical Stability:** Stable when stored under proper conditions.

**Conditions to Avoid:** Heat

**Reactivity / Incompatibility:** Incompatible with: oxidizers hydrazoic acid ammonium nitrate sulfur

**Hazardous Decomposition:** Heating to decomposition releases toxic and/or corrosive fumes of: phosphorus oxides sulfur oxides carbon dioxide carbon monoxide nitrogen oxides

**Hazardous Polymerization:** Will not occur.

---

## 11. TOXICOLOGICAL INFORMATION

**Product Toxicological Data:**

**LD50:** Oral rat LD50 = 1500 mg/kg

**LC50:** None reported

**Dermal Toxicity Data:** None reported

**Skin and Eye Irritation Data:** Sulfanilic acid: Skin rabbit 500 mg/24H - Standard Draize - MILD; Eye rabbit 100 mg/24H - Standard Draize - MODERATE

**Mutation Data:** Cadmium - Cytogenetic analysis - hamster ovary 1 µmol/l

**Reproductive Effects Data:** Cadmium: Oral male rat TDLo = 155 mg/kg - 13 weeks pre-mating - effects on newborn growth and behavior; Oral female rat TDLo = 23 mg/kg - 1-22 days after conception - blood and lymphatic system abnormalities

**Ingredient Toxicological Data:** Cadmium: Oral rat LD50 = 225 mg/kg, Inhalation rat LC50 = 25 mg/m<sup>3</sup>/30 min; Gentisic acid Oral rat LD50 = 800 mg/kg; Sulfanilic acid Oral rat LD50 = 12.3 g/kg; KH<sub>2</sub>PO<sub>4</sub> Oral rat LD50 = 7100 mg/kg

---

## 12. ECOLOGICAL INFORMATION

**Product Ecological Information:** --

No ecological data available for this product.

**Ingredient Ecological Information:** --

No ecological data available for the ingredients of this product.

---

## 13. DISPOSAL CONSIDERATIONS

**EPA Waste ID Number:** D006

**Special Instructions (Disposal):** Dispose of material in an E.P.A. approved hazardous waste facility.

**Empty Containers:** Rinse three times with an appropriate solvent. Rinsate from empty containers may contain sufficient product to require disposal as hazardous waste. Dispose of empty container as normal trash.

**NOTICE (Disposal):** These disposal guidelines are based on federal regulations and may be superseded by more stringent state or local requirements. Please consult your local environmental regulators for more information.

---

## 14. TRANSPORT INFORMATION

**D.O.T.:**

**D.O.T. Proper Shipping Name:** Not Currently Regulated

--

**DOT Hazard Class:** NA

**DOT Subsidiary Risk:** NA

**DOT ID Number:** NA

**DOT Packing Group:** NA

**I.C.A.O.:**

**I.C.A.O. Proper Shipping Name:** Not Currently Regulated

--

**ICAO Hazard Class:** NA

**ICAO Subsidiary Risk:** NA

**ICAO ID Number:** NA

**ICAO Packing Group:** NA

**I.M.O.:**

**I.M.O. Proper Shipping Name:** Not Currently Regulated

--

**I.M.O. Hazard Class:** NA

**I.M.O. Subsidiary Risk:** NA

**I.M.O. ID Number:** NA

**I.M.O. Packing Group:** NA

**Additional Information:** There is a possibility that this product could be contained in a reagent set or kit composed of various compatible dangerous goods. If the item is NOT in a set or kit, the classification given above applies. If the item IS part of a set or kit, the classification would change to the following: UN3316 Chemical Kit, Class 9, PG II or III. If the item is not regulated, the Chemical Kit classification does not apply. ALSO NOTE: If the National Competent Authority declares this product an environmental hazard by Special Provision 909 (IMDG) and Special Provision A97 (IATA) the classification may be UN3077 or UN3082.

---

## 15. REGULATORY INFORMATION

**U.S. Federal Regulations:**

**O.S.H.A.:** This product contains Cadmium and is regulated under 29CFR Subpart Z 1910.1027. This product meets the criteria for a hazardous substance as defined in the Hazard Communication Standard. (29 CFR 1910.1200)

**E.P.A.:**

**S.A.R.A. Title III Section 311/312 Categorization (40 CFR 370):** Immediate (Acute) Health Hazard  
Delayed (Chronic) Health Hazard

**S.A.R.A. Title III Section 313 (40 CFR 372):** This product contains a chemical(s) subject to the reporting requirements of Section 313 of Title III of SARA.

Cadmium

**302 (EHS) TPQ (40 CFR 355):** Not applicable

**304 CERCLA RQ (40 CFR 302.4):** Cadmium 10 lbs.

**304 EHS RQ (40 CFR 355):** Not applicable

**Clean Water Act (40 CFR 116.4):** Not applicable

**RCRA:** Contains RCRA regulated substances. See Section 13, EPA Waste ID Number.

**C.P.S.C.:** Not applicable

**State Regulations:**

**California Prop. 65:** WARNING - This product contains a chemical known to the State of California to cause cancer.

**Identification of Prop. 65 Ingredient(s):** Cadmium

**California Perchlorate Rule CCR Title 22 Chap 33:**

**Trade Secret Registry:** Not applicable

**National Inventories:**

**U.S. Inventory Status:** All ingredients in this product are listed on the TSCA 8(b) Inventory (40 CFR 710).

*TSCA CAS Number:* Not applicable

---

## 16. OTHER INFORMATION

**Intended Use:** Determination of nitrate

**References:** 29 CFR 1900 - 1910 (Code of Federal Regulations - Labor). Air Contaminants, Federal Register, Vol. 54, No. 12. Thursday, January 19, 1989. pp. 2332-2983. TLV's Threshold Limit Values and Biological Exposure Indices for 1992-1993. American Conference of Governmental Industrial Hygienists, 1992. CCINFO RTECS. Canadian Centre for Occupational Health and Safety. Hamilton, Ontario Canada: 30 June 1993. Gosselin, R. E. et al. Clinical Toxicology of Commercial Products, 5th Ed. Baltimore: The Williams and Wilkins Co., 1984. IARC Monographs on the Evaluation of the Carcinogenic Risks to Humans. World Health Organization (Volumes 1-42) Supplement 7. France: 1987. List of Dangerous Substances Classified in Annex I of the EEC Directive (67/548) - Classification, Packaging and Labeling of Dangerous Substances, Amended July 1992. The Merck Index, 11th Ed. Rahway, New Jersey: Merck and Co., Inc., 1989. Technical Judgment. In-house information.

**Revision Summary:** Updates in Section(s) 2,

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### Legend:

NA - Not Applicable	w/w - weight/weight
ND - Not Determined	w/v - weight/volume
NV - Not Available	v/v - volume/volume

**USER RESPONSIBILITY:** Each user should read and understand this information and incorporate it in individual site safety programs in accordance with applicable hazard communication standards and regulations.

**THE INFORMATION CONTAINED HEREIN IS BASED ON DATA CONSIDERED TO BE ACCURATE. HOWEVER, NO WARRANTY IS EXPRESSED OR IMPLIED REGARDING THE ACCURACY OF THESE DATA OR THE RESULTS TO BE OBTAINED FROM THE USE THEREOF.**

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Hach Company  
P.O.Box 389  
Loveland, CO USA 80539  
(970) 669-3050

MSDS No: M00223

# MATERIAL SAFETY DATA SHEET

---

## 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

**Product Name:** Phenolphthalein Indicator Solution 5 g/l

**Catalog Number:** 16232

Hach Company  
P.O.Box 389  
Loveland, CO USA 80539  
(970) 669-3050

Emergency Telephone Numbers:  
(Medical and Transportation)  
(303) 623-5716 24 Hour Service  
(515)232-2533 8am - 4pm CST

**MSDS Number:** M00223

**Chemical Name:** Not applicable

**CAS No.:** Not applicable

**Chemical Formula:** Not applicable

**Chemical Family:** Not applicable

**Hazard:** Causes irritation. Experimental carcinogen.

**Date of MSDS Preparation:**

**Day:** 06

**Month:** February

**Year:** 2007

---

## 2. COMPOSITION / INFORMATION ON INGREDIENTS

### Diethylene Glycol Monoethyl Ether

**CAS No.:** 111-90-0

**TSCA CAS Number:** 111-90-0

**Percent Range:** >98

**Percent Range Units:** weight / weight

**LD50:** Oral Rat LD 50 = 5500 mg/kg, Oral mouse LD50 = 6600 mg/kg

**LC50:** Inhalation rat LC50 >200 mg/L 1Hr

**TLV:** Not established

**PEL:** Not established

**Hazard:** Causes irritation. Can form Peroxides

### Phenolphthalein

**CAS No.:** 77-09-8

**TSCA CAS Number:** 77-09-8

**Percent Range:** 0.1 - 1.0

**Percent Range Units:** weight / volume

**LD50:** None reported

**LC50:** None reported

**TLV:** Not established

**PEL:** Not established

**Hazard:** May cause allergic reaction. May cause irritation. Suspected carcinogen.

---

## 3. HAZARDS IDENTIFICATION



**Emergency Overview:**

**Appearance:** Clear

**Odor:** Bland

CAUSES EYE AND SKIN IRRITATION MAY CAUSE RESPIRATORY TRACT IRRITATION  
CONTAINS MATERIAL WHICH MAY CAUSE CANCER BASED ON ANIMAL DATA

**HMIS:**

**Health:** 2\*

**Flammability:** 1

**Reactivity:** 0

**Protective Equipment:** X - See protective equipment, Section 8.

**NFPA:**

**Health:** 1

**Flammability:** 1

**Reactivity:** 0

**Symbol:** Not applicable

**Potential Health Effects:**

**Eye Contact:** Causes moderate irritation

**Skin Contact:** Causes mild irritation

**Skin Absorption:** Harmful if absorbed through the skin

**Target Organs:** Liver Kidneys

**Ingestion:** May cause: drunkenness incoordination dizziness drowsiness headache nausea confusion

**Target Organs:** Central nervous system Liver Kidneys

**Inhalation:** May cause: respiratory tract irritation

**Target Organs:** None reported

**Medical Conditions Aggravated:** Liver conditions Kidney conditions

**Chronic Effects:** None reported

**Cancer / Reproductive Toxicity Information:**

This product does NOT contain any OSHA listed carcinogens.

An ingredient of this mixture is: IARC Group 2B: Experimental Carcinogen

Phenolphthalein

An ingredient of this mixture is: NTP Listed Group 2B: Experimental Carcinogen

Phenolphthalein

**Additional Cancer / Reproductive Toxicity Information:** Contains: an experimental mutagen.

**Toxicologically Synergistic Products:** None reported

---

## 4. FIRST AID

**Eye Contact:** Immediately flush eyes with water for 15 minutes. Call physician.

**Skin Contact (First Aid):** Wash skin with plenty of water for 15 minutes. Call physician immediately.

**Ingestion (First Aid):** Give large quantities of water. Call physician immediately.

**Inhalation:** Remove to fresh air.

---

## 5. FIRE FIGHTING MEASURES

**Flammable Properties:** Can burn in fire, releasing toxic vapors.

**Flash Point:** 253 °F (123 °C)

**Method:** Open cup

**Flammability Limits:**

**Lower Explosion Limits:** 2%

**Upper Explosion Limits:** 12.3%

**Autoignition Temperature:** Not available

**Hazardous Combustion Products:** Toxic fumes of: carbon monoxide, carbon dioxide.

**Fire / Explosion Hazards:** None reported

**Static Discharge:** None reported.

**Mechanical Impact:** None reported

**Extinguishing Media:** Dry chemical. Carbon dioxide Alcohol foam.

**Fire Fighting Instruction:** As in any fire, wear self-contained breathing apparatus pressure-demand and full protective gear.

---

## 6. ACCIDENTAL RELEASE MEASURES

**Spill Response Notice:**

Only persons properly qualified to respond to an emergency involving hazardous substances may respond to a spill according to federal regulations (OSHA 29 CFR 1910.120(a)(v)) and per your company's emergency response plan and guidelines/procedures. See Section 13, Special Instructions for disposal assistance.

**Containment Technique:** Absorb spilled liquid with non-reactive sorbent material.

**Clean-up Technique:** Cover with an inert material, such as sand. Sweep up material. Dispose of material in an E.P.A. approved hazardous waste facility. Decontaminate the area of the spill with a soap solution.

**Evacuation Procedure:** Evacuate as needed to perform spill clean-up. If conditions warrant, increase the size of the evacuation.

**Special Instructions (for accidental release):** Not applicable

**304 EHS RQ (40 CFR 355):** Not applicable

**D.O.T. Emergency Response Guide Number:** None

---

## 7. HANDLING / STORAGE

**Handling:** Avoid contact with eyes skin clothing Do not breathe mist or vapors. Wash thoroughly after handling. Maintain general industrial hygiene practices when using this product.

**Storage:** Protect from: heat

**Flammability Class:** Not applicable

---

## 8. EXPOSURE CONTROLS / PROTECTIVE EQUIPMENT

**Engineering Controls:** Have an eyewash station nearby. Maintain general industrial hygiene practices when using this product.

**Personal Protective Equipment:**

**Eye Protection:** chemical splash goggles

**Skin Protection:** disposable latex gloves lab coat

**Inhalation Protection:** adequate ventilation

**Precautionary Measures:** Avoid contact with: eyes skin clothing Do not breathe: mist/vapor Wash thoroughly after handling. Protect from: heat

**TLV:** Not established

**PEL:** Not established

---

## 9. PHYSICAL / CHEMICAL PROPERTIES

**Appearance:** Clear

**Physical State:** Liquid

**Molecular Weight:** Not applicable

**Odor:** Bland

**pH:** Not determined

**Vapor Pressure:** Not determined

**Vapor Density (air = 1):** 4.62

**Boiling Point:** 203° C (399° F)

**Melting Point:** Not determined

**Specific Gravity (water = 1):** Not determined

**Evaporation Rate (water = 1):** Not determined  
**Volatile Organic Compounds Content:** Not determined  
**Partition Coefficient (n-octanol / water):** Not applicable

**Solubility:**

**Water:** Miscible  
**Acid:** Not determined  
**Other:** Soluble in Ethanol, Acetone, Benzene, Ether, Pyridine

**Metal Corrosivity:**

**Steel:** Not determined  
**Aluminum:** Not determined

---

## 10. STABILITY / REACTIVITY

**Chemical Stability:** Stable when stored under proper conditions.

**Conditions to Avoid:** Contact with heat, sparks, open flames or other ignition sources. Moisture: substance is hygroscopic.

**Reactivity / Incompatibility:** None reported

**Hazardous Decomposition:** None reported

**Hazardous Polymerization:** Will not occur.

---

## 11. TOXICOLOGICAL INFORMATION

**Product Toxicological Data:**

**LD50:** None reported

**LC50:** None reported

**Dermal Toxicity Data:** None reported

**Skin and Eye Irritation Data:** None reported

**Mutation Data:** None reported

**Reproductive Effects Data:** None reported

**Ingredient Toxicological Data:** Diethylene Glycol Ethyl ether: Oral Rat LD 50 = 5500 mg/kg, Oral mouse LD50 = 6600 mg/kg; Inhalation rat LC50 >200 mg/L 1Hr; Skin mouse LD50 = 6000 mg/kg, Skin Rat LD50 = 6000 mg/kg, Skin rabbit LD50 = 8500 mg/kg

---

## 12. ECOLOGICAL INFORMATION

**Product Ecological Information:** --

No ecological data available for this product.

**Ingredient Ecological Information:** --

No ecological data available for the ingredients of this product.

---

## 13. DISPOSAL CONSIDERATIONS

**EPA Waste ID Number:** None

**Special Instructions (Disposal):** Incinerate material at an E.P.A. approved hazardous waste facility.

**Empty Containers:** Rinse three times with an appropriate solvent. Dispose of empty container as normal trash.

**NOTICE (Disposal):** These disposal guidelines are based on federal regulations and may be superseded by more stringent state or local requirements. Please consult your local environmental regulators for more information.

---

## 14. TRANSPORT INFORMATION

**D.O.T.:**

**D.O.T. Proper Shipping Name:** Not Currently Regulated

--

**DOT Hazard Class:** NA

**DOT Subsidiary Risk:** NA

**DOT ID Number:** NA

**DOT Packing Group:** NA

**I.C.A.O.:**

**I.C.A.O. Proper Shipping Name:** Not Currently Regulated

--

**ICAO Hazard Class:** NA

**ICAO Subsidiary Risk:** NA

**ICAO ID Number:** NA

**ICAO Packing Group:** NA

**I.M.O.:**

**I.M.O. Proper Shipping Name:** Not Currently Regulated

--

**I.M.O. Hazard Class:** NA

**I.M.O. Subsidiary Risk:** NA

**I.M.O. ID Number:** NA

**I.M.O. Packing Group:** NA

**Additional Information:** There is a possibility that this product could be contained in a reagent set or kit composed of various compatible dangerous goods. If the item is NOT in a set or kit, the classification given above applies. If the item IS part of a set or kit, the classification would change to the following: UN3316 Chemical Kit, Class 9, PG II or III. If the item is not regulated, the Chemical Kit classification does not apply.

---

## 15. REGULATORY INFORMATION

**U.S. Federal Regulations:**

**O.S.H.A.:** This product meets the criteria for a hazardous substance as defined in the Hazard Communication Standard. (29 CFR 1910.1200)

**E.P.A.:**

**S.A.R.A. Title III Section 311/312 Categorization (40 CFR 370):** Immediate (Acute) Health Hazard  
Delayed (Chronic) Health Hazard

**S.A.R.A. Title III Section 313 (40 CFR 372):** This product contains a chemical(s) subject to the reporting requirements of Section 313 of Title III of SARA.

Glycol ether

**302 (EHS) TPQ (40 CFR 355):** Not applicable

**304 CERCLA RQ (40 CFR 302.4):** Not applicable

**304 EHS RQ (40 CFR 355):** Not applicable

**Clean Water Act (40 CFR 116.4):** Not applicable

**RCRA:** Contains no RCRA regulated substances.

**C.P.S.C.:** Not applicable

**State Regulations:**

**California Prop. 65:** WARNING - This product contains a chemical known to the State of California to cause cancer.

**Identification of Prop. 65 Ingredient(s):** Phenolphthalein

**California Perchlorate Rule CCR Title 22 Chap 33:**

**Trade Secret Registry:** Not applicable

**National Inventories:**

**U.S. Inventory Status:** All ingredients in this product are listed on the TSCA 8(b) Inventory (40 CFR 710).

**TSCA CAS Number:** Not applicable

---

## 16. OTHER INFORMATION

**Intended Use:** Indicator for pH

**References:** 29 CFR 1900 - 1910 (Code of Federal Regulations - Labor). Air Contaminants, Federal Register, Vol. 54, No. 12. Thursday, January 19, 1989. pp. 2332-2983. TLV's Threshold Limit Values and Biological Exposure Indices for 1992-1993. American Conference of Governmental Industrial Hygienists, 1992. The Merck Index, 11th Ed. Rahway, New Jersey: Merck and Co., Inc., 1989. CCINFO RTECS. Canadian Centre for Occupational Health and Safety. Hamilton, Ontario Canada: 30 June 1993. Sax, N. Irving. Dangerous Properties of Industrial Materials, 7th Ed. New York: Van Nostrand Reinhold Co., 1989. Technical Judgment. Vendor Information.

**Revision Summary:** Updates in Section(s) 14,

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**Legend:**

NA - Not Applicable	w/w - weight/weight
ND - Not Determined	w/v - weight/volume
NV - Not Available	v/v - volume/volume

**USER RESPONSIBILITY:** Each user should read and understand this information and incorporate it in individual site safety programs in accordance with applicable hazard communication standards and regulations.

**THE INFORMATION CONTAINED HEREIN IS BASED ON DATA CONSIDERED TO BE ACCURATE. HOWEVER, NO WARRANTY IS EXPRESSED OR IMPLIED REGARDING THE ACCURACY OF THESE DATA OR THE RESULTS TO BE OBTAINED FROM THE USE THEREOF.**

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World Headquarters  
Hach Company  
P.O.Box 389  
Loveland, CO USA 80539  
(970) 669-3050

MSDS No: M00038

# MATERIAL SAFETY DATA SHEET

---

## 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

**Product Name:** PhosVer ® 3 Phosphate Reagent  
**Catalog Number:** 220999

Hach Company  
P.O.Box 389  
Loveland, CO USA 80539  
(970) 669-3050

Emergency Telephone Numbers:  
(Medical and Transportation)  
(303) 623-5716 24 Hour Service  
(515)232-2533 8am - 4pm CST

**MSDS Number:** M00038  
**Chemical Name:** Not applicable  
**CAS No.:** Not applicable  
**Chemical Formula:** Not applicable  
**Chemical Family:** Not applicable  
**Hazard:** Causes eye burns.  
**Date of MSDS Preparation:**  
**Day:** 21  
**Month:** March  
**Year:** 2009

---

## 2. COMPOSITION / INFORMATION ON INGREDIENTS

### Potassium Pyrosulfate

**CAS No.:** 7790-62-7  
**TSCA CAS Number:** 7790-62-7  
**Percent Range:** 70.0 - 80.0  
**Percent Range Units:** weight / weight  
**LD50:** Oral rat LD50 = 2340 mg/kg  
**LC50:** None reported  
**TLV:** Not established  
**PEL:** Not established  
**Hazard:** Causes eye burns.

### Ascorbic Acid

**CAS No.:** 50-81-7  
**TSCA CAS Number:** 50-81-7  
**Percent Range:** 20.0 - 30.0  
**Percent Range Units:** weight / weight  
**LD50:** Oral rat LD50 = 11900 mg/kg  
**LC50:** None reported  
**TLV:** Not established  
**PEL:** Not established  
**Hazard:** Practically non-toxic.

### Sodium Molybdate

**CAS No.:** 10102-40-6  
**TSCA CAS Number:** 7631-95-0  
**Percent Range:** 1.0 - 10.0  
**Percent Range Units:** weight / weight  
**LD50:** Oral rat LD<sub>50</sub> = 4000 mg/kg.  
**LC50:** Inhalation rat LC50 = > 2080 mg/m<sup>3</sup>/4 hrs  
**TLV:** 5 mg/m<sup>3</sup> (as Mo)  
**PEL:** 5 mg/m<sup>3</sup> (as Mo)

**Hazard:** May cause irritation.

**Other components, each**

**CAS No.:** Not applicable

**TSCA CAS Number:** Not applicable

**Percent Range:** < 1.0

**Percent Range Units:** weight / weight

**LD50:** Not applicable

**LC50:** Not applicable

**TLV:** Not established

**PEL:** Not established

**Hazard:** Any ingredient(s) of this product listed as "Other component(s)" is not considered a health hazard to the user of this product.

---

### 3. HAZARDS IDENTIFICATION

**Emergency Overview:**

**Appearance:** White to off-white powder

**Odor:** None

CAUSES EYE BURNS MAY CAUSE RESPIRATORY TRACT IRRITATION

**HMIS:**

**Health:** 3

**Flammability:** 1

**Reactivity:** 0

**Protective Equipment:** X - See protective equipment, Section 8.

**NFPA:**

**Health:** 3

**Flammability:** 1

**Reactivity:** 0

**Symbol:** Not applicable

**Potential Health Effects:**

**Eye Contact:** Causes eye burns.

**Skin Contact:** No effects are anticipated

**Skin Absorption:** None reported

**Target Organs:** None reported

**Ingestion:** May cause: copper deficiency anemia gout loss of coordination loss of appetite listlessness diarrhea liver damage May effect enzyme activity.

**Target Organs:** Blood Liver

**Inhalation:** May cause: respiratory tract irritation Effects similar to those of ingestion.

**Target Organs:** Blood Liver

**Medical Conditions Aggravated:** Pre-existing: Eye conditions Respiratory conditions Gout

**Chronic Effects:** Chronic overexposure may cause copper deficiency enzyme activity effects liver damage Molybdenum poisoning signs include loss of appetite, listlessness and reduced growth rate. Excessive exposure to molybdenum compounds may cause gout and anemia.

**Cancer / Reproductive Toxicity Information:**

This product does NOT contain any OSHA listed carcinogens.

This product does NOT contain any IARC listed chemicals.

This product does NOT contain any NTP listed chemicals.

**Additional Cancer / Reproductive Toxicity Information:** Contains: an experimental mutagen.

**Toxicologically Synergistic Products:** None reported

---

### 4. FIRST AID

**Eye Contact:** Immediately flush eyes with water for 15 minutes. Call physician.

**Skin Contact (First Aid):** Wash skin with plenty of water.

**Ingestion (First Aid):** Do not induce vomiting. Give 1-2 glasses of water. Call physician immediately. Never give anything by mouth to an unconscious person.

**Inhalation:** Remove to fresh air. Give artificial respiration if necessary. Call physician.

---

## 5. FIRE FIGHTING MEASURES

**Flammable Properties:** Can burn in fire, releasing toxic vapors.

**Flash Point:** Not applicable

**Method:** Not applicable

**Flammability Limits:**

**Lower Explosion Limits:** Not applicable

**Upper Explosion Limits:** Not applicable

**Autoignition Temperature:** Not determined

**Hazardous Combustion Products:** Toxic fumes of: sulfur oxides, carbon monoxide, carbon dioxide, sodium monoxide

**Fire / Explosion Hazards:** None reported

**Static Discharge:** None reported.

**Mechanical Impact:** None reported

**Extinguishing Media:** Use media appropriate to surrounding fire conditions

**Fire Fighting Instruction:** As in any fire, wear self-contained breathing apparatus pressure-demand and full protective gear.

---

## 6. ACCIDENTAL RELEASE MEASURES

**Spill Response Notice:**

Only persons properly qualified to respond to an emergency involving hazardous substances may respond to a spill according to federal regulations (OSHA 29 CFR 1910.120(a)(v)) and per your company's emergency response plan and guidelines/procedures. See Section 13, Special Instructions for disposal assistance.

**Containment Technique:** Stop spilled material from being released to the environment.

**Clean-up Technique:** Scoop up spilled material into a large beaker and dissolve with water. Adjust to a pH between 6 and 9 with an alkali, such as soda ash or sodium bicarbonate. Flush reacted material to the drain with a large excess of water. Decontaminate the area of the spill with a soap solution.

**Evacuation Procedure:** Evacuate local area (15 foot radius or as directed by your facility's emergency response plan) when: any quantity is spilled.

**Special Instructions (for accidental release):** Not applicable

**304 EHS RQ (40 CFR 355):** Not applicable

**D.O.T. Emergency Response Guide Number:** None

---

## 7. HANDLING / STORAGE

**Handling:** Avoid contact with eyes, clothing. Do not breathe dust. Wash thoroughly after handling. Maintain general industrial hygiene practices when using this product.

**Storage:** Store between 10° and 25°C.

**Flammability Class:** Not applicable

---

## 8. EXPOSURE CONTROLS / PROTECTIVE EQUIPMENT

**Engineering Controls:** Have a safety shower nearby. Maintain general industrial hygiene practices when using this product.

**Personal Protective Equipment:**

**Eye Protection:** safety glasses with top and side shields

**Skin Protection:** disposable latex gloves, lab coat

**Inhalation Protection:** adequate ventilation

**Precautionary Measures:** Avoid contact with: eyes. Do not breathe: dust. Wash thoroughly after handling. Protect from: heat

**TLV:** Not established

**PEL:** Not established

---

## 9. PHYSICAL / CHEMICAL PROPERTIES



**Appearance:** White to off-white powder  
**Physical State:** Solid  
**Molecular Weight:** Not applicable  
**Odor:** None  
**pH:** of a 5% Solution = 1.1  
**Vapor Pressure:** Not applicable  
**Vapor Density (air = 1):** Not applicable  
**Boiling Point:** Not applicable  
**Melting Point:** 190 °C (374 °F)  
**Specific Gravity (water = 1):** 2.17  
**Evaporation Rate (water = 1):** Not applicable  
**Volatile Organic Compounds Content:** Not applicable  
**Partition Coefficient (n-octanol / water):** Not applicable  
**Solubility:**  
    **Water:** Soluble  
    **Acid:** Soluble  
    **Other:** Not determined  
**Metal Corrosivity:**  
    **Steel:** Not applicable  
    **Aluminum:** Not applicable

---

## 10. STABILITY / REACTIVITY

**Chemical Stability:** Stable when stored under proper conditions.  
**Conditions to Avoid:** Extreme temperatures  
**Reactivity / Incompatibility:** Incompatible with: oxidizers dyes alkalies iron copper  
**Hazardous Decomposition:** Heating to decomposition releases: carbon dioxide carbon monoxide sulfur oxides  
**Hazardous Polymerization:** Will not occur.

---

## 11. TOXICOLOGICAL INFORMATION

**Product Toxicological Data:**  
    **LD50:** None reported  
    **LC50:** None reported  
    **Dermal Toxicity Data:** None reported  
    **Skin and Eye Irritation Data:** None reported  
    **Mutation Data:** None reported  
    **Reproductive Effects Data:** None reported  
**Ingredient Toxicological Data:** Potassium Pyrosulfate Oral rat LD50 = 2340 mg/kg; Sodium Molybdate Oral rat LD50 = 4000 mg/kg, Inhalation rat LC50 > 2080mg/m<sup>3</sup>/4hr; Ascorbic Acid Oral rat LD50 = 11.9 g/kg

---

## 12. ECOLOGICAL INFORMATION

**Product Ecological Information:** --  
No ecological data available for this product.  
**Ingredient Ecological Information:** --  
No ecological data available for the ingredients of this product.

---

## 13. DISPOSAL CONSIDERATIONS

**EPA Waste ID Number:** None  
**Special Instructions (Disposal):** Work in an approved fume hood. Dilute material with excess water making a weaker than 5% solution. Adjust to a pH between 6 and 9 with an alkali, such as soda ash or sodium bicarbonate. Open cold water tap completely, slowly pour the reacted material to the drain. Allow cold water to run for 5 minutes to completely flush the system.  
**Empty Containers:** Rinse three times with an appropriate solvent. Dispose of empty container as normal trash.  
**NOTICE (Disposal):** These disposal guidelines are based on federal regulations and may be superseded by more stringent state or local requirements. Please consult your local environmental regulators for more information.

---

## 14. TRANSPORT INFORMATION

### **D.O.T.:**

**D.O.T. Proper Shipping Name:** Not Currently Regulated

--

**DOT Hazard Class:** NA

**DOT Subsidiary Risk:** NA

**DOT ID Number:** NA

**DOT Packing Group:** NA

### **I.C.A.O.:**

**I.C.A.O. Proper Shipping Name:** Not Currently Regulated

--

**ICAO Hazard Class:** NA

**ICAO Subsidiary Risk:** NA

**ICAO ID Number:** NA

**ICAO Packing Group:** NA

### **I.M.O.:**

**I.M.O. Proper Shipping Name:** Not Currently Regulated

--

**I.M.O. Hazard Class:** NA

**I.M.O. Subsidiary Risk:** NA

**I.M.O. ID Number:** NA

**I.M.O. Packing Group:** NA

**Additional Information:** There is a possibility that this product could be contained in a reagent set or kit composed of various compatible dangerous goods. If the item is NOT in a set or kit, the classification given above applies. If the item IS part of a set or kit, the classification would change to the following: UN3316 Chemical Kit, Class 9, PG II or III. If the item is not regulated, the Chemical Kit classification does not apply.

---

## 15. REGULATORY INFORMATION

### **U.S. Federal Regulations:**

**O.S.H.A.:** This product meets the criteria for a hazardous substance as defined in the Hazard Communication Standard. (29 CFR 1910.1200)

### **E.P.A.:**

**S.A.R.A. Title III Section 311/312 Categorization (40 CFR 370):** Immediate (Acute) Health Hazard Delayed (Chronic) Health Hazard

**S.A.R.A. Title III Section 313 (40 CFR 372):** This product does NOT contain any chemical subject to the reporting requirements of Section 313 of Title III of SARA.

--

**302 (EHS) TPQ (40 CFR 355):** Not applicable

**304 CERCLA RQ (40 CFR 302.4):** Not applicable

**304 EHS RQ (40 CFR 355):** Not applicable

**Clean Water Act (40 CFR 116.4):** Not applicable

**RCRA:** Contains no RCRA regulated substances.

**C.P.S.C.:** Not applicable

### **State Regulations:**

**California Prop. 65:** No Prop. 65 listed chemicals are present in this product.

**Identification of Prop. 65 Ingredient(s):** Not applicable

**California Perchlorate Rule CCR Title 22 Chap 33:**

**Trade Secret Registry:** Not applicable

### **National Inventories:**

**U.S. Inventory Status:** All ingredients in this product are listed on the TSCA 8(b) Inventory (40 CFR 710).

**TSCA CAS Number:** Not applicable

---

## 16. OTHER INFORMATION

**Intended Use:** Phosphate determination

**References:** TLV's Threshold Limit Values and Biological Exposure Indices for 1992-1993. American Conference of Governmental Industrial Hygienists, 1992. Air Contaminants, Federal Register, Vol. 54, No. 12. Thursday, January 19, 1989. pp. 2332-2983. In-house information. Technical Judgment. Outside Testing. NIOSH/OSHA Occupational Health

Guidelines for Chemical Hazards. Cincinnati: Department of Health and Human Services, 1981. Sax, N. Irving. Dangerous Properties of Industrial Materials, 7th Ed. New York: Van Nostrand Reinhold Co., 1989. Gosselin, R. E. et al. Clinical Toxicology of Commercial Products, 5th Ed. Baltimore: The Williams and Wilkins Co., 1984. Vendor Information. Patty, Frank A. Industrial Hygiene and Toxicology, 3rd Revised Edition. Volume 2. New York: A Wiley-Interscience Publication, 1981.

**Revision Summary:** Updates in Section(s) 14,

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**Legend:**

NA - Not Applicable                      w/w - weight/weight

ND - Not Determined                    w/v - weight/volume

NV - Not Available                        v/v - volume/volume

**USER RESPONSIBILITY:** Each user should read and understand this information and incorporate it in individual site safety programs in accordance with applicable hazard communication standards and regulations.

**THE INFORMATION CONTAINED HEREIN IS BASED ON DATA CONSIDERED TO BE ACCURATE. HOWEVER, NO WARRANTY IS EXPRESSED OR IMPLIED REGARDING THE ACCURACY OF THESE DATA OR THE RESULTS TO BE OBTAINED FROM THE USE THEREOF.**

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Hach Company  
P.O.Box 389  
Loveland, CO USA 80539  
(970) 669-3050

MSDS No: M00281

# MATERIAL SAFETY DATA SHEET

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## 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

**Product Name:** Potassium 2 Reagent Solution Pillows

**Catalog Number:** 1432298

Hach Company  
P.O.Box 389  
Loveland, CO USA 80539  
(970) 669-3050

Emergency Telephone Numbers:  
(Medical and Transportation)  
(303) 623-5716 24 Hour Service  
(515)232-2533 8am - 4pm CST

**MSDS Number:** M00281

**Chemical Name:** Not applicable

**CAS No.:** Not applicable

**Chemical Formula:** Not applicable

**Chemical Family:** Not applicable

**Hazard:** Cannot be made non-toxic. Causes irritation. Sensitizer. Causes burns. Carcinogen.

**Date of MSDS Preparation:**

**Day:** 13

**Month:** November

**Year:** 2008

---

## 2. COMPOSITION / INFORMATION ON INGREDIENTS

### Methyl Alcohol

**CAS No.:** 67-56-1

**TSCA CAS Number:** 67-56-1

**Percent Range:** 10.0 - 20.0

**Percent Range Units:** weight / weight

**LD50:** Oral Human LDLo = 143 mg/kg; Oral rat LD50 = 5628 mg/kg

**LC50:** Inhalation rat LC50 = 64000 ppm/4H; Inhalation mouse LCLo = 50 g/m<sup>3</sup>/2H

**TLV:** 200 ppm

**PEL:** 200 ppm

**Hazard:** Toxic. Cannot be made non-toxic. Flammable. Causes irritation.

### Demineralized Water

**CAS No.:** 7732-18-5

**TSCA CAS Number:** 7732-18-5

**Percent Range:** 50.0 - 60.0

**Percent Range Units:** weight / weight

**LD50:** None reported

**LC50:** None reported

**TLV:** Not established

**PEL:** Not established

**Hazard:** No effects anticipated.

### Formaldehyde

**CAS No.:** 50-00-0

**TSCA CAS Number:** 50-00-0

**Percent Range:** 30.0 - 40.0

**Percent Range Units:** weight / weight

**LD50:** Oral rat LD50 = 100 mg/kg; Oral mouse LD50 = 42 mg/kg

**LC50:** Inhalation rat LC50 = 203mg/m<sup>3</sup>; Inhalation mouse LC50 = 400 mg/m<sup>3</sup>/2H

**TLV:** C: 0.37mg/m<sup>3</sup>

**PEL:** 0.75 ppm. See the OSHA Standard at 29CFR1910.1048.

**Hazard:** Carcinogen. Causes burns. May cause allergic reaction.

---

### 3. HAZARDS IDENTIFICATION

**Emergency Overview:**

**Appearance:** Clear, colorless

**Odor:** Pungent

MAY BE FATAL OR CAUSE BLINDNESS IF SWALLOWED CAN NOT BE MADE  
NONPOISONOUS VAPOR HARMFUL CAUSES BURNS HARMFUL IF INHALED OR ABSORBED  
THROUGH SKIN

SUSPECT CANCER HAZARD: MAY CAUSE CANCER MAY CAUSE ALLERGIC SKIN AND  
RESPIRATORY REACTIONS

COMBUSTIBLE LIQUID AND VAPOR

**HMIS:**

**Health:** 3\*

**Flammability:** 2

**Reactivity:** 2

**Protective Equipment:** X - See protective equipment, Section 8.

**NFPA:**

**Health:** 3

**Flammability:** 2

**Reactivity:** 2

**Symbol:** Not applicable

**Potential Health Effects:**

**Eye Contact:** Causes eye burns.

**Skin Contact:** Causes burns. May cause: skin sensitization

**Skin Absorption:** Effects similar to those of ingestion Effects similar to those of inhalation

**Target Organs:** Circulatory system Kidneys Liver Optic nerve Central nervous system

**Ingestion:** Methanol causes cardiovascular effects such as cardiac depression and blood pressure changes.

Methanol causes central nervous system depression, symptoms may include: drunkenness, drowsiness,  
dizziness, lightheadedness, unconsciousness and coma. Methanol may cause irritation of eyes, visual  
impairment or blindness. May cause: vomiting liver damage kidney damage circulatory collapse

**Target Organs:** Circulatory system Kidneys Liver Optic nerve Central nervous system

**Inhalation:** Methanol causes cardiovascular effects such as cardiac depression and blood pressure changes.

Methanol causes central nervous system depression, symptoms may include: drunkenness, drowsiness,  
dizziness, lightheadedness, unconsciousness and coma. Methanol may cause irritation of the eyes, visual  
impairment or blindness. May cause: respiratory tract irritation allergic respiratory reaction shortness of  
breath Very large doses may cause: lethargy Effects similar to those of ingestion. Formaldehyde causes  
nasopharyngeal cancer in humans. May cause cancer of the nasal cavity and paranasal sinuses. May cause  
leukemia.

**Target Organs:** Central nervous system Circulatory system Liver Kidneys Optic nerve Lungs Nasal  
cavity

**Medical Conditions Aggravated:** Allergies or sensitivity to formaldehyde. Persons with eye, kidney, liver,  
or respiratory problems may be more susceptible to formaldehyde.

**Chronic Effects:** Chronic overexposure may cause cancer skin sensitization allergic respiratory reactions  
liver damage kidney damage

**Cancer / Reproductive Toxicity Information:**

An ingredient of this product is an OSHA listed carcinogen.  
Formaldehyde  
An ingredient of this mixture is: IARC Group 1: Recognized Carcinogen  
Formaldehyde  
This product does NOT contain any NTP listed chemicals.

**Additional Cancer / Reproductive Toxicity Information:** Contains: an experimental mutagen. an experimental teratogen.  
**Toxicologically Synergistic Products:** None reported

---

#### 4. FIRST AID

**Eye Contact:** Immediately flush eyes with water for 15 minutes. Call physician.  
**Skin Contact (First Aid):** Wash skin with soap and plenty of water for 15 minutes. Call physician immediately.  
**Ingestion (First Aid):** Do not induce vomiting. Give 1-2 glasses of water. Call physician immediately. Never give anything by mouth to an unconscious person.  
**Inhalation:** Remove to fresh air. Give artificial respiration if necessary. Call physician.

---

#### 5. FIRE FIGHTING MEASURES

**Flammable Properties:** Combustible Liquid Combustion generates toxic fumes. Vaporizes easily at normal temperatures. This material does NOT sustain combustion when tested according to the UN Recommendation's "Methods of Testing for Combustibility".  
**Flash Point:** 56-63° C (133-145° F)  
**Method:** Open cup  
**Flammability Limits:**  
**Lower Explosion Limits:** 7%  
**Upper Explosion Limits:** 70%  
**Autoignition Temperature:** 420° C (788° F)  
**Hazardous Combustion Products:** Toxic fumes of: formaldehyde carbon monoxide, carbon dioxide.  
**Fire / Explosion Hazards:** Combustible liquid Do not expose to flames.  
**Static Discharge:** None reported.  
**Mechanical Impact:** None reported  
**Extinguishing Media:** Use media appropriate to surrounding fire conditions  
**Fire Fighting Instruction:** As in any fire, wear self-contained breathing apparatus pressure-demand and full protective gear. Containers can build up pressure if exposed to heat.

---

#### 6. ACCIDENTAL RELEASE MEASURES

**Spill Response Notice:**  
Only persons properly qualified to respond to an emergency involving hazardous substances may respond to a spill according to federal regulations (OSHA 29 CFR 1910.120(a)(v)) and per your company's emergency response plan and guidelines/procedures. See Section 13, Special Instructions for disposal assistance.  
**Containment Technique:** Releases of this material may contaminate the environment. Remove all combustible material from spill area. Remove all ignition and spark-creating sources from the spill area. Cover spilled liquid with a commercially available flammable liquid sorbent such as vapor barrier blanket or activated carbon to avoid evolution of fumes. Vapors may travel to a source of ignition and flash back. May be ignited by: heat, sparks, or flames. Material will float on water creating a fire hazard. Dike the material to create a barrier to combustibles. Dike large spills to keep spilled material from entering sewage and drainage systems or bodies of water.  
**Clean-up Technique:** Eliminate all sources of ignition. Do not breathe the fumes. Cover with an inert material, such as sand. Use only non-sparking tools. Sweep up material. Incinerate material at an E.P.A. approved hazardous waste facility. Decontaminate the area of the spill with a soap solution.

**Evacuation Procedure:** Evacuate general area (50 foot radius or as directed by your facility's emergency response plan) when: any quantity is spilled. If conditions warrant, increase the size of the evacuation.

**Special Instructions (for accidental release):** Mixture contains a component which is regulated as hazardous waste. Mixture contains a component which is regulated as a water pollutant. Mixture contains a component which is regulated as a hazardous air pollutant.

**304 EHS RQ (40 CFR 355):** Formaldehyde - RQ 100 lbs

**D.O.T. Emergency Response Guide Number:** 132

---

## 7. HANDLING / STORAGE

**Handling:** Avoid contact with skin eyes clothing Do not breathe mist or vapors. Use with adequate ventilation. Wash thoroughly after handling. Maintain general industrial hygiene practices when using this product.

**Storage:** Keep container tightly closed when not in use. Protect from: heat sparks, flames and other ignition sources

**Flammability Class:** Class II

---

## 8. EXPOSURE CONTROLS / PROTECTIVE EQUIPMENT

**Engineering Controls:** Have an eyewash station nearby. Have a safety shower nearby. Use a fume hood to avoid exposure to dust, mist or vapor. Maintain general industrial hygiene practices when using this product.

**Personal Protective Equipment:**

**Eye Protection:** safety glasses with top and side shields

**Skin Protection:** disposable latex gloves lab coat

**Inhalation Protection:** laboratory fume hood

**Precautionary Measures:** Avoid contact with: eyes skin clothing Do not breathe: mist/vapor Use with adequate ventilation. Wash thoroughly after handling. Protect from: heat

**TLV:** Formaldehyde: Ceiling: 0.3 ppm; Methanol: 200 ppm

**PEL:** Formaldehyde: 0.75 ppm; Methanol: 200 ppm

---

## 9. PHYSICAL / CHEMICAL PROPERTIES

**Appearance:** Clear, colorless

**Physical State:** Liquid

**Molecular Weight:** Not applicable

**Odor:** Pungent

**pH:** 2.8-4.0

**Vapor Pressure:** Not determined

**Vapor Density (air = 1):** 1.04

**Boiling Point:** 96 °C 204.8 °F

**Melting Point:** -15 °C 5 °F

**Specific Gravity (water = 1):** 1.08

**Evaporation Rate (water = 1):** Not determined

**Volatile Organic Compounds Content:** Not available

**Partition Coefficient (n-octanol / water):** Not applicable

**Solubility:**

**Water:** Soluble

**Acid:** Not determined

**Other:** Soluble in alcohol and acetone

**Metal Corrosivity:**

**Steel:** Not determined

**Aluminum:** Not determined

---

## 10. STABILITY / REACTIVITY

**Chemical Stability:** Stable when stored under proper conditions.

**Conditions to Avoid:** Contact with heat, sparks, open flames or other ignition sources. Exposure to air.

**Reactivity / Incompatibility:** Incompatible with: oxidizers alkalies

**Hazardous Decomposition:** Heating to decomposition releases toxic and/or corrosive fumes of:  
formaldehyde carbon dioxide carbon monoxide

**Hazardous Polymerization:** Will not occur.

---

## 11. TOXICOLOGICAL INFORMATION

**Product Toxicological Data:**

**LD50:** Oral rat LD50 = 800 mg/kg

**LC50:** None reported

**Dermal Toxicity Data:** None reported

**Skin and Eye Irritation Data:** None reported

**Mutation Data:** None reported

**Reproductive Effects Data:** None reported

**Ingredient Toxicological Data:** Formaldehyde: Oral rat LD50 = 100mg/kg, Skin rabbit LD50 = 270mg/kg, Inhalation rat LC50 = 203mg/m<sup>3</sup>; Methanol Oral rat LD50 = 5628mg/kg, Skin rabbit LD50 = 15800mg/kg, Inhalation rat LC50 = 6400ppm/4Hours.

---

## 12. ECOLOGICAL INFORMATION

**Product Ecological Information:** Bluegill LC50 = 100µg/l/96H; Catfish (fresh water) TLm = 32 ppm/24H; Fathead minnow LC50 = 10-100 µl/l/96H; Rainbow trout LC50 = 168 mg/l/48H

**Ingredient Ecological Information:** None available

---

## 13. DISPOSAL CONSIDERATIONS

**EPA Waste ID Number:** D001

**Special Instructions (Disposal):** Incinerate material at an E.P.A. approved hazardous waste facility.

**Empty Containers:** Rinse three times with an appropriate solvent. Dispose of empty container as normal trash. Rinsate from empty containers may contain sufficient product to require disposal as hazardous waste.

**NOTICE (Disposal):** These disposal guidelines are based on federal regulations and may be superseded by more stringent state or local requirements. Please consult your local environmental regulators for more information.

---

## 14. TRANSPORT INFORMATION

**D.O.T.:**

**D.O.T. Proper Shipping Name:** Formaldehyde, solutions, flammable

--

**DOT Hazard Class:** 3

**DOT Subsidiary Risk:** 8

**DOT ID Number:** UN1198

**DOT Packing Group:** III

**I.C.A.O.:**

**I.C.A.O. Proper Shipping Name:** Formaldehyde Solution, Flammable

--

**ICAO Hazard Class:** 3

**ICAO Subsidiary Risk:** 8



**ICAO ID Number:** UN1198

**ICAO Packing Group:** III

**I.M.O.:**

**I.M.O. Proper Shipping Name:** Formaldehyde Solution, Flammable

--

**I.M.O. Hazard Class:** 3

**I.M.O. Subsidiary Risk:** 8

**I.M.O. ID Number:** UN1198

**I.M.O. Packing Group:** III

**Additional Information:** There is a possibility that this product could be contained in a reagent set or kit composed of various compatible dangerous goods. If the item is NOT in a set or kit, the classification given above applies. If the item IS part of a set or kit, the classification would change to the following: UN3316 Chemical Kit, Class 9, PG II or III. If the item is not regulated, the Chemical Kit classification does not apply.

---

## 15. REGULATORY INFORMATION

**U.S. Federal Regulations:**

**O.S.H.A.:** This product meets the criteria for a hazardous substance as defined in the Hazard Communication Standard. (29 CFR 1910.1200) This product contains Formaldehyde and is regulated under 29CFR Subpart Z 1910.1048.

**E.P.A.:**

**S.A.R.A. Title III Section 311/312 Categorization (40 CFR 370):** Immediate (Acute) Health Hazard  
Delayed (Chronic) Health Hazard Fire Hazard

**S.A.R.A. Title III Section 313 (40 CFR 372):** This product contains a chemical(s) subject to the reporting requirements of Section 313 of Title III of SARA.

Formaldehyde, Methanol

**302 (EHS) TPQ (40 CFR 355):** Formaldehyde 500 lbs.

**304 CERCLA RQ (40 CFR 302.4):** Formaldehyde 100 lbs. Methanol 5000 lbs.

**304 EHS RQ (40 CFR 355):** Formaldehyde - RQ 100 lbs

**Clean Water Act (40 CFR 116.4):** Formaldehyde - RQ 100 lbs.

**RCRA:** Contains RCRA regulated substances. See Section 13, EPA Waste ID Number.

**C.P.S.C.:** The label for this product bears the signal words "STRONG SENSITIZER" because the concentration of formaldehyde in this product is greater than 1%.

**State Regulations:**

**California Prop. 65:** No Prop. 65 listed chemicals are present in this product.

**Identification of Prop. 65 Ingredient(s):** Not applicable

**California Perchlorate Rule CCR Title 22 Chap 33:**

**Trade Secret Registry:** Not applicable

**National Inventories:**

**U.S. Inventory Status:** All ingredients in this product are listed on the TSCA 8(b) Inventory (40 CFR 710).

**TSCA CAS Number:** Not applicable

---

## 16. OTHER INFORMATION

**Intended Use:** Laboratory Reagent

**References:** TLV's Threshold Limit Values and Biological Exposure Indices for 1992-1993. American Conference of Governmental Industrial Hygienists, 1992. Air Contaminants, Federal Register, Vol. 54, No. 12. Thursday, January 19, 1989. pp. 2332-2983. The Merck Index, 11th Ed. Rahway, New Jersey: Merck and Co., Inc., 1989. Sax, N. Irving. Dangerous Properties of Industrial Materials, 7th Ed. New York: Van Nostrand Reinhold Co., 1989. Fire Protection Guide on Hazardous Materials, 10th Ed. Quincy, MA: National Fire Protection Fire Protection Guide on Hazardous Materials, 10th Ed. Quincy, MA: National Fire Protection Association, 1991. NIOSH Pocket Guide to Chemical Hazards. Publ. No. 85-114. Cincinnati: Department of Health and Human Services, 1985. Gosselin, R. E. et al. Clinical Toxicology of Commercial Products, 5th Ed. Baltimore: The Williams and Wilkins Co., 1984. IARC Monographs on the Evaluation of the Carcinogenic

Risks to Humans. World Health Organization (Volumes 1-42) Supplement 7. France: 1987. Technical Judgment. Vendor Information. CCINFO RTECS. Canadian Centre for Occupational Health and Safety. Hamilton, Ontario Canada: 30 June 1993. In-house information. Patty, Frank A. Industrial Hygiene and Toxicology, 3rd Revised Edition. Volume 2. New York: A Wiley-Interscience Publication, 1981.

**Revision Summary:** Updates in Section(s) 14,

---

**Legend:**

NA - Not Applicable	w/w - weight/weight
ND - Not Determined	w/v - weight/volume
NV - Not Available	v/v - volume/volume

**USER RESPONSIBILITY:** Each user should read and understand this information and incorporate it in individual site safety programs in accordance with applicable hazard communication standards and regulations.

**THE INFORMATION CONTAINED HEREIN IS BASED ON DATA CONSIDERED TO BE ACCURATE. HOWEVER, NO WARRANTY IS EXPRESSED OR IMPLIED REGARDING THE ACCURACY OF THESE DATA OR THE RESULTS TO BE OBTAINED FROM THE USE THEREOF.**

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(970) 669-3050

MSDS No: M00069

# MATERIAL SAFETY DATA SHEET

---

## 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

**Product Name:** Potassium 3 Reagent

**Catalog Number:** 1432399

Hach Company  
P.O.Box 389  
Loveland, CO USA 80539  
(970) 669-3050

Emergency Telephone Numbers:  
(Medical and Transportation)  
(303) 623-5716 24 Hour Service  
(515)232-2533 8am - 4pm CST

**MSDS Number:** M00069

**Chemical Name:** Sodium Tetraphenylborate

**CAS No.:** 143-66-8

**Chemical Formula:** C<sub>24</sub>H<sub>20</sub>BNa

**Chemical Family:** Aromatic Compounds

**Hazard:** Toxic properties unknown. May cause irritation.

**Date of MSDS Preparation:**

**Day:** 11

**Month:** February

**Year:** 2007

---

## 2. COMPOSITION / INFORMATION ON INGREDIENTS

### Sodium Tetraphenylborate

**CAS No.:** 143-66-8

**TSCA CAS Number:** 143-66-8

**Percent Range:** 100.0

**Percent Range Units:** weight / weight

**LD50:** None reported

**LC50:** None reported

**TLV:** Not established

**PEL:** Not established

**Hazard:** Toxic properties unknown. May cause irritation.

---

## 3. HAZARDS IDENTIFICATION

### **Emergency Overview:**

**Appearance:** White crystals

**Odor:** None

MAY CAUSE EYE, SKIN AND RESPIRATORY TRACT IRRITATION

### **HMIS:**

**Health:** 1

**Flammability:** 1

**Reactivity:** 0

**Protective Equipment:** X - See protective equipment, Section 8.

**NFPA:**

**Health:** 1

**Flammability:** 1

**Reactivity:** 0

**Symbol:** Not applicable

**Potential Health Effects:**

**Eye Contact:** May cause irritation

**Skin Contact:** May cause irritation

**Skin Absorption:** None reported

**Target Organs:** None reported

**Ingestion:** May cause: nausea vomiting abdominal pain diarrhea

**Target Organs:** None reported

**Inhalation:** May cause: respiratory tract irritation

**Target Organs:** None reported

**Medical Conditions Aggravated:** None reported

**Chronic Effects:** None reported

**Cancer / Reproductive Toxicity Information:**

O.S.H.A. Listed: No

IARC Listed: No

NTP Listed: No

**Additional Cancer / Reproductive Toxicity Information:** None reported

**Toxicologically Synergistic Products:** None reported

---

## 4. FIRST AID

**Eye Contact:** Immediately flush eyes with water for 15 minutes. Call physician.

**Skin Contact (First Aid):** Wash skin with soap and plenty of water.

**Ingestion (First Aid):** Give large quantities of water. Call physician immediately.

**Inhalation:** Remove to fresh air. Give artificial respiration if necessary. Call physician.

---

## 5. FIRE FIGHTING MEASURES

**Flammable Properties:** During a fire, irritating and highly toxic gases may be generated by thermal decomposition.

**Flash Point:** Not applicable

**Method:** Not applicable

**Flammability Limits:**

**Lower Explosion Limits:** Not applicable

**Upper Explosion Limits:** Not applicable

**Autoignition Temperature:** Not determined

**Hazardous Combustion Products:** May emit acrid smoke and fumes.

**Fire / Explosion Hazards:** None reported

**Static Discharge:** None reported.

**Mechanical Impact:** None reported

**Extinguishing Media:** Water. Carbon dioxide Dry chemical.

**Fire Fighting Instruction:** As in any fire, wear self-contained breathing apparatus pressure-demand and full protective gear.

---

## 6. ACCIDENTAL RELEASE MEASURES

**Spill Response Notice:**

Only persons properly qualified to respond to an emergency involving hazardous substances may respond to a spill according to federal regulations (OSHA 29 CFR 1910.120(a)(v)) and per your company's emergency response plan and guidelines/procedures. See Section 13, Special Instructions for disposal assistance.

**Containment Technique:** Stop spilled material from being released to the environment.

**Clean-up Technique:** Sweep up material. Dispose of material in an E.P.A. approved hazardous waste facility.

**Evacuation Procedure:** Evacuate as needed to perform spill clean-up. If conditions warrant, increase the size of the evacuation.

**Special Instructions (for accidental release):** Not applicable

**304 EHS RQ (40 CFR 355):** Not applicable

**D.O.T. Emergency Response Guide Number:** None

---

## 7. HANDLING / STORAGE

**Handling:** Avoid contact with eyes skin Do not breathe dust. Wash thoroughly after handling. Maintain general industrial hygiene practices when using this product.

**Storage:** Protect from: moisture exposure to direct sunlight. Keep container tightly closed when not in use.

**Flammability Class:** Not applicable

---

## 8. EXPOSURE CONTROLS / PROTECTIVE EQUIPMENT

**Engineering Controls:** Maintain general industrial hygiene practices when using this product.

**Personal Protective Equipment:**

**Eye Protection:** safety glasses with top and side shields

**Skin Protection:** disposable latex gloves lab coat

**Inhalation Protection:** adequate ventilation

**Precautionary Measures:** Avoid contact with: eyes skin Do not breathe: dust Wash thoroughly after handling. Protect from: moisture light

**TLV:** Not established

**PEL:** Not established

---

## 9. PHYSICAL / CHEMICAL PROPERTIES

**Appearance:** White crystals

**Physical State:** Solid

**Molecular Weight:** 342.24

**Odor:** None

**pH:** 5% soln. = 9.6

**Vapor Pressure:** Not applicable

**Vapor Density (air = 1):** Not applicable

**Boiling Point:** Not applicable

**Melting Point:** >300°C (>572°F)

**Specific Gravity (water = 1):** Not determined

**Evaporation Rate (water = 1):** Not applicable

**Volatile Organic Compounds Content:** Not applicable

**Partition Coefficient (n-octanol / water):** Not determined

**Solubility:**

**Water:** Soluble

**Acid:** Unstable in acid

**Other:** Soluble in acetone

**Metal Corrosivity:**

**Steel:** Not determined

**Aluminum:** Not determined

---

## 10. STABILITY / REACTIVITY

**Chemical Stability:** Stable when stored under proper conditions.

**Conditions to Avoid:** Excess moisture Exposure to air. Heating to decomposition.

**Reactivity / Incompatibility:** Incompatible with: strong acids oxidizers

**Hazardous Decomposition:** Combustion gives off black, sooty, toxic smoke

**Hazardous Polymerization:** Will not occur.

---

## 11. TOXICOLOGICAL INFORMATION

**Product Toxicological Data:**

**LD50:** None reported

**LC50:** None reported

**Dermal Toxicity Data:** None reported

**Skin and Eye Irritation Data:** None reported

**Mutation Data:** None reported

**Reproductive Effects Data:** None reported

**Ingredient Toxicological Data:** Not applicable  
Not applicable

---

## 12. ECOLOGICAL INFORMATION

**Product Ecological Information:** No information available for this product  
Not applicable

**Ingredient Ecological Information:** Not applicable  
Not applicable

---

## 13. DISPOSAL CONSIDERATIONS

**EPA Waste ID Number:** None

**Special Instructions (Disposal):** Dispose of material in an E.P.A. approved hazardous waste facility.

**Empty Containers:** Rinse three times with an appropriate solvent. Dispose of empty container as normal trash.

**NOTICE (Disposal):** These disposal guidelines are based on federal regulations and may be superseded by more stringent state or local requirements. Please consult your local environmental regulators for more information.

---

## 14. TRANSPORT INFORMATION

**D.O.T.:**

**D.O.T. Proper Shipping Name:** Not Currently Regulated

--

**DOT Hazard Class:** NA

**DOT Subsidiary Risk:** NA

**DOT ID Number:** NA

**DOT Packing Group:** NA

**I.C.A.O.:**

**I.C.A.O. Proper Shipping Name:** Not Currently Regulated

--

**ICAO Hazard Class:** NA

**ICAO Subsidiary Risk:** NA

**ICAO ID Number:** NA

**ICAO Packing Group:** NA

**I.M.O.:**

**I.M.O. Proper Shipping Name:** Not Currently Regulated

--

**I.M.O. Hazard Class:** NA

**I.M.O. Subsidiary Risk:** NA

**I.M.O. ID Number:** NA

**I.M.O. Packing Group:** NA

**Additional Information:** There is a possibility that this product could be contained in a reagent set or kit composed of various compatible dangerous goods. If the item is NOT in a set or kit, the classification given above applies. If the item IS part of a set or kit, the classification would change to the following: UN3316 Chemical Kit, Class 9, PG II or III. If the item is not regulated, the Chemical Kit classification does not apply.

---

## 15. REGULATORY INFORMATION

### **U.S. Federal Regulations:**

**O.S.H.A.:** This product meets the criteria for a hazardous substance as defined in the Hazard Communication Standard. (29 CFR 1910.1200)

### **E.P.A.:**

**S.A.R.A. Title III Section 311/312 Categorization (40 CFR 370):** Immediate (Acute) Health Hazard

**S.A.R.A. Title III Section 313 (40 CFR 372):** This product does NOT contain any chemical subject to the reporting requirements of Section 313 of Title III of SARA.

--

**302 (EHS) TPQ (40 CFR 355):** Not applicable

**304 CERCLA RQ (40 CFR 302.4):** Not applicable

**304 EHS RQ (40 CFR 355):** Not applicable

**Clean Water Act (40 CFR 116.4):** Not applicable

**RCRA:** Contains no RCRA regulated substances.

**C.P.S.C.:** Not applicable

### **State Regulations:**

**California Prop. 65:** No Prop. 65 listed chemicals are present in this product.

**Identification of Prop. 65 Ingredient(s):** None

**California Perchlorate Rule CCR Title 22 Chap 33:**

**Trade Secret Registry:** Not applicable

### **National Inventories:**

**U.S. Inventory Status:** TSCA Listed: Yes

**TSCA CAS Number:** 143-66-8

---

## 16. OTHER INFORMATION

**Intended Use:** Determination of potassium

**References:** 29 CFR 1900 - 1910 (Code of Federal Regulations - Labor). Air Contaminants, Federal Register, Vol. 54, No. 12. Thursday, January 19, 1989. pp. 2332-2983. TLV's Threshold Limit Values and Biological Exposure Indices for 1992-1993. American Conference of Governmental Industrial Hygienists, 1992. Technical Judgment. The Merck Index, 11th Ed. Rahway, New Jersey: Merck and Co., Inc., 1989. Vendor Information. In-house information.

**Revision Summary:** Updates in Section(s) 14,

---

### **Legend:**

NA - Not Applicable	w/w - weight/weight
ND - Not Determined	w/v - weight/volume
NV - Not Available	v/v - volume/volume

**USER RESPONSIBILITY:** Each user should read and understand this information and incorporate it in individual site safety programs in accordance with applicable hazard communication standards and regulations.

**THE INFORMATION CONTAINED HEREIN IS BASED ON DATA CONSIDERED TO BE ACCURATE. HOWEVER, NO WARRANTY IS EXPRESSED OR IMPLIED REGARDING THE ACCURACY OF THESE DATA OR THE RESULTS TO BE OBTAINED FROM THE USE THEREOF.**

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World Headquarters  
Hach Company  
P.O.Box 389  
Loveland, CO USA 80539  
(970) 669-3050

MSDS No: M00288

# MATERIAL SAFETY DATA SHEET

---

## 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

**Product Name:** Potassium Chloride  
**Catalog Number:** 76401

Hach Company  
P.O.Box 389  
Loveland, CO USA 80539  
(970) 669-3050

Emergency Telephone Numbers:  
(Medical and Transportation)  
(303) 623-5716 24 Hour Service  
(515)232-2533 8am - 4pm CST

**MSDS Number:** M00288  
**Chemical Name:** Potassium Chloride  
**CAS No.:** 7447-40-7  
**Chemical Formula:** KCl  
**Chemical Family:** Inorganic Salt  
**Hazard:** May cause irritation.  
**Date of MSDS Preparation:**  
**Day:** 06  
**Month:** June  
**Year:** 2007

---

## 2. COMPOSITION / INFORMATION ON INGREDIENTS

**Potassium Chloride**  
**CAS No.:** 7447-40-7  
**TSCA CAS Number:** 7447-40-7  
**Percent Range:** 100.0  
**Percent Range Units:** weight / weight  
**LD50:** Oral rat LD<sub>50</sub> = 2600 mg/kg  
**LC50:** None reported.  
**TLV:** Not established.  
**PEL:** Not established.  
**Hazard:** May cause irritation.

---

## 3. HAZARDS IDENTIFICATION

**Emergency Overview:**  
**Appearance:** White crystals  
**Odor:** None  
MAY CAUSE EYE AND RESPIRATORY TRACT IRRITATION

**HMIS:**  
**Health:** 1  
**Flammability:** 0  
**Reactivity:** 0

**Protective Equipment:** X - See protective equipment, Section 8.

**NFPA:**

**Health:** 1

**Flammability:** 0

**Reactivity:** 0

**Symbol:** Not applicable

**Potential Health Effects:**

**Eye Contact:** Causes mild irritation

**Skin Contact:** No effects are anticipated

**Skin Absorption:** No effects anticipated

**Target Organs:** Not applicable

**Ingestion:** May cause: anorexia blood pressure changes cardiac depression fever gastroenteritis

**Target Organs:** Blood Heart

**Inhalation:** May cause: respiratory tract irritation

**Target Organs:** None reported

**Medical Conditions Aggravated:** Pre-existing: Kidney conditions

**Chronic Effects:** None reported

**Cancer / Reproductive Toxicity Information:**

O.S.H.A. Listed: No

IARC Listed: No

NTP Listed: No

**Additional Cancer / Reproductive Toxicity Information:** None reported

**Toxicologically Synergistic Products:** None reported

---

## 4. FIRST AID

**Eye Contact:** Immediately flush eyes with water for 15 minutes. Call physician.

**Skin Contact (First Aid):** Wash skin with plenty of water.

**Ingestion (First Aid):** Give large quantities of water. Call physician immediately.

**Inhalation:** Remove to fresh air.

---

## 5. FIRE FIGHTING MEASURES

**Flammable Properties:** Does not burn, but may melt in a fire, releasing toxic fumes.

**Flash Point:** Not applicable

**Method:** Not applicable

**Flammability Limits:**

**Lower Explosion Limits:** Not applicable

**Upper Explosion Limits:** Not applicable

**Autoignition Temperature:** Not applicable

**Hazardous Combustion Products:** Toxic fumes of: chlorides

**Fire / Explosion Hazards:** May react violently with: bromine trifluoride

**Static Discharge:** None reported.

**Mechanical Impact:** None reported

**Extinguishing Media:** Carbon dioxide Dry chemical. Water.

**Fire Fighting Instruction:** As in any fire, wear self-contained breathing apparatus pressure-demand and full protective gear. Evacuate area and fight fire from a safe distance.

---

## 6. ACCIDENTAL RELEASE MEASURES

**Spill Response Notice:**

Only persons properly qualified to respond to an emergency involving hazardous substances may respond to a spill according to federal regulations (OSHA 29 CFR 1910.120(a)(v)) and per your company's emergency response plan and guidelines/procedures. See Section 13, Special Instructions for disposal assistance.

**Containment Technique:** Stop spilled material from being released to the environment.

**Clean-up Technique:** Scoop up spilled material into a large beaker and dissolve with water. Flush the spilled material to the drain with a large excess of water. Decontaminate the area of the spill with a soap solution.

**Evacuation Procedure:** Evacuate as needed to perform spill clean-up. If conditions warrant, increase the size of the evacuation.

**Special Instructions (for accidental release):** Not applicable

**304 EHS RQ (40 CFR 355):** Not applicable

**D.O.T. Emergency Response Guide Number:** None

---

## 7. HANDLING / STORAGE

**Handling:** Avoid contact with eyes Do not breathe dust. Wash thoroughly after handling. Maintain general industrial hygiene practices when using this product.

**Storage:** Protect from: moisture

**Flammability Class:** Not applicable

---

## 8. EXPOSURE CONTROLS / PROTECTIVE EQUIPMENT

**Engineering Controls:** Have an eyewash station nearby. Maintain general industrial hygiene practices when using this product.

**Personal Protective Equipment:**

**Eye Protection:** safety glasses with top and side shields

**Skin Protection:** disposable latex gloves

**Inhalation Protection:** adequate ventilation

**Precautionary Measures:** Avoid contact with: eyes Do not breathe: dust Wash thoroughly after handling.

**TLV:** Not established.

**PEL:** Not established.

---

## 9. PHYSICAL / CHEMICAL PROPERTIES

**Appearance:** White crystals

**Physical State:** Solid

**Molecular Weight:** 74.55

**Odor:** None

**pH:** 7 (aqueous solution)

**Vapor Pressure:** Not applicable

**Vapor Density (air = 1):** Not applicable

**Boiling Point:** Not applicable

**Melting Point:** 773°C (1423°F)

**Specific Gravity (water = 1):** 1.98

**Evaporation Rate (water = 1):** Not applicable

**Volatile Organic Compounds Content:** Not applicable

**Partition Coefficient (n-octanol / water):** Not determined

**Solubility:**

**Water:** Soluble.

**Acid:** Not determined

**Other:** Soluble in glycerol

**Metal Corrosivity:**

**Steel:** Not determined

**Aluminum:** Not determined

---

## 10. STABILITY / REACTIVITY

**Chemical Stability:** Stable when stored under proper conditions.

**Conditions to Avoid:** Excess moisture Heating to decomposition.

**Reactivity / Incompatibility:** May react violently in contact with: bromine trifluoride

**Hazardous Decomposition:** Heating to decomposition releases: Toxic fumes of: potassium oxide chlorides

**Hazardous Polymerization:** Will not occur.

---

## 11. TOXICOLOGICAL INFORMATION

**Product Toxicological Data:**

**LD50:** Oral rat LD<sub>50</sub> = 2600 mg/kg

**LC50:** None reported.

**Dermal Toxicity Data:** None reported.

**Skin and Eye Irritation Data:** Eye irritation rabbit: 500mg/ 24hrs = Mild (Standard Draize Test).

**Mutation Data:** None reported

**Reproductive Effects Data:** None reported

**Ingredient Toxicological Data:** --

Not applicable

---

## 12. ECOLOGICAL INFORMATION

**Product Ecological Information:** --

No ecological data available for this product.

**Ingredient Ecological Information:** --

Not applicable

---

## 13. DISPOSAL CONSIDERATIONS

**EPA Waste ID Number:** None

**Special Instructions (Disposal):** Dilute material with excess water making a weaker than 5% solution. Open hot water tap completely, slowly pour the material to the drain.

**Empty Containers:** Rinse three times with an appropriate solvent. Dispose of empty container as normal trash.

**NOTICE (Disposal):** These disposal guidelines are based on federal regulations and may be superseded by more stringent state or local requirements. Please consult your local environmental regulators for more information.

---

## 14. TRANSPORT INFORMATION

**D.O.T.:**

**D.O.T. Proper Shipping Name:** Not Currently Regulated

--

**DOT Hazard Class:** NA

**DOT Subsidiary Risk:** NA

**DOT ID Number:** NA

**DOT Packing Group:** NA

**I.C.A.O.:**

**I.C.A.O. Proper Shipping Name:** Not Currently Regulated

--

**ICAO Hazard Class:** NA

**ICAO Subsidiary Risk:** NA

**ICAO ID Number:** NA

**ICAO Packing Group:** NA

***I.M.O.:***

***I.M.O. Proper Shipping Name:*** Not Currently Regulated

--

***I.M.O. Hazard Class:*** NA

***I.M.O. Subsidiary Risk:*** NA

***I.M.O. ID Number:*** NA

***I.M.O. Packing Group:*** NA

***Additional Information:*** There is a possibility that this product could be contained in a reagent set or kit composed of various compatible dangerous goods. If the item is NOT in a set or kit, the classification given above applies. If the item IS part of a set or kit, the classification would change to the following: UN3316 Chemical Kit, Class 9, PG II or III. If the item is not regulated, the Chemical Kit classification does not apply.

---

## 15. REGULATORY INFORMATION

***U.S. Federal Regulations:***

***O.S.H.A.:*** This product meets the criteria for a hazardous substance as defined in the Hazard Communication Standard. (29 CFR 1910.1200)

***E.P.A.:***

***S.A.R.A. Title III Section 311/312 Categorization (40 CFR 370):*** Immediate (Acute) Health Hazard

***S.A.R.A. Title III Section 313 (40 CFR 372):*** This product does NOT contain any chemical subject to the reporting requirements of Section 313 of Title III of SARA.

--

***302 (EHS) TPQ (40 CFR 355):*** Not applicable

***304 CERCLA RQ (40 CFR 302.4):*** Not applicable

***304 EHS RQ (40 CFR 355):*** Not applicable

***Clean Water Act (40 CFR 116.4):*** Not applicable

***RCRA:*** Contains no RCRA regulated substances.

***C.P.S.C.:*** Not applicable

***State Regulations:***

***California Prop. 65:*** No Prop. 65 listed chemicals are present in this product.

***Identification of Prop. 65 Ingredient(s):*** None

***California Perchlorate Rule CCR Title 22 Chap 33:***

***Trade Secret Registry:*** Not applicable

***National Inventories:***

***U.S. Inventory Status:*** TSCA Listed: Yes

***TSCA CAS Number:*** 7447-40-7

---

## 16. OTHER INFORMATION

***Intended Use:*** Laboratory Reagent

***References:*** 29 CFR 1900 - 1910 (Code of Federal Regulations - Labor). Air Contaminants, Federal Register, Vol. 54, No. 12. Thursday, January 19, 1989. pp. 2332-2983. CCINFO RTECS. Canadian Centre for Occupational Health and Safety. Hamilton, Ontario Canada: 30 June 1993. IARC Monographs on the Evaluation of the Carcinogenic Risks to Humans. World Health Organization (Volumes 1-42) Supplement 7. France: 1987. List of Dangerous Substances Classified in Annex I of the EEC Directive (67/548) - Classification, Packaging and Labeling of Dangerous Substances, Amended July 1992. Sixth Annual Report on Carcinogens, 1991. U.S. Department of Health and Human Services. Rockville, MD: Technical Resources, Inc. 1991. Technical Judgment. TLV's Threshold Limit Values and Biological Exposure Indices for 1992-1993. American Conference of Governmental Industrial Hygienists, 1992. Vendor Information.

***Revision Summary:*** Updates in Section(s) 14,

---

**Legend:**

NA - Not Applicable

w/w - weight/weight

ND - Not Determined

w/v - weight/volume

NV - Not Available

v/v - volume/volume

**USER RESPONSIBILITY:** Each user should read and understand this information and incorporate it in individual site safety programs in accordance with applicable hazard communication standards and regulations.

**THE INFORMATION CONTAINED HEREIN IS BASED ON DATA CONSIDERED TO BE ACCURATE. HOWEVER, NO WARRANTY IS EXPRESSED OR IMPLIED REGARDING THE ACCURACY OF THESE DATA OR THE RESULTS TO BE OBTAINED FROM THE USE THEREOF.**

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Hach Company  
P.O.Box 389  
Loveland, CO USA 80539  
(970) 669-3050

MSDS No: M00139

# MATERIAL SAFETY DATA SHEET

---

## 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

**Product Name:** Sodium and Potassium Ionic Strength Adjustor Powder  
**Catalog Number:** 4451569

Hach Company  
P.O.Box 389  
Loveland, CO USA 80539  
(970) 669-3050

Emergency Telephone Numbers:  
(Medical and Transportation)  
(303) 623-5716 24 Hour Service  
(515)232-2533 8am - 4pm CST

**MSDS Number:** M00139  
**Chemical Name:** Not applicable  
**CAS No.:** Not applicable  
**Chemical Formula:** Not applicable  
**Chemical Family:** Not applicable  
**Hazard:** May cause irritation.  
**Date of MSDS Preparation:**  
**Day:** 27  
**Month:** April  
**Year:** 2007

---

## 2. COMPOSITION / INFORMATION ON INGREDIENTS

### Tris-(Hydroxymethyl)-Aminomethane

**CAS No.:** 77-86-1  
**TSCA CAS Number:** 77-86-1  
**Percent Range:** 40.0 - 50.0  
**Percent Range Units:** weight / weight  
**LD50:** Oral rat LD50 = 5900 mg/kg  
**LC50:** None reported  
**TLV:** Not established  
**PEL:** Not established  
**Hazard:** May cause irritation.

### Magnesium Sulfate

**CAS No.:** 10034-99-8  
**TSCA CAS Number:** 7487-88-9  
**Percent Range:** 60.0 - 70.0  
**Percent Range Units:** weight / weight  
**LD50:** Oral mouse LDLo = 5000 mg/kg  
**LC50:** None reported  
**TLV:** Not established  
**PEL:** Not established  
**Hazard:** May cause irritation.

---

## 3. HAZARDS IDENTIFICATION

### **Emergency Overview:**

**Appearance:** White powder

**Odor:** None

MAY CAUSE EYE, SKIN AND RESPIRATORY TRACT IRRITATION

**HMIS:**

**Health:** 1

**Flammability:** 0

**Reactivity:** 0

**Protective Equipment:** X - See protective equipment, Section 8.

**NFPA:**

**Health:** 1

**Flammability:** 1

**Reactivity:** 0

**Symbol:** Not applicable

**Potential Health Effects:**

**Eye Contact:** May cause irritation

**Skin Contact:** May cause irritation

**Skin Absorption:** No effects anticipated

**Target Organs:** Not applicable

**Ingestion:** May cause: vomiting central nervous system depression abdominal pain diarrhea hypoglycemia weakness collapse

**Target Organs:** Central nervous system

**Inhalation:** May cause: respiratory tract irritation sore throat coughing

**Target Organs:** None reported

**Medical Conditions Aggravated:** Pre-existing: Eye conditions Respiratory conditions

**Chronic Effects:** None reported

**Cancer / Reproductive Toxicity Information:**

This product does NOT contain any OSHA listed carcinogens.

This product does NOT contain any IARC listed chemicals.

This product does NOT contain any NTP listed chemicals.

**Additional Cancer / Reproductive Toxicity Information:** Contains: an experimental teratogen. In laboratory tests, when magnesium sulfate was given to pregnant rats, a sharp reduction of both the number and the weight of the offspring was observed.

**Toxicologically Synergistic Products:** None reported

---

#### 4. FIRST AID

**Eye Contact:** Immediately flush eyes with water for 15 minutes. Call physician.

**Skin Contact (First Aid):** Wash skin with plenty of water.

**Ingestion (First Aid):** Give large quantities of water. Call physician immediately.

**Inhalation:** Remove to fresh air.

---

#### 5. FIRE FIGHTING MEASURES

**Flammable Properties:** Does not burn, but may melt in a fire, releasing toxic fumes.

**Flash Point:** Not applicable

**Method:** Not applicable

**Flammability Limits:**

**Lower Explosion Limits:** Not applicable

**Upper Explosion Limits:** Not applicable

**Autoignition Temperature:** Not applicable

**Hazardous Combustion Products:** This material will not burn.

**Fire / Explosion Hazards:** This product will not burn or explode.

**Static Discharge:** None reported.

**Mechanical Impact:** None reported

**Extinguishing Media:** Use media appropriate to surrounding fire conditions

**Fire Fighting Instruction:** As in any fire, wear self-contained breathing apparatus pressure-demand and full protective gear.

---

#### 6. ACCIDENTAL RELEASE MEASURES



**Spill Response Notice:**

Only persons properly qualified to respond to an emergency involving hazardous substances may respond to a spill according to federal regulations (OSHA 29 CFR 1910.120(a)(v)) and per your company's emergency response plan and guidelines/procedures. See Section 13, Special Instructions for disposal assistance.

**Containment Technique:** Stop spilled material from being released to the environment.

**Clean-up Technique:** Sweep up material. Dispose of material in an E.P.A. approved hazardous waste facility. Decontaminate the area of the spill with a soap solution.

**Evacuation Procedure:** Evacuate as needed to perform spill clean-up. If conditions warrant, increase the size of the evacuation.

**Special Instructions (for accidental release):** Not applicable

**304 EHS RQ (40 CFR 355):** Not applicable

**D.O.T. Emergency Response Guide Number:** NOne

---

## 7. HANDLING / STORAGE

**Handling:** Avoid contact with eyes Do not breathe dust. Wash thoroughly after handling. Maintain general industrial hygiene practices when using this product.

**Storage:** Keep container tightly closed when not in use.

**Flammability Class:** Not applicable

---

## 8. EXPOSURE CONTROLS / PROTECTIVE EQUIPMENT

**Engineering Controls:** Have an eyewash station nearby. Maintain general industrial hygiene practices when using this product.

**Personal Protective Equipment:**

**Eye Protection:** safety glasses with top and side shields

**Skin Protection:** lab coat disposable latex gloves

**Inhalation Protection:** adequate ventilation

**Precautionary Measures:** Avoid contact with: eyes Do not breathe: dust Wash thoroughly after handling.

**TLV:** Not established

**PEL:** Not established

---

## 9. PHYSICAL / CHEMICAL PROPERTIES

**Appearance:** White powder

**Physical State:** Solid

**Molecular Weight:** Not applicable

**Odor:** None

**pH:** 5% solution = 10.1

**Vapor Pressure:** Not applicable

**Vapor Density (air = 1):** Not applicable

**Boiling Point:** Not applicable

**Melting Point:** 121°C

**Specific Gravity (water = 1):** Not determined

**Evaporation Rate (water = 1):** Not applicable

**Volatile Organic Compounds Content:** Not applicable

**Partition Coefficient (n-octanol / water):** Not applicable

**Solubility:**

**Water:** Soluble

**Acid:** Soluble

**Other:** Not determined

**Metal Corrosivity:**

**Steel:** 0.006 in/yr

**Aluminum:** Not determined

---

## 10. STABILITY / REACTIVITY

**Chemical Stability:** Stable when stored under proper conditions.

**Conditions to Avoid:** Heating to decomposition.

**Reactivity / Incompatibility:** None reported  
**Hazardous Decomposition:** Heating to decomposition releases toxic and/or corrosive fumes of: sulfur oxides  
**Hazardous Polymerization:** Will not occur.

---

## 11. TOXICOLOGICAL INFORMATION

**Product Toxicological Data:**

**LD50:** None reported

**LC50:** None reported

**Dermal Toxicity Data:** None reported

**Skin and Eye Irritation Data:** None reported

**Mutation Data:** None reported

**Reproductive Effects Data:** Intraperitoneal - rat TDLo = 750 mg/kg (7-21D preg): TERATOGEN. Sharp reduction in both the number and weight of offspring.

**Ingredient Toxicological Data:** Magnesium Sulfate: Oral mouse LDLo = 5000 mg/kg; Tris-(Hydroxymethyl)-Aminomethane: Oral rat LD50 = 5900 mg/kg

---

## 12. ECOLOGICAL INFORMATION

**Product Ecological Information:** --

No ecological data available for this product.

**Ingredient Ecological Information:** --

No ecological data available for the ingredients of this product.

---

## 13. DISPOSAL CONSIDERATIONS

**EPA Waste ID Number:** Not applicable

**Special Instructions (Disposal):** Dispose of material in an E.P.A. approved hazardous waste facility.

**Empty Containers:** Rinse three times with an appropriate solvent. Dispose of empty container as normal trash.

**NOTICE (Disposal):** These disposal guidelines are based on federal regulations and may be superseded by more stringent state or local requirements. Please consult your local environmental regulators for more information.

---

## 14. TRANSPORT INFORMATION

**D.O.T.:**

**D.O.T. Proper Shipping Name:** Not Currently Regulated

--

**DOT Hazard Class:** NA

**DOT Subsidiary Risk:** NA

**DOT ID Number:** NA

**DOT Packing Group:** NA

**I.C.A.O.:**

**I.C.A.O. Proper Shipping Name:** Not Currently Regulated

--

**ICAO Hazard Class:** NA

**ICAO Subsidiary Risk:** NA

**ICAO ID Number:** NA

**ICAO Packing Group:** NA

**I.M.O.:**

**I.M.O. Proper Shipping Name:** Not Currently Regulated

--

**I.M.O. Hazard Class:** NA

**I.M.O. Subsidiary Risk:** NA

**I.M.O. ID Number:** NA

**I.M.O. Packing Group:** NA

**Additional Information:** There is a possibility that this product could be contained in a reagent set or kit composed of various compatible dangerous goods. If the item is NOT in a set or kit, the classification given above applies. If the item IS part of a set or kit, the classification would change to the following: UN3316 Chemical Kit, Class 9, PG II or III. If the item is not regulated, the Chemical Kit classification does not apply.

---

## 15. REGULATORY INFORMATION

### *U.S. Federal Regulations:*

**O.S.H.A.:** This product meets the criteria for a hazardous substance as defined in the Hazard Communication Standard. (29 CFR 1910.1200)

### *E.P.A.:*

**S.A.R.A. Title III Section 311/312 Categorization (40 CFR 370):** Immediate (Acute) Health Hazard Delayed (Chronic) Health Hazard

**S.A.R.A. Title III Section 313 (40 CFR 372):** This product does NOT contain any chemical subject to the reporting requirements of Section 313 of Title III of SARA.

--

**302 (EHS) TPQ (40 CFR 355):** Not applicable

**304 CERCLA RQ (40 CFR 302.4):** Not applicable

**304 EHS RQ (40 CFR 355):** Not applicable

**Clean Water Act (40 CFR 116.4):** Not applicable

**RCRA:** Contains no RCRA regulated substances.

**C.P.S.C.:** Not applicable

### *State Regulations:*

**California Prop. 65:** No Prop. 65 listed chemicals are present in this product.

**Identification of Prop. 65 Ingredient(s):** Not applicable

**California Perchlorate Rule CCR Title 22 Chap 33:**

**Trade Secret Registry:** Not applicable

### *National Inventories:*

**U.S. Inventory Status:** All ingredients in this product are listed on the TSCA 8(b) Inventory (40 CFR 710).

**TSCA CAS Number:** Not applicable

---

## 16. OTHER INFORMATION

**Intended Use:** Ionic Strength Adjustor for use with sodium or potassium electrode

**References:** Sax, N. Irving. Dangerous Properties of Industrial Materials, 7th Ed. New York: Van Nostrand Reinhold Co., 1989. CCINFO RTECS. Canadian Centre for Occupational Health and Safety. Hamilton, Ontario Canada: 30 June 1993. Vendor Information. The Merck Index, 11th Ed. Rahway, New Jersey: Merck and Co., Inc., 1989. Technical Judgment. TLV's Threshold Limit Values and Biological Exposure Indices for 1992-1993. American Conference of Governmental Industrial Hygienists, 1992. Air Contaminants, Federal Register, Vol. 54, No. 12. Thursday, January 19, 1989. pp. 2332-2983. 29 CFR 1900 - 1910 (Code of Federal Regulations - Labor).

**Revision Summary:** Updates in Section(s) 14,

---

### **Legend:**

NA - Not Applicable	w/w - weight/weight
ND - Not Determined	w/v - weight/volume
NV - Not Available	v/v - volume/volume

**USER RESPONSIBILITY:** Each user should read and understand this information and incorporate it in individual site safety programs in accordance with applicable hazard communication standards and regulations.

**THE INFORMATION CONTAINED HEREIN IS BASED ON DATA CONSIDERED TO BE ACCURATE. HOWEVER, NO WARRANTY IS EXPRESSED OR IMPLIED REGARDING THE ACCURACY OF THESE DATA OR THE RESULTS TO BE OBTAINED FROM THE USE THEREOF.**

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World Headquarters  
Hach Company  
P.O.Box 389  
Loveland, CO USA 80539  
(970) 669-3050

MSDS No: M00680

# MATERIAL SAFETY DATA SHEET

---

## 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

**Product Name:** Sodium Hydroxide Solution, 0.075 N  
**Catalog Number:** 2498032

Hach Company  
P.O.Box 389  
Loveland, CO USA 80539  
(970) 669-3050

Emergency Telephone Numbers:  
(Medical and Transportation)  
(303) 623-5716 24 Hour Service  
(515)232-2533 8am - 4pm CST

**MSDS Number:** M00680  
**Chemical Name:** Not applicable  
**CAS No.:** Not applicable  
**Chemical Formula:** Not applicable  
**Chemical Family:** Not applicable  
**Hazard:** Causes eye burns.  
**Date of MSDS Preparation:**  
**Day:** 23  
**Month:** May  
**Year:** 2007

---

## 2. COMPOSITION / INFORMATION ON INGREDIENTS

### Sodium Hydroxide

**CAS No.:** 1310-73-2  
**TSCA CAS Number:** 1310-73-2  
**Percent Range:** < 0.5  
**Percent Range Units:** weight / volume  
**LD50:** Oral rat LDLo = 500 mg/kg.  
**LC50:** None reported  
**TLV:** 2 mg/m<sup>3</sup> Ceiling/STEL  
**PEL:** 2 mg/m<sup>3</sup>  
**Hazard:** Causes severe burns. Toxic.

### Demineralized Water

**CAS No.:** 7732-18-5  
**TSCA CAS Number:** 7732-18-5  
**Percent Range:** >95.0  
**Percent Range Units:** volume / volume  
**LD50:** None reported  
**LC50:** None reported  
**TLV:** Not established  
**PEL:** Not established  
**Hazard:** No effects anticipated.

### Isopropanol

**CAS No.:** 67-63-0  
**TSCA CAS Number:** 67-63-0

**Percent Range:** < 5.0

**Percent Range Units:** volume / volume

**LD50:** Oral rat LD50 = 5045 mg/kg Oral Human LDLo = 2770 mg/kg

**LC50:** Inhalation rat LCLo = 12000 ppm/8hr

**TLV:** 400 ppm (500 ppm STEL)

**PEL:** 400 ppm

**Hazard:** Flammable. Causes moderate eye irritation.

---

### 3. HAZARDS IDENTIFICATION

**Emergency Overview:**

**Appearance:** Clear, colorless liquid

**Odor:** Alcoholic

CAUSES EYE BURNS

**HMIS:**

**Health:** 3

**Flammability:** 1

**Reactivity:** 0

**Protective Equipment:** X - See protective equipment, Section 8.

**NFPA:**

**Health:** 3

**Flammability:** 1

**Reactivity:** 0

**Symbol:** Not applicable

**Potential Health Effects:**

**Eye Contact:** Causes eye burns.

**Skin Contact:** None reported

**Skin Absorption:** None reported

**Target Organs:** None reported

**Ingestion:** May cause: burns of the mouth and esophagus vomiting rapid pulse and respirations shock collapse

**Target Organs:** None reported

**Inhalation:** No data reported.

**Target Organs:** Not applicable

**Medical Conditions Aggravated:** Pre-existing: Eye conditions

**Chronic Effects:** None reported

**Cancer / Reproductive Toxicity Information:**

This product does NOT contain any OSHA listed carcinogens.

This product does NOT contain any IARC listed chemicals.

This product does NOT contain any NTP listed chemicals.

**Additional Cancer / Reproductive Toxicity Information:** None reported

**Toxicologically Synergistic Products:** None reported

---

### 4. FIRST AID

**Eye Contact:** Immediately flush eyes with water for 15 minutes. Call physician.

**Skin Contact (First Aid):** Wash skin with soap and plenty of water. Call physician if irritation develops.

**Ingestion (First Aid):** Do not induce vomiting. Give 1-2 glasses of water. Call physician immediately. Never give anything by mouth to an unconscious person.  
**Inhalation:** None required.

---

## 5. FIRE FIGHTING MEASURES

**Flammable Properties:** Can burn in fire, releasing toxic vapors.  
**Flash Point:** >210 °F (98.89 °C)  
**Method:** Closed cup  
**Flammability Limits:**  
**Lower Explosion Limits:** Not determined  
**Upper Explosion Limits:** Not determined  
**Autoignition Temperature:** Not applicable  
**Hazardous Combustion Products:** carbon monoxide, carbon dioxide.  
**Fire / Explosion Hazards:** May react violently with: acids  
**Static Discharge:** None reported.  
**Mechanical Impact:** None reported  
**Extinguishing Media:** Use media appropriate to surrounding fire conditions  
**Fire Fighting Instruction:** As in any fire, wear self-contained breathing apparatus pressure-demand and full protective gear.

---

## 6. ACCIDENTAL RELEASE MEASURES

**Spill Response Notice:**  
Only persons properly qualified to respond to an emergency involving hazardous substances may respond to a spill according to federal regulations (OSHA 29 CFR 1910.120(a)(v)) and per your company's emergency response plan and guidelines/procedures. See Section 13, Special Instructions for disposal assistance.  
**Containment Technique:** Absorb spilled liquid with non-reactive sorbent material. Stop spilled material from being released to the environment.  
**Clean-up Technique:** Cover spilled material with a dry acid, such as citric or boric. Scoop up slurry into a large beaker. Dilute with a large excess of water. Adjust to a pH between 6 and 9. Use sulfuric or citric acid to lower pH. Use soda ash or sodium bicarbonate to increase pH. Flush reacted material to the drain with a large excess of water. Decontaminate the area of the spill with a soap solution.  
**Evacuation Procedure:** Evacuate local area (15 foot radius or as directed by your facility's emergency response plan) when: any quantity is spilled. If conditions warrant, increase the size of the evacuation.  
**Special Instructions (for accidental release):** Product is regulated as a hazardous water pollutant. Product is regulated as RCRA hazardous waste.  
**304 EHS RQ (40 CFR 355):** Not applicable  
**D.O.T. Emergency Response Guide Number:** Not applicable

---

## 7. HANDLING / STORAGE

**Handling:** Avoid contact with eyes skin Do not breathe mist or vapors. Wash thoroughly after handling. Maintain general industrial hygiene practices when using this product.  
**Storage:** Protect from: heat Keep away from: acids  
**Flammability Class:** Not applicable

---

## 8. EXPOSURE CONTROLS / PROTECTIVE EQUIPMENT

**Engineering Controls:** Have an eyewash station nearby. Maintain general industrial hygiene practices when using this product.  
**Personal Protective Equipment:**  
**Eye Protection:** chemical splash goggles  
**Skin Protection:** disposable latex gloves lab coat

**Inhalation Protection:** adequate ventilation  
**Precautionary Measures:** Avoid contact with: eyes skin Do not breathe: mist/vapor Wash thoroughly after handling. Protect from: heat Keep away from: acids/acid fumes  
**TLV:** Not established  
**PEL:** Not established

---

## 9. PHYSICAL / CHEMICAL PROPERTIES

**Appearance:** Clear, colorless liquid  
**Physical State:** Liquid  
**Molecular Weight:** Not applicable  
**Odor:** Alcoholic  
**pH:** 12.66  
**Vapor Pressure:** Not determined  
**Vapor Density (air = 1):** Not determined  
**Boiling Point:** 98 °C  
**Melting Point:** Not determined  
**Specific Gravity (water = 1):** 0.988  
**Evaporation Rate (water = 1):** Not determined  
**Volatile Organic Compounds Content:** Not determined  
**Partition Coefficient (n-octanol / water):** Not applicable  
**Solubility:**  
**Water:** Miscible  
**Acid:** Miscible  
**Other:** Not determined  
**Metal Corrosivity:**  
**Steel:** 0.000 in/yr  
**Aluminum:** 0.041 in/yr

---

## 10. STABILITY / REACTIVITY

**Chemical Stability:** Stable when stored under proper conditions.  
**Conditions to Avoid:** Heat Evaporation  
**Reactivity / Incompatibility:** May react violently in contact with: strong acids  
**Hazardous Decomposition:** No hazardous decomposition products known.  
**Hazardous Polymerization:** Will not occur.

---

## 11. TOXICOLOGICAL INFORMATION

**Product Toxicological Data:**  
**LD50:** None reported  
**LC50:** None reported  
**Dermal Toxicity Data:** None reported  
**Skin and Eye Irritation Data:** Isopropanol: Eye rabbit 100 mg/24 h - MODERATE, Skin rabbit: 500 mg - MILD; Sodium Hydroxide: Eye 50 µg/24 h - SEVERE, Skin rabbit with 0.25% solution MILD to NO IRRITATION  
**Mutation Data:** Isopropanol: Cytogenic analysis - Inhalation rat 1030 µg/m<sup>3</sup>/16W (Intermittent)  
**Reproductive Effects Data:** Isopropanol: Oral rat TDLo = 11340 mg/kg - Maternal effects: menstrual cycle changes or disorders  
**Ingredient Toxicological Data:** Isopropanol: Oral rat LD50 = 5045 mg/kg; Oral Human LDLo = 2770 mg/kg; Inhalation Rat LCLo = 12000 ppm/8h; Sodium Hydroxide Oral Rat LDLo = 50 mg/kg

---

## 12. ECOLOGICAL INFORMATION

**Product Ecological Information:** --

No ecological data available for this product.

**Ingredient Ecological Information:** --

No ecological data available for the ingredients of this product.

---

## 13. DISPOSAL CONSIDERATIONS

**EPA Waste ID Number:** D002

**Special Instructions (Disposal):** Dilute to 3 to 5 times the volume with cold water. Adjust to a pH between 6 and 9 with an acid, such as sulfuric or citric. Open cold water tap completely, slowly pour the reacted material to the drain. Allow cold water to run for 5 minutes to completely flush the system.

**Empty Containers:** Rinse three times with an appropriate solvent. Dispose of empty container as normal trash.

**NOTICE (Disposal):** These disposal guidelines are based on federal regulations and may be superseded by more stringent state or local requirements. Please consult your local environmental regulators for more information.

---

## 14. TRANSPORT INFORMATION

**D.O.T.:**

**D.O.T. Proper Shipping Name:** Not Currently Regulated

--

**DOT Hazard Class:** NA

**DOT Subsidiary Risk:** NA

**DOT ID Number:** NA

**DOT Packing Group:** NA

**I.C.A.O.:**

**I.C.A.O. Proper Shipping Name:** Not Currently Regulated

--

**ICAO Hazard Class:** NA

**ICAO Subsidiary Risk:** NA

**ICAO ID Number:** NA

**ICAO Packing Group:** NA

**I.M.O.:**

**I.M.O. Proper Shipping Name:** Not Currently Regulated

--

**I.M.O. Hazard Class:** NA

**I.M.O. Subsidiary Risk:** NA

**I.M.O. ID Number:** NA

**I.M.O. Packing Group:** NA

**Additional Information:** There is a possibility that this product could be contained in a reagent set or kit composed of various compatible dangerous goods. If the item is NOT in a set or kit, the classification given above applies. If the item IS part of a set or kit, the classification would change to the following: UN3316 Chemical Kit, Class 9, PG II or III. If the item is not regulated, the Chemical Kit classification does not apply.

---

## 15. REGULATORY INFORMATION

**U.S. Federal Regulations:**

**O.S.H.A.:** This product meets the criteria for a hazardous substance as defined in the Hazard Communication Standard. (29 CFR 1910.1200)

**E.P.A.:**

**S.A.R.A. Title III Section 311/312 Categorization (40 CFR 370):** Immediate (Acute) Health Hazard

**S.A.R.A. Title III Section 313 (40 CFR 372):** This product does NOT contain any chemical subject to the reporting requirements of Section 313 of Title III of SARA.



--

**302 (EHS) TPQ (40 CFR 355):** Not applicable

**304 CERCLA RQ (40 CFR 302.4):** Sodium Hydroxide 1000 lbs.

**304 EHS RQ (40 CFR 355):** Not applicable

**Clean Water Act (40 CFR 116.4):** Sodium Hydroxide - RQ = 1000 lbs. (454 kgs.)

**RCRA:** Contains RCRA regulated substances. See Section 13, EPA Waste ID Number.

**C.P.S.C.:** Not applicable

**State Regulations:**

**California Prop. 65:** No Prop. 65 listed chemicals are present in this product.

**Identification of Prop. 65 Ingredient(s):** None

**California Perchlorate Rule CCR Title 22 Chap 33:**

**Trade Secret Registry:** Not applicable

**National Inventories:**

**U.S. Inventory Status:** All ingredients in this product are listed on the TSCA 8(b) Inventory (40 CFR 710).

**TSCA CAS Number:** Not applicable

---

## 16. OTHER INFORMATION

**Intended Use:** Standard solution

**References:** 29 CFR 1900 - 1910 (Code of Federal Regulations - Labor). Air Contaminants, Federal Register, Vol. 54, No. 12. Thursday, January 19, 1989. pp. 2332-2983. TLV's Threshold Limit Values and Biological Exposure Indices for 1992-1993. American Conference of Governmental Industrial Hygienists, 1992. In-house information. Technical Judgment. Sax, N. Irving. Dangerous Properties of Industrial Materials, 7th Ed. New York: Van Nostrand Reinhold Co., 1989.

**Revision Summary:** Updates in Section(s) 14,

---

**Legend:**

NA - Not Applicable	w/w - weight/weight
ND - Not Determined	w/v - weight/volume
NV - Not Available	v/v - volume/volume

**USER RESPONSIBILITY:** Each user should read and understand this information and incorporate it in individual site safety programs in accordance with applicable hazard communication standards and regulations.

**THE INFORMATION CONTAINED HEREIN IS BASED ON DATA CONSIDERED TO BE ACCURATE. HOWEVER, NO WARRANTY IS EXPRESSED OR IMPLIED REGARDING THE ACCURACY OF THESE DATA OR THE RESULTS TO BE OBTAINED FROM THE USE THEREOF.**

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Hach Company  
P.O.Box 389  
Loveland, CO USA 80539  
(970) 669-3050

MSDS No: M01001

# MATERIAL SAFETY DATA SHEET

---

## 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

**Product Name:** Sodium Reference Standard Solution 1000 ± 10 mg/L as Na<sup>+</sup> in H<sub>2</sub>O

**Catalog Number:** 1474949

Hach Company  
P.O.Box 389  
Loveland, CO USA 80539  
(970) 669-3050

Emergency Telephone Numbers:  
(Medical and Transportation)  
(303) 623-5716 24 Hour Service  
(515)232-2533 8am - 4pm CST

**MSDS Number:** M01001

**Chemical Name:** Not applicable

**CAS No.:** Not applicable

**Chemical Formula:** Not applicable

**Chemical Family:** Not applicable

**Hazard:** Practically non-toxic.

**Date of MSDS Preparation:**

**Day:** 18

**Month:** August

**Year:** 2007

---

## 2. COMPOSITION / INFORMATION ON INGREDIENTS

### Sodium Chloride

**CAS No.:** 7647-14-5

**TSCA CAS Number:** 7647-14-5

**Percent Range:** < 1.0

**Percent Range Units:** weight / volume

**LD50:** Oral rat LD50 = 3000 mg/kg

**LC50:** None reported

**TLV:** Not established

**PEL:** Not established

**Hazard:** Causes moderate eye irritation.

### Demineralized Water

**CAS No.:** 7732-18-5

**TSCA CAS Number:** 7732-18-5

**Percent Range:** > 99.0

**Percent Range Units:** volume / volume

**LD50:** None reported

**LC50:** None reported

**TLV:** Not established

**PEL:** Not established

**Hazard:** No effects anticipated.

### Other components, each

**CAS No.:** Not applicable

**TSCA CAS Number:** Not applicable

**Percent Range:** < 0.1

**Percent Range Units:** volume / volume

**LD50:** Not applicable

**LC50:** Not applicable

**TLV:** Not established

**PEL:** Not established

**Hazard:** Any ingredient(s) of this product listed as "Other component(s)" is not considered a health hazard to the user of this product.

---

### 3. HAZARDS IDENTIFICATION

**Emergency Overview:**

**Appearance:** Clear, colorless liquid

**Odor:** None

**HMIS:**

**Health:** 0

**Flammability:** 0

**Reactivity:** 0

**Protective Equipment:** X - See protective equipment, Section 8.

**NFPA:**

**Health:** 0

**Flammability:** 0

**Reactivity:** 0

**Symbol:** Not applicable

**Potential Health Effects:**

**Eye Contact:** No effects are anticipated

**Skin Contact:** No effects are anticipated

**Skin Absorption:** No effects anticipated

**Target Organs:** Not applicable

**Ingestion:** Very large doses may cause: abdominal cramps

**Target Organs:** None reported

**Inhalation:** No effects anticipated

**Target Organs:** Not applicable

**Medical Conditions Aggravated:** None reported

**Chronic Effects:** None reported

**Cancer / Reproductive Toxicity Information:**

This product does NOT contain any OSHA listed carcinogens.

This product does NOT contain any IARC listed chemicals.

This product does NOT contain any NTP listed chemicals.

**Additional Cancer / Reproductive Toxicity Information:** In a laboratory test, mice given a 2% NaCl solution in place of drinking water during pregnancy produced hypertensive adult offspring. In a laboratory test, single subcutaneous injection of NaCl into pregnant mice @ 2500 mg/Kg caused fetal deaths and malformations.

**Toxicologically Synergistic Products:** None reported

---

### 4. FIRST AID

**Eye Contact:** Flush eyes with water. Call physician if irritation develops.  
**Skin Contact (First Aid):** Wash skin with plenty of water.  
**Ingestion (First Aid):** Give large quantities of water. Call physician immediately.  
**Inhalation:** None required.

---

## 5. FIRE FIGHTING MEASURES

**Flammable Properties:** Material will not burn.  
**Flash Point:** Not applicable  
**Method:** Not applicable  
**Flammability Limits:**  
**Lower Explosion Limits:** Not applicable  
**Upper Explosion Limits:** Not applicable  
**Autoignition Temperature:** Not applicable  
**Hazardous Combustion Products:** This material will not burn.  
**Fire / Explosion Hazards:** None reported  
**Static Discharge:** None reported.  
**Mechanical Impact:** None reported  
**Extinguishing Media:** Use media appropriate to surrounding fire conditions  
**Fire Fighting Instruction:** As in any fire, wear self-contained breathing apparatus pressure-demand and full protective gear. Evacuate area and fight fire from a safe distance.

---

## 6. ACCIDENTAL RELEASE MEASURES

**Spill Response Notice:**  
Only persons properly qualified to respond to an emergency involving hazardous substances may respond to a spill according to federal regulations (OSHA 29 CFR 1910.120(a)(v)) and per your company's emergency response plan and guidelines/procedures. See Section 13, Special Instructions for disposal assistance.  
**Containment Technique:** Stop spilled material from being released to the environment.  
**Clean-up Technique:** Flush the spilled material to the drain with a large excess of water.  
**Evacuation Procedure:** Evacuate as needed to perform spill clean-up. If conditions warrant, increase the size of the evacuation.  
**Special Instructions (for accidental release):** Not applicable  
**304 EHS RQ (40 CFR 355):** Not applicable  
**D.O.T. Emergency Response Guide Number:** Not applicable

---

## 7. HANDLING / STORAGE

**Handling:** Avoid contact with eyes Wash thoroughly after handling. Maintain general industrial hygiene practices when using this product.  
**Storage:** Keep container tightly closed when not in use.  
**Flammability Class:** Not applicable

---

## 8. EXPOSURE CONTROLS / PROTECTIVE EQUIPMENT

**Engineering Controls:** Maintain general industrial hygiene practices when using this product.  
**Personal Protective Equipment:**  
**Eye Protection:** safety glasses with top and side shields  
**Skin Protection:** Not applicable  
**Inhalation Protection:** adequate ventilation  
**Precautionary Measures:** Avoid contact with: eyes Wash thoroughly after handling.  
**TLV:** Not established  
**PEL:** Not established

---

## 9. PHYSICAL / CHEMICAL PROPERTIES

**Appearance:** Clear, colorless liquid  
**Physical State:** Liquid  
**Molecular Weight:** Not applicable  
**Odor:** None  
**pH:** 5.14  
**Vapor Pressure:** Not determined  
**Vapor Density (air = 1):** Not determined  
**Boiling Point:** ~ 100°C (~ 212°F)  
**Melting Point:** Not determined  
**Specific Gravity (water = 1):** 0.99  
**Evaporation Rate (water = 1):** ~ 0.95  
**Volatile Organic Compounds Content:** Not determined  
**Partition Coefficient (n-octanol / water):** Not applicable  
**Solubility:**  
    **Water:** Miscible  
    **Acid:** Miscible  
    **Other:** Not determined  
**Metal Corrosivity:**  
    **Steel:** Not determined  
    **Aluminum:** Not determined

---

## 10. STABILITY / REACTIVITY

**Chemical Stability:** Stable when stored under proper conditions.  
**Conditions to Avoid:** Evaporation Extreme temperatures  
**Reactivity / Incompatibility:** None reported  
**Hazardous Decomposition:** None reported  
**Hazardous Polymerization:** Will not occur.

---

## 11. TOXICOLOGICAL INFORMATION

**Product Toxicological Data:**  
    **LD50:** None reported  
    **LC50:** None reported  
    **Dermal Toxicity Data:** None reported  
    **Skin and Eye Irritation Data:** None reported  
    **Mutation Data:** None reported  
    **Reproductive Effects Data:** None reported  
**Ingredient Toxicological Data:** --  
    No toxicological data available for the ingredients of this product.

---

## 12. ECOLOGICAL INFORMATION

**Product Ecological Information:** --  
    No ecological data available for this product.  
**Ingredient Ecological Information:** --  
    No ecological data available for the ingredients of this product.

---

## 13. DISPOSAL CONSIDERATIONS

**EPA Waste ID Number:** Not applicable  
**Special Instructions (Disposal):** Open cold water tap completely, slowly pour the material to the drain.

**Empty Containers:** Rinse three times with an appropriate solvent. Dispose of empty container as normal trash.

**NOTICE (Disposal):** These disposal guidelines are based on federal regulations and may be superseded by more stringent state or local requirements. Please consult your local environmental regulators for more information.

---

## 14. TRANSPORT INFORMATION

### **D.O.T.:**

**D.O.T. Proper Shipping Name:** Not Currently Regulated

--

**DOT Hazard Class:** NA

**DOT Subsidiary Risk:** NA

**DOT ID Number:** NA

**DOT Packing Group:** NA

### **I.C.A.O.:**

**I.C.A.O. Proper Shipping Name:** Not Currently Regulated

--

**ICAO Hazard Class:** NA

**ICAO Subsidiary Risk:** NA

**ICAO ID Number:** NA

**ICAO Packing Group:** NA

### **I.M.O.:**

**I.M.O. Proper Shipping Name:** Not Currently Regulated

--

**I.M.O. Hazard Class:** NA

**I.M.O. Subsidiary Risk:** NA

**I.M.O. ID Number:** NA

**I.M.O. Packing Group:** NA

**Additional Information:** There is a possibility that this product could be contained in a reagent set or kit composed of various compatible dangerous goods. If the item is NOT in a set or kit, the classification given above applies. If the item IS part of a set or kit, the classification would change to the following: UN3316 Chemical Kit, Class 9, PG II or III. If the item is not regulated, the Chemical Kit classification does not apply.

---

## 15. REGULATORY INFORMATION

### **U.S. Federal Regulations:**

**O.S.H.A.:** This product does not meet the criteria for a hazardous substance as defined in the Hazard Communication Standard. (29 CFR 1910.1200)

### **E.P.A.:**

**S.A.R.A. Title III Section 311/312 Categorization (40 CFR 370):** This product is not hazardous under 29 CFR.1910.1200 and therefore is not covered by Title III under SARA.

**S.A.R.A. Title III Section 313 (40 CFR 372):** This product does NOT contain any chemical subject to the reporting requirements of Section 313 of Title III of SARA.

--

**302 (EHS) TPQ (40 CFR 355):** Not applicable

**304 CERCLA RQ (40 CFR 302.4):** Not applicable

**304 EHS RQ (40 CFR 355):** Not applicable

**Clean Water Act (40 CFR 116.4):** Not applicable

**RCRA:** Contains no RCRA regulated substances.

**C.P.S.C.:** Not applicable

### **State Regulations:**

**California Prop. 65:** No Prop. 65 listed chemicals are present in this product.

**Identification of Prop. 65 Ingredient(s):** None

**California Perchlorate Rule CCR Title 22 Chap 33:**

**Trade Secret Registry:** Not applicable

**National Inventories:**

**U.S. Inventory Status:** All ingredients in this product are listed on the TSCA 8(b) Inventory (40 CFR 710).

**TSCA CAS Number:** Not applicable

---

## 16. OTHER INFORMATION

**Intended Use:** Standard solution

**References:** 29 CFR 1900 - 1910 (Code of Federal Regulations - Labor). Air Contaminants, Federal Register, Vol. 54, No. 12. Thursday, January 19, 1989. pp. 2332-2983. TLV's Threshold Limit Values and Biological Exposure Indices for 1992-1993. American Conference of Governmental Industrial Hygienists, 1992. Fire Protection Guide on Hazardous Materials, 10th Ed. Quincy, MA: National Fire Protection Fire Protection Guide on Hazardous Materials, 10th Ed. Quincy, MA: National Fire Protection Association, 1991. In-house information. Technical Judgment.

**Revision Summary:** Updates in Section(s) 14,

---

### Legend:

NA - Not Applicable	w/w - weight/weight
ND - Not Determined	w/v - weight/volume
NV - Not Available	v/v - volume/volume

**USER RESPONSIBILITY:** Each user should read and understand this information and incorporate it in individual site safety programs in accordance with applicable hazard communication standards and regulations.

**THE INFORMATION CONTAINED HEREIN IS BASED ON DATA CONSIDERED TO BE ACCURATE. HOWEVER, NO WARRANTY IS EXPRESSED OR IMPLIED REGARDING THE ACCURACY OF THESE DATA OR THE RESULTS TO BE OBTAINED FROM THE USE THEREOF.**

**HACH COMPANY ©2009**

<b>MSDS</b> <i>Material Safety Data Sheet</i>	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
	<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.

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

# HYDROCHLORIC ACID, 33 - 40%

## 1. Product Identification

**Synonyms:** Muriatic acid; hydrogen chloride, aqueous

**CAS No.:** 7647-01-0

**Molecular Weight:** 36.46

**Chemical Formula:** HCl

**Product Codes:**

J.T. Baker: 5367, 5537, 5575, 5800, 5814, 5821, 5839, 5861, 5862, 5894, 5962, 5972, 5994, 6900, 7831, 9529, 9530, 9534, 9535, 9536, 9538, 9539, 9540, 9544, 9548

Mallinckrodt: 2062, 2515, 2612, 2624, 2626, 3861, 5583, 5587, H611, H613, H987, H992, H999, V078, V628

## 2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
Hydrogen Chloride	7647-01-0	33 - 40%	Yes
Water	7732-18-5	60 - 67%	No

## 3. Hazards Identification

### Emergency Overview

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

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

Health Rating: 3 - Severe (Poison)

Flammability Rating: 0 - None

Reactivity Rating: 2 - Moderate

Contact Rating: 4 - Extreme (Corrosive)



Lab Protective Equip: GOGGLES & SHIELD; LAB COAT & APRON; VENT HOOD; PROPER GLOVES  
Storage Color Code: White (Corrosive)

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### **Potential Health Effects**

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#### **Inhalation:**

Corrosive! Inhalation of vapors can cause coughing, choking, inflammation of the nose, throat, and upper respiratory tract, and in severe cases, pulmonary edema, circulatory failure, and death.

#### **Ingestion:**

Corrosive! Swallowing hydrochloric acid can cause immediate pain and burns of the mouth, throat, esophagus and gastrointestinal tract. May cause nausea, vomiting, and diarrhea. Swallowing may be fatal.

#### **Skin Contact:**

Corrosive! Can cause redness, pain, and severe skin burns. Concentrated solutions cause deep ulcers and discolor skin.

#### **Eye Contact:**

Corrosive! Vapors are irritating and may cause damage to the eyes. Contact may cause severe burns and permanent eye damage.

#### **Chronic Exposure:**

Long-term exposure to concentrated vapors may cause erosion of teeth. Long term exposures seldom occur due to the corrosive properties of the acid.

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

Persons with pre-existing skin disorders or eye 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 immediately.

#### **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. Thoroughly clean shoes before reuse. Get medical attention immediately.

#### **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:**

Extreme heat or contact with metals can release flammable hydrogen gas.

#### **Explosion:**

Not considered to be an explosion hazard.

#### **Fire Extinguishing Media:**

If involved in a fire, use water spray. Neutralize with soda ash or slaked lime.

#### **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 hydrochloric acid. Stay away from ends of tanks. Cool tanks with water spray until well after fire is out.

---

## 6. Accidental Release Measures

Ventilate area of leak or spill. 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. Neutralize with alkaline material (soda ash, lime), then 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.

J. T. Baker NEUTRASORB® or TEAM® 'Low Na+' acid neutralizers are recommended for spills of this product.

---

## 7. Handling and Storage

Store in a cool, dry, ventilated storage area with acid resistant floors and good drainage. Protect from physical damage. Keep out of direct sunlight and away from heat, water, and incompatible materials. Do not wash out container and use it for other purposes. When diluting, the acid should always be added slowly to water and in small amounts. Never use hot water and never add water to the acid. Water added to acid can cause uncontrolled boiling and splashing. When opening metal containers, use non-sparking tools because of the possibility of hydrogen gas being present. 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 Hydrochloric acid:

- OSHA Permissible Exposure Limit (PEL):

5 ppm (Ceiling)

- ACGIH Threshold Limit Value (TLV):

2 ppm (Ceiling), 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 an acid gas 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:**

Rubber or neoprene gloves and additional protection including impervious boots, apron, or coveralls, as needed in areas of unusual exposure 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:**

Colorless, fuming liquid.

**Odor:**

Pungent odor of hydrogen chloride.

**Solubility:**

Infinite in water with slight evolution of heat.

**Density:**

1.18

**pH:**

For HCL solutions: 0.1 (1.0 N), 1.1 (0.1 N), 2.02 (0.01 N)

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

100

**Boiling Point:**

53C (127F) Azeotrope (20.2%) boils at 109C (228F)

**Melting Point:**

-74C (-101F)

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

No information found.

**Vapor Pressure (mm Hg):**

190 @ 25C (77F)

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

No information found.

---

## 10. Stability and Reactivity

**Stability:**

Stable under ordinary conditions of use and storage. Containers may burst when heated.

**Hazardous Decomposition Products:**

When heated to decomposition, emits toxic hydrogen chloride fumes and will react with water or steam to produce heat and toxic and corrosive fumes. Thermal oxidative decomposition produces toxic chlorine fumes and explosive hydrogen gas.

**Hazardous Polymerization:**

Will not occur.

**Incompatibilities:**

A strong mineral acid, concentrated hydrochloric acid is incompatible with many substances and highly reactive with strong bases, metals, metal oxides, hydroxides, amines, carbonates and other alkaline materials.

Incompatible with materials such as cyanides, sulfides, sulfites, and formaldehyde.

**Conditions to Avoid:**

Heat, direct sunlight.

---

## 11. Toxicological Information

Inhalation rat LC50: 3124 ppm/1H; oral rabbit LD50: 900 mg/kg (Hydrochloric acid concentrated); investigated as a tumorigen, mutagen, reproductive effector.

-----\Cancer Lists\-----			
Ingredient	---NTP Carcinogen---		IARC Category
	Known	Anticipated	
Hydrogen Chloride (7647-01-0)	No	No	3
Water (7732-18-5)	No	No	None

---

## 12. Ecological Information

**Environmental Fate:**

When released into the soil, this material is not expected to biodegrade. When released into the soil, this material

may leach into groundwater.

**Environmental Toxicity:**

This material is expected to 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:** HYDROCHLORIC ACID

**Hazard Class:** 8

**UN/NA:** UN1789

**Packing Group:** II

**Information reported for product/size:** 475LB

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

-----

**Proper Shipping Name:** HYDROCHLORIC ACID

**Hazard Class:** 8

**UN/NA:** UN1789

**Packing Group:** II

**Information reported for product/size:** 475LB

### 15. Regulatory Information

Risk and Safety Phrases:

Symbol: C

Risk: 34-37

Safety: (1/2-)26-45

```

-----\Chemical Inventory Status - Part 1\-----
Ingredient                                     TSCA  EC   Japan  Australia
-----
Hydrogen Chloride (7647-01-0)                 Yes  Yes  Yes    Yes
Water (7732-18-5)                             Yes  Yes  Yes    Yes

```

```

-----\Chemical Inventory Status - Part 2\-----
Ingredient                                     Korea  --Canada--  Phil.
-----
Hydrogen Chloride (7647-01-0)                 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.
-----
Hydrogen Chloride (7647-01-0)                 5000  500*  Yes    No
Water (7732-18-5)                             No    No    No     No

```

-----\Federal, State & International Regulations - Part 2\-----

Ingredient	CERCLA	-RCRA-	-TSCA-
Hydrogen Chloride (7647-01-0)	5000	261.33	8(d)
Water (7732-18-5)	No	No	No

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

**Australian Hazchem Code:** 2R  
**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: 1

**Label Hazard Warning:**

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

**Label Precautions:**

- Do not get in eyes, on skin, or on clothing.
- Do not breathe vapor or mist.
- Use only with adequate ventilation.
- Wash thoroughly after handling.
- Store in a tightly closed container.
- Remove and wash contaminated clothing promptly.

**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 get medical attention immediately.

**Product Use:**

Laboratory Reagent.

**Revision Information:**

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

**Disclaimer:**

\*\*\*\*\*

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\*\*\*\*\*

**Prepared by:** Environmental Health & Safety

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

# MATERIAL SAFETY DATA SHEET

## Hydrogen Peroxide (20 to 40%)

MSDS Ref. No: 7722-84-1-3

Version: US/Canada

Date Approved: 06/10/2002

Revision No: 6

---

## 1. PRODUCT AND COMPANY IDENTIFICATION

**PRODUCT NAME:** Hydrogen Peroxide (20 to 40%)

**ALTERNATE TRADE NAME(S):** Hybrite® 32.5%, Durox® Reg. & LR 35%, Oxypure® 35%, Standard 27.5 & 35%, Super D® 25 & 35, Technical 35%, Chlorate Grade, 20%, Semiconductor Reg, Seg, RGS, RGS 2, RGS 3, 31%

**GENERAL USE:** Durox® 35% Reg. & LR - meets the Food Chemical Codex requirements for aseptic packaging and other food related applications. Oxypure® 35% - certified by NSF to meet ANSI/NSF Standard 60 requirements for drinking water treatment. Standard 27.5 and 35% - most suitable grade for industrial bleaching, processing, pollution abatement and general oxidation reactions. Semiconductor Reg, Seg, RGS, RGS 2, RGS 3, 31% - conform to ACS and Semi Specs. for water etching, and cleaning and applications requiring low residues. Super D® 25 and 35% - meets US Pharmacopoeia specifications for 3% topical solutions when diluted with proper quality water. While manufactured to the USP standards for purity and to FMC's demanding ISO 9002 quality standards, FMC does not claim that its Hydrogen Peroxide is manufactured in accordance with all pharmaceutical cGMP conditions. Technical 35% - essentially free of inorganic metals suitable for chemical synthesis. Chlorate Grade 20% - specially formulated for use in chlorate manufacture or processing.

### MANUFACTURER

FMC of Canada Ltd.  
Hydrogen Peroxide Division  
PG Pulp Mill Road  
Prince George, BC V2N2S6  
**General Information:** 604-561-4200

FMC Corporation  
Hydrogen Peroxide Division  
1735 Market Street  
Philadelphia, PA 19103  
**General Information:** (215) 299-6000

### Emergency Telephone Numbers:

**CHEMTREC (U.S.):** (800) 424-9300  
**Emergency Phone** 613-996-6666  
(Canutec)

**Emergency Phone** (303) 595-9048  
(Medical) Call Collect  
**Emergency Phone** (609) 924-6677  
(Plant) Call Collect

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## 2. COMPOSITION / INFORMATION ON INGREDIENTS

<u>Chemical Name</u>	<u>CAS#</u>	<u>Wt.%</u>
Hydrogen Peroxide	7722-84-1	20 - 40
Water	7732-18-5	60 - 80

---

## 3. HAZARDS IDENTIFICATION

### EMERGENCY OVERVIEW

**IMMEDIATE CONCERNS:** Oxidizer. Contact with combustibles may cause fire. Decomposes yielding oxygen that supports combustion of organic matters and can cause overpressure if confined.

**POTENTIAL HEALTH EFFECTS:** Corrosive to eyes, nose, throat and lungs. May cause irreversible tissue damage to the eyes including blindness. May cause skin irritation.

---

## 4. FIRST AID MEASURES

**EYES:** Immediately flush with water for at least 15 minutes, lifting the upper and lower eyelids intermittently. See a medical doctor or ophthalmologist immediately.

**SKIN:** Wash with plenty of soap and water. Get medical attention if irritation occurs and persists.

**INGESTION:** Rinse mouth with water. Dilute by giving 1 or 2 glasses of water. Do not induce vomiting. Never give anything by mouth to an unconscious person. See a medical doctor immediately.

**INHALATION:** Remove to fresh air. If breathing difficulty or discomfort occurs and persists, contact a medical doctor.

**NOTES TO MEDICAL DOCTOR:** Hydrogen peroxide at these concentrations is a strong oxidant. Direct contact with the eye is likely to cause corneal damage especially if not washed immediately. Careful ophthalmologic evaluation is recommended and the possibility of local corticosteroid therapy should be considered. Because of the likelihood of corrosive effects on the gastrointestinal tract after ingestion, and the unlikelihood of systemic effects, attempts at evacuating the stomach via emesis induction or gastric lavage should be avoided. There is a remote possibility, however, that a nasogastric or orogastric tube may be required for the reduction of severe distension due to gas formation.

---

## 5. FIRE FIGHTING MEASURES

**FLASH POINT AND METHOD:** Non-combustible

**FLAMMABLE LIMITS:** Non-combustible

**AUTOIGNITION TEMPERATURE:** Non-combustible

**EXTINGUISHING MEDIA:** Flood with water.



**FIRE / EXPLOSION HAZARDS:** Product is non-combustible. On decomposition releases oxygen which may intensify fire.

**FIRE FIGHTING PROCEDURES:** Any tank or container surrounded by fire should be flooded with water for cooling. Wear full protective clothing and self-contained breathing apparatus.

**SENSITIVITY TO STATIC DISCHARGE:** No data available

**SENSITIVITY TO IMPACT:** No data available

**HAZARDOUS DECOMPOSITION PRODUCTS:** Oxygen which supports combustion.

---

## 6. ACCIDENTAL RELEASE MEASURES

**RELEASE NOTES:** Dilute with a large volume of water and hold in a pond or diked area until hydrogen peroxide decomposes. Hydrogen peroxide may be decomposed by adding sodium metabisulfite or sodium sulfite after diluting to about 5%. Dispose according to methods outlined for waste disposal. Combustible materials exposed to hydrogen peroxide should be immediately submerged in or rinsed with large amounts of water to ensure that all hydrogen peroxide is removed. Residual hydrogen peroxide that is allowed to dry (upon evaporation hydrogen peroxide can concentrate) on organic materials such as paper, fabrics, cotton, leather, wood or other combustibles can cause the material to ignite and result in a fire.

---

## 7. HANDLING AND STORAGE

**HANDLING:** Wear cup type chemical safety goggles and full-face shield, impervious clothing, such as rubber, PVC, etc., and rubber or neoprene gloves and shoes. Avoid cotton, wool and leather. Avoid excessive heat and contamination. Contamination may cause decomposition and generation of oxygen gas which could result in high pressures and possible container rupture. Hydrogen peroxide should be stored only in vented containers and transferred only in a prescribed manner (see FMC Technical Bulletins). Never return unused hydrogen peroxide to original container, empty drums should be triple rinsed with water before discarding. Utensils used for handling hydrogen peroxide should only be made of glass, stainless steel, aluminum or plastic.

**STORAGE:** Store drums in cool areas out of direct sunlight and away from combustibles. For bulk storage refer to FMC Technical Bulletins.

**COMMENTS: VENTILATION:**

Provide mechanical general and/or local exhaust ventilation to prevent release of vapor or mist into the work environment.

---

## 8. EXPOSURE CONTROLS / PERSONAL PROTECTION

### EXPOSURE LIMITS

<u>Chemical Name</u>	<u>TWA (ACGIH)</u>	<u>STEL/Ceiling (ACGIH)</u>	<u>PEL (OSHA)</u>	<u>STEL/Ceiling (OSHA)</u>
Hydrogen Peroxide		1 ppm	1 ppm	

**ENGINEERING CONTROLS:** Ventilation should be provided to minimize the release of hydrogen peroxide vapors and mists into the work environment. Spills should be minimized or confined immediately to prevent release into the work area. Remove contaminated clothing immediately and wash before reuse.

## PERSONAL PROTECTIVE EQUIPMENT

**EYES AND FACE:** Use cup type chemical goggles. Full face shield may be used.

**RESPIRATORY:** If concentrations in excess of 10 ppm are expected use approved self-contained breathing apparatus. Do not use oxidizable sorbants such as activated carbon.

**PROTECTIVE CLOTHING:** Liquid proof rubber or neoprene gloves. Rubber or neoprene footwear (avoid leather). Impervious clothing materials such as rubber, neoprene, nitrile or polyvinyl chloride (avoid cotton, wool and leather). Completely submerge hydrogen peroxide contaminated clothing or other materials in water prior to drying. Residual hydrogen peroxide, if allowed to dry on materials such as paper, fabrics, cotton, leather, wood or other combustibles can cause the material to ignite and result in a fire.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

**ODOR:** Odorless

**APPEARANCE:** Clear, colorless liquid

**pH:** (as is) 2.0 to 3.5

**PERCENT VOLATILE:** 100%

**VAPOR PRESSURE:** 28 mmHg @ 30°C (20%); 24 mmHg @ 30°C (31%); 23 mmHg @ 30°C (35%)

**VAPOR DENSITY:** (Air = 1): Not available

**BOILING POINT:** 103°C/218°F (20%); 107°C/225°F (31%); 108°C/226°F (35%)

**FREEZING POINT:** -15°C/6°F (20%); -26°C/-15°F (31%); -33°C/-27°F (35%)

**SOLUBILITY IN WATER:** (in H<sub>2</sub>O % by wt) 100%

**EVAPORATION RATE:** (Butyl Acetate = 1) Above 1

**DENSITY:** Not available

**SPECIFIC GRAVITY:** 1.07 @ 20°C/4°C (20%); 1.11 @ 20°C/4°C (31%); 1.13 @

20°C/4°C (35%)

**COEFF. OIL/WATER:** Not available

**ODOR THRESHOLD:** Not available

**OXIDIZING PROPERTIES:** Strong oxidizer

**COMMENTS:** pH (1% solution) @ 25°C: 5.0 - 6.0

---

## 10. STABILITY AND REACTIVITY

**CONDITIONS TO AVOID:** Excessive heat or contamination could cause product to become unstable.

**STABILITY:** Stable (heat and contamination could cause decomposition)

**POLYMERIZATION:** Will not occur

**HAZARDOUS DECOMPOSITION PRODUCTS:** Oxygen which supports combustion.

**INCOMPATIBLE MATERIALS:** Reducing agents, wood, paper and other combustibles, iron and other heavy metals, copper alloys and caustic.

**COMMENTS:** Materials to Avoid : Dirt, organics, cyanides and combustibles such as wood, paper, oils, etc.

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## 11. TOXICOLOGICAL INFORMATION

**EYE EFFECTS:** Extremely irritating/corrosive (rabbit) (35% hydrogen peroxide) [FMC Study Number: I83-748]

**SKIN EFFECTS:** Mildly irritating after 4 hours exposure (rabbit) (35% hydrogen peroxide) [FMC Study Number: I83-747]

**DERMAL LD<sub>50</sub>:** >2000 mg/kg (rabbit) (35% hydrogen peroxide) [FMC Study Number: I83-746]

**ORAL LD<sub>50</sub>:** =1193 mg/kg (rat) (35% hydrogen peroxide) [FMC Study Number: I83-745]

**INHALATION LC<sub>50</sub>:** >0.17 mg/L (rat) (50% hydrogen peroxide) [FMC Study Number: I89-1080]

**TARGET ORGANS:** Eyes, nose, throat and lungs

**ACUTE EFFECTS FROM OVEREXPOSURE:** Extremely irritating/corrosive to eyes and gastrointestinal tract. May cause irreversible tissue damage to the eyes including blindness.

Inhalation of mist or vapors may be severely irritating to nose, throat and lungs. May cause skin irritation.

**CHRONIC EFFECTS FROM OVEREXPOSURE:** There are reports of limited evidence of carcinogenicity of hydrogen peroxide to mice administered high concentrations in their drinking water (IARC Monograph 36, 1985). However, the International Agency For Research on Cancer concluded that hydrogen peroxide could not be classified as to its carcinogenicity to humans (Group III carcinogen).

## CARCINOGENICITY

<u>Chemical Name</u>	<u>NTP Status</u>	<u>IARC Status</u>	<u>OSHA Status</u>	<u>Other</u>
Hydrogen Peroxide	Not listed	Not listed	Not listed	(ACGIH) Listed (A3, Animal Carcinogen)

---

## 12. ECOLOGICAL INFORMATION

**ECOTOXICOLOGICAL INFORMATION:** Channel catfish 96 hour LC50 = 37.4 mg/L

Fathead minnow 96 hour LC50 = 16.4 mg/L

Daphnia magna 24 hour EC50 = 7.7 mg/L

Daphnia pulex 48 hour LC50 = 2.4 mg/L

Freshwater snail 96 hour LC50 = 17.7 mg/L

For more information refer to ECETOC "Joint Assessment of Commodity Chemicals No. 22, Hydrogen Peroxide." ISSN-0773-6339, January 1993

**CHEMICAL FATE INFORMATION:** Hydrogen peroxide in the aquatic environment is subject to various reduction or oxidation processes and decomposes into water and oxygen. Hydrogen peroxide half-life in freshwater ranged from 8 hours to 20 days, in air from 10-20 hrs. and in soils from minutes to hours depending upon microbiological activity and metal contaminants.

---

## 13. DISPOSAL CONSIDERATIONS

**DISPOSAL METHOD:** An acceptable method of disposal is to dilute with a large amount of water and allow the hydrogen peroxide to decompose followed by discharge into a suitable treatment system in accordance with all regulatory agencies. The appropriate regulatory agencies should be contacted prior to disposal.

---

## 14. TRANSPORT INFORMATION

### U.S. DEPARTMENT OF TRANSPORTATION (DOT)

**PROPER SHIPPING NAME:** Hydrogen peroxide, aqueous solutions with not less than

20% but not more than 40% hydrogen peroxide

**PRIMARY HAZARD CLASS/DIVISION:** 5.1 (Oxidizer)

**UN/NA NUMBER:** UN 2014

**PACKING GROUP:** II

**PLACARDS:** 5.1 (Oxidizer)

**LABEL:** Oxidizer, Corrosive

**OTHER SHIPPING INFORMATION:**

DOT Marking: Hydrogen Peroxide, aqueous solution with not less than 20%, but not more than 40% Hydrogen Peroxide, UN 2014

Hazardous Substance/RQ: Not applicable

49 STCC Number : 4918776 Aluminum tanks, drum/DOT 42D

**SPECIAL SHIPPING NOTES:** IMDG: Hydrogen Peroxide, aqueous solutions with not less than 20%, but not more than 40% hydrogen peroxide. IATA: Hydrogen Peroxide, aqueous solutions with not less than 20%, but not more than 40% hydrogen peroxide (\*). (\*) Air regulations permit shipment of Hydrogen Peroxide (20 - 40%) in unvented containers for Air Cargo Only aircraft, as well as for Passenger and Cargo aircraft. HOWEVER, all FMC Hydrogen Peroxide containers are vented and therefore, air shipments of FMC H<sub>2</sub>O<sub>2</sub> is not permitted. IATA air regulations state that venting of packages containing oxidizing substances is not permitted for air transport. Protect from physical damage. Keep drums in upright position. Drums should not be stacked in transit. Do not store drum on wooden pallets.

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## 15. REGULATORY INFORMATION

### UNITED STATES

#### SARA TITLE III (SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT)

**SARA TITLE III SECTION 302 EXTREMELY HAZARDOUS SUBSTANCES (40 CFR 355):** Not listed

**SECTION 311 HAZARD CATEGORY (40 CFR 370):**

Fire Hazard

Immediate (Acute) Health Hazard

**SECTION 312 THRESHOLD PLANNING QUANTITY (40 CFR 370):** 10000 lbs. (conc. <52%)

**SECTION 313 REPORTABLE INGREDIENTS (40 CFR 372):** Not listed

#### CERCLA (COMPREHENSIVE ENVIRONMENTAL RESPONSE COMPENSATION AND LIABILITY ACT)

**CERCLA REGULATORY (40 CFR 302.4):** Unlisted (Hydrogen Peroxide 20-40%);  
RQ = 100 lbs.; Ignitability, Corrosivity

## **TSCA (TOXIC SUBSTANCE CONTROL ACT)**

**TSCA STATUS (40 CFR 710):** Listed

**RCRA STATUS:** Waste No. D001 Waste No. D002

## **CANADA**

### **WHMIS (WORKPLACE HAZARDOUS MATERIALS INFORMATION SYSTEM):** Product Identification No.: 2014

Hazard Classification: Class C (Oxidizer), Class D, Div. 2, Subdiv. B. (Toxic) Class E (Corrosive) Ingredient Disclosure List: Listed

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## **16. OTHER INFORMATION**

### **REVISION SUMMARY**

This MSDS replaces Revision #5, dated September 29, 2000. Changes in information are as follows: Section 16 (Other Information): HMIS Headings

#### **HMIS RATING**

<b>HEALTH:</b>	3
<b>FLAMMABILITY</b>	0
<b>PHYSICAL HAZARD:</b>	1
<b>PERSONAL PROTECTION (PPE):</b>	H

#### **NFPA RATING**

<b>HEALTH:</b>	3
<b>FLAMMABILITY</b>	0
<b>REACTIVITY:</b>	1
<b>SPECIAL:</b>	OX

#### **Key**

4 = Severe  
3 = Serious  
2 = Moderate  
1 = Slight  
0 = Minimal

**HMIS RATINGS NOTES:** Protection = H (Safety goggles, gloves, apron, the use of a supplied air or SCBA respirator is required in lieu of a vapor cartridge respirator)

The contents and format of this MSDS are in accordance with OSHA Hazard Communication Standard and Canada's Workplace Hazardous Information System (WHMIS). National Fire Protection Association (NFPA) SPECIAL = OX (Oxidizer) Hazardous Materials Identification System (HMIS)

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## Material Safety Data Sheet

**Prod. No. 19552 (Type A), 19556 (Type B) Cargille Immersion Oil**  
**Issue Date (10-05-90)**

### Section 1: Product and Company Identification

**Product Name: Cargille Immersion Oil types A & B**

Chemical name: Proprietary mixture of Hydrogenated Terphenyl, Terphenyl, Natural Hydrocarbons and Polybutenes.

Formula: Proprietary

Conditions of Intended and normal Use: (abbr. C.I.U.) as a microscope immersion oil at normal room pressure (760mm Hg), temperature 39F to 104°F in a non misted /non airborne state in a room having normal air changes, (2)/hr., in a trained and supervised laboratory/ industrial setting using standard GL/GM Procedures. See Sections 7 and 8.

**Company Name**

**Ted Pella, Inc. and PELCO International, P.O. Box 492477, Redding, CA 96049-2477**

**Domestic Phone (800) 237-3526 (Mon-Thu. 6:00AM to 4:30PM PST; Fri 6:00AM to 4:00PM PST)**

**International Phone (01) (530) 243-2200 (Mon-Thu. 6:00AM to 4:30PM PST; Fri 6:00AM to 4:00PM PST)**

**Chemtrec Emergency Number 1-800-424-9300 24 hrs a day.**

### Section 2 Hazardous Ingredients:

Common Name(s)	OSHA PEL Ceiling	ACGIH TLV TWA	Other Limits Recommended
Hydrogenated Terphenyl	Ne	5mg/cubic meter*	
Terphenyl	5mg/cubic meter*	5mg/cubic meter*	
Natural Hydrocarbons	5mg/cubic meter*	5mg/cubic meter*	if misted
Polybutenes	5mg/cubic meter*	5mg/cubic meter*	if misted

\*PEL ceilings & TLV TWA's if any should not occur if C.I.U. and Sections 7 & 8 followed.

Note: Product normally sold in 1/4 oz. to 1 gallon quantities. Used in a single drop to a few cubic centimeters per application. See requisitioner for specific quantities involved.

### Section 3 Physical and Chemical Characteristics:

Boiling Point at (760mm Hg.): 340°C (644°F)

Melting Point: <32°F

Specific Gravity (H<sub>2</sub>O=1): .9 (Temp. 23°C, 73°F)

Vapor Density (air=1): ca 1 (760mm Hg. and 23°C/73°F)  
Solubility in H<sub>2</sub>O: Nil (760mm Hg. and 23°C/73°F)  
Evaporation Rate, butyl acetate=1: ca 1 (760mm Hg. and 23°C/73°F)  
Vapor Pressure (mm Hg): <0.1 (Temp. 23°C, 73°F)  
Appearance and Odor: Light yellow, sight characteristic odor.

#### **Section 4 Fire and Explosion Hazard Data:**

Flash Point (method used): >325°F (163°C) COC  
Flammable Limits: Lower: ND, Upper: ND  
Autoignition Temperature: ND  
Extinguishing Methods: Carbon dioxide, foam, dry chemical or any Class B agent.  
Special Fire Fighting Procedures: None  
Unusual Fire and Explosion Hazards: None

#### **Section 5 Health Hazard Information:**

Routes of entry: not likely under C.I.U.  
Inhalation: Yes; Skin: slight; Mucous Membranes/Eyes: slight; Ingestion: Possible.  
Health Hazards (Acute and Chronic): None known, under C.I.U.  
Carcinogenicity: NTP: NO; IARC Monographs: No  
OSHA Carcinogen: No  
Signs and Symptoms of Exposure: Oily feel, if liquid is misted or above 150°F (not a C.I.U.) headaches and nausea possible.  
Medical Conditions Generally Aggravated by Exposure: ND

#### **Section 6 Emergency and First Aid Procedures:**

Include possible material that may have been mixed with liquid during use.  
Eye Contact: Flush with water, slight temporary irritation possible (consult physician).  
Skin Contact: Prompt soap and water wash. Remove and launder exposed clothing.  
Inhalation: (Not likely under C.I.U.) If concern arises, remove to fresh air.  
Ingestion: Low order of toxicity, First Aid normally not needed. Consult physician.

#### **Section 7 Reactivity Data:**

Stability: Stable  
Hazardous Polymerization: Will not occur.  
Incompatibility (Materials & Conditions to Avoid): Strong oxidizers, heat above 150°F.  
Hazardous Decomposition Products: ND

#### **Section 8 Special Protection Information:**

Ventilation: Normal room air changes (2) hr.\*  
Respiratory Protection: \*  
Protective Gloves: Polyethylene (if worn)\*  
Eye Protection: \*  
Other Protective Clothing or Equipment: NA  
Always use good hygienic work practices as to housekeeping, personal hygiene, use of chemical lab apron and splash goggles, avoidance of vapors, prolonged and repeated skin contact.  
Special Precautions: NA

#### **Section 9 Spill/Leak Procedures:**

Steps to Be Taken in case Material is Released or Spilled:



Absorb, place in a plastic container, cap or twist tie closure.

Waste Disposal Methods: All Chemical disposal must be in accordance with current local, state, and Federal regulations. Treat as used instrument lubrication oil.

**Section 10 Special Precautions:**

Precautions to Be Taken in Handling and Storing: Storage Temperature: Store between 65°F and 90°F (18°C and 32°C)

Other Precautions: Avoid continual direct sunlight, vaporizing or atomizing.

\*Not mandatory except as good laboratory industrial practices.

ND= No data

NA= Not applicable

C.I.U.= Conditions of intended use.

NE=Not established

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Ted Pella, Inc. makes no warranty of any kind regarding the information furnished herein. Users should independently determine the suitability and completeness of information from all sources. While this data is presented in good faith and believed to be accurate, it should be considered only as a supplement to other information gathered by the user. It is the User's responsibility to assure the proper use and disposal of these materials as well as the safety and health of all personnel who may work with or otherwise come in contact with these materials.

**▽ PolyScience**  
**Material Safety Data Sheet**  
**Lab Algicide**

<b>1. Product And Company Identification</b>	
<b>Supplier</b> PolyScience 6600 West Touhy Avenue Niles, IL 60714 Telephone Number: (847) 647-0611 FAX Number: (847) 647-1155 Web Site: www.polyscience.com	
<b>Supplier Emergency Contacts &amp; Phone Number</b> CHEMTREC - DAY or NIGHT: (800) 424-9300	<b>Manufacturer Emergency Contacts &amp; Phone Number</b> CHEMTREC - DAY or NIGHT: (800) 424-9300
Issue Date: 11/20/2000 Product Name: LabAlgicide CAS Number: Not Established Chemical Family: Copper and Nitrogen Compounds Chemical Formula: Proprietary Mixture MSDS Number: 86	

<b>2. Composition/Information On Ingredients</b>			
	Ingredient Name	CAS Number	Percent Of Total Weight
	COPPER CARBONATE	12069-69-1	
	DIMETHYL BENZYL AMMONIUM CHLORIDE	68424-85-1	
	ETHYL ALCOHOL	64-17-5	
	MONOETHANOLAMINE	141-43-5	
	TRIETHANOLAMINE	102-71-6	
Ingredients listed in this section have been determined to be hazardous as defined in 29CFR 1910.1200. Materials determined to be health hazards are listed if they comprise 1% or more of the composition. Materials identified as carcinogens are listed if they comprise 0.1% or more of the composition. Information on proprietary materials is available in 29CFR 1910.1200(i)(1).			

<b>Hazards Identification (Pictograms)</b> 
---

<b>3. Hazards Identification</b> <b>Primary Routes(s) Of Entry</b> Skin Contact, Eye Contact, Inhalation <b>Eye Hazards</b> Causes severe eye burns.
--

**▼ PolyScience**  
**Material Safety Data Sheet**  
**Lab Algicide**

**3. Hazards Identification - Continued**

**Skin Hazards**

Corrosive to living tissue.

**Ingestion Hazards**

Harmful if swallowed.

**Inhalation Hazards**

Causes respiratory tract irritation.

**Signs And Symptoms**

Irritation of Eyes, Skin, and Respiratory Passages

**Conditions Aggravated By Exposure**

None Known

**First Aid (Pictograms)**



**4. First Aid Measures**

**Eye**

Remove the victim from the source of contamination or exposure to nearest eyewash or other source of clean water. In case of contact, hold eyelids apart and immediately flush eyes with plenty of water for at least 15 minutes.

**Skin**

Rinse the affected area with tepid water for at least 15 minutes.

**Ingestion**

Call a physician or a poison control center immediately. If victim is fully conscious, give one or two cups of water or milk to drink. If swallowed, do not induce vomiting unless directed to do so by medical personnel.

**Inhalation**

If inhaled, remove to fresh air. If breathing is difficult, give oxygen. Evaluate Principal Route of Entry, Seek appropriate medical attention. Never give anything by mouth to an unconscious person.

**Fire Fighting (Pictograms)**



**5. Fire Fighting Measures**

**Flash Point:** N/A °F

**Extinguishing Media**

Use the appropriate extinguishing media for the surrounding fire. Combustion products are toxic.

**6. Accidental Release Measures**

Contain and/or absorb spill with inert material (e.g. sand, vermiculite). Avoid release to the environment. May flush small amount to sewer.

**▼ PolyScience**  
**Material Safety Data Sheet**  
**Lab Algicide**

**7. Handling And Storage**

**Handling And Storage Precautions**

Keep out of reach of children. Wash thoroughly after handling.

**Handling Precautions**

Avoid contact with eyes. Wash hands before eating, drinking, or smoking. Avoid contact with skin and clothing.

**Storage Precautions**

Store in a cool dry place. Keep out of reach of children.

**Work/Hygienic Practices**

Use safe chemical handling procedures suitable for the hazards presented by this material.

**Protective Clothing (Pictograms)**



**8. Exposure Controls/Personal Protection**

**Engineering Controls**

Local exhaust acceptable. Special exhaust not required

**Eye/Face Protection**

Safety glasses with side shields or goggles recommended.

**Skin Protection**

Chemical-resistant gloves.

**Respiratory Protection**

General room ventilation is normally adequate.

**Ingredient(s) - Exposure Limits**

ETHYL ALCOHOL

ACGIH TLV-TWA 1000 ppm

OSHA PEL-TWA 1000 ppm

TRIETHANOLAMINE

ACGIH TLV-TWA 5 mg/m<sup>3</sup>

**9. Physical And Chemical Properties**

**Appearance**

Blue viscous liquid

**Odor**

slight

**Chemical Type:** Mixture

**Physical State:** Liquid

**Boiling Point:** 212 °F

**Specific Gravity:** 1.2

**Percent Volatiles:** Nil

**Vapor Pressure:** Not established

**Vapor Density:** >1

**pH Factor:** 6-8

**Solubility:** soluble

**Evaporation Rate:** <1

**▼ PolyScience**  
**Material Safety Data Sheet**  
**Lab Algicide**

**10. Stability And Reactivity**

**Stability:** Stable

**Hazardous Polymerization:** Will not occur

**Conditions To Avoid (Stability)**

Contact with Clay

**Incompatible Materials**

Strong Acids

**Hazardous Decomposition Products**

Hydrogen chloride fumes, oxides of Carbon and Nitrogen

**11. Toxicological Information**

No Data Available...

**12. Ecological Information**

No Data Available...

**13. Disposal Considerations**

Refer to applicable local, state and federal regulations as well as industry standards.

**14. Transport Information**

**Proper Shipping Name**

CORROSIVE LIQUID NOS(Copper Triethanolamine Complex)

**Hazard Class**

8,PGIII (<4L Consumer Commodity ORM-D)

**DOT Identification Number**

UN1760

**DOT (Pictograms)**



**15. Regulatory Information**

**Ingredient(s) - State Regulations**

ETHYL ALCOHOL

New Jersey - Workplace Hazard

New Jersey - Special Hazard

Pennsylvania - Workplace Hazard

California - Proposition 65

Massachusetts - Hazardous Substance


New York City - Hazardous Substance

TRIETHANOLAMINE

Pennsylvania - Workplace Hazard

Massachusetts - Hazardous Substance

**▼ PolyScience**  
**Material Safety Data Sheet**  
**Lab Algicide**

<u>NFPA</u>	<u>HMIS</u>								
	<table border="1"><tr><td>HEALTH</td><td style="text-align: center;">2</td></tr><tr><td>FLAMMABILITY</td><td style="text-align: center;">0</td></tr><tr><td>REACTIVITY</td><td style="text-align: center;">1</td></tr><tr><td>PERSONAL PROTECTION</td><td style="text-align: center;">B</td></tr></table>	HEALTH	2	FLAMMABILITY	0	REACTIVITY	1	PERSONAL PROTECTION	B
HEALTH	2								
FLAMMABILITY	0								
REACTIVITY	1								
PERSONAL PROTECTION	B								

**16. Other Information**

Revision/Preparer Information

MSDS Preparer: JHW3

This MSDS Superceeds A Previous MSDS Dated: 09/13/2000

**Disclaimer**

Although reasonable care has been taken in the preparation of this document, we extend no warranties and make no representations as to the accuracy or completeness of the information contained therein, and assume no responsibility regarding the suitability of this information for the user's intended purposes or for the consequences of its use. Each individual should make a determination as to the suitability of the information for their particular purposes(s).

Laporte Water Technologies



# MSDS

P.O. Box 329 - 802 Washington Avenue Chestertown, MD 21620 - USA

## MATERIAL SAFETY DATA SHEET

TELEPHONE # FOR INFORMATION 410 778-3100

24 HOUR EMERGENCY NUMBER (CHEM-TEL): USA, Canada, Puerto Rico 800-255-3924;

Outside North American Continent 813-248-0585 (call Collect)

### 1. Product Identification

**Product Code:** 5101

**Product Description:** Aluminum Test Solution

**Manufactured By:** LaMotte Company

802 Washington Avenue

Chestertown, MD 21620

### 2. Composition/Information On Ingredients

Hazard	CAS#/Name	%	PEL	TLV
Yes	67-63-0 Isopropanol	>99	400 ppm	980 mg/cubic m
Yes	475-25-2 Hematein	0.1	N/E	N/E

### 3. Hazards Overview

**Primary Route Of Entry:** Eye Skin Ingestion Inhalation

Warning! Flammable liquid and vapor. Harmful if swallowed or inhaled. May be irritating to eyes, skin, and respiratory tract. Affects central nervous system.

#### HMIS Hazard

Scale: 4 = Extreme, 3 = High, 2 = Moderate, 1 = Slight, 0 = Least

Health: 2      Flammability: 3      Reactivity: 2

**Carcinogenicity:** None:

**Other Health Related Comments:**

---

**Product Code:** 5101

**Product Description:** Aluminum Test Solution

---

#### **4. First Aid Measures**

**Eye Contact:** Immediately flush with water for 15 minutes. Consult physician.

**Skin Contact:** Flush skin with water. Wash with soap and water.

**Ingestion:** Do not induce vomiting. Drink plenty of water. Call a doctor immediately.

**Inhalation:** Remove to fresh air. If breathing is difficult, give oxygen.

---

#### **5. Fire Fighting Measures**

**Flash Point (Method Used):** 12 deg C-closed cup      **LEL:** 2%      **UEL:** 12%

**Extinguishing Media:** Dry chemical, CO<sub>2</sub>, or water spray

**Special Fire Fighting Procedures:** Firefighters wear self-contained breathing apparatus

**Unusual Fire & Explosion Hazard:** Vapors may travel to ignition source and flash back.

---

#### **6. Accidental Release Measures**

Eliminate all sources of ignition. Absorb on paper. Evaporate on iron pan in hood.

---

#### **7. Handling & Storage**

Store in cool, dry, storage area away from heat, ignition sources, and incompatible materials. Do not use near heat or flame.

---



---

**Product Code:** 5101

**Product Description:** Aluminum Test Solution

---

## **8. Exposure Controls/Personal Protection**

### **Ventilation**

Mechanical

### **Protection When Handling**

Eye Protection Gloves Lab Coat

**Work/Hygenic Practices:** Use with adequate ventilation and avoid contact with skin and eyes. Wash after handling.

---

## **9. Physical & Chemical Properties**

**Appearance:** Clear Red Liquid

**Solubility In Water:** Soluble

**Odor:** Alcohol

**pH:** N/A

**Vapor Density:** 2 (Air=1)

**Vapor Pressure:** 33mm Hg @ 20 deg C

**Boiling Point:** 82 deg C

**Melting Point:** -89 deg C

---

## **10. Stability & Reactivity**

**Stable:** Yes

**Conditions To Avoid:** Heat, sources of ignition

**Incompatibility (Materials To Avoid):** Contact with nitric acid or other strong oxidizers

**Hazardous Decomposition Products:** COx

---

## **11. Toxicological Information**

oral rat LD50: 5840 mg/kg for isopropanol; oral human LDLo: 3570 mg/kg. Investigated as a tumorigen, mutagen, reproductive effector.

**Target Organs:** Central Nervous System Eyes Lung Skin

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---

**Product Code:** 5101

**Product Description:** Aluminum Test Solution

---

## 12. Ecological Information

When released to water or soil, this material is expected to quickly evaporate. It is not expected to significantly bioaccumulate. When released into the air, it is expected to be readily degraded or to be removed to a degree by wet deposition (rain, snow)

---

## 13. Disposal Considerations

Small quantity: Flush down drain with excess water. Large quantity: Atomize into incinerator. Dispose according to federal, state and local regulations.

---

## 14. Transportation Information

**Proper Shipping Name:**

**DOT:** ISOPROPANOL

**IATA:** ISOPROPANOL

**Hazard Class/Div:**

**DOT:** 3

**IATA:** 3

**UN:** 1219

**Packing Group:** II

---

## 15. Regulatory Information

### Chemical Inventory Status

Hazard	Ingredient	USA	Europe	--- Canada ---		Australia	Japan
		TSCA	EC	DSL	NDSL		
Yes	67-63-0 Isopropyl Alcohol	Yes	Yes	Yes	No	Yes	Yes
Yes	475-25-2 Hematein	Yes	Yes	Yes	No	Yes	Yes

### Federal, State, & International Regulations

Ingredient	--- SARA 302 ---		----- SARA 313 -----		CERCLA	RCRA 261.33	TSCA 8(D)
	RQ	TPQ	Listed	Chemical Category			
67-63-0 Isopropyl Alcohol	No	No	Yes	No	No	No	No
475-25-2 Hematein	No	No	No	No	No	No	No

---

**Product Code:** 5101

**Product Description:** Aluminum Test Solution

---

--- SARA 311/312 ---

**Hazard Categories**

----- Australia -----

**Hazchem  
Code**

**Poison  
Schedule**

**This MSDS Is  
WHMIS Compliant**

<b>Ingredient</b>	<b>Acute</b>	<b>Chronic</b>	<b>Fire</b>	<b>Pressure</b>	<b>Reactivity</b>			
67-63-0 Isopropyl Alcohol	Yes	Yes	Yes	No	No	2[S]2	None Allocated	
475-25-2 Hematein	No	No	No	No	No	None Allocated	None Allocated	
<b>product 5101 as a whole</b>	Yes	Yes	Yes	No	No	2[S]2	None Allocated	Yes

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**16. Other Information**

**Prepared By:** IP, Regulatory Affairs Department

**Revised:** 3/20/2006

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# MATERIAL SAFETY DATA SHEET

LaMOTTE COMPANY  
PO BOX 329 - CHESTERTOWN - MARYLAND - 21620  
TELEPHONE # FOR INFORMATION 410-778-3100

**24 Hour Emergency Number (CHEM-TEL) 800-255-3924**

## 1. PRODUCT IDENTIFICATION

**Ammonia Nitrogen Test Solution (Nessler Reagent)** *Code Nr. 5103*

## 2. HAZARDOUS INGREDIENTS

NAME	CAS #	TSCA #	%	PEL	TLV
Potassium Hydroxide	1310-58-3		15	2 mg/cubic m	C 2 mg/cubic m
Mercuric Chloride	7487-94-7		3.3	N/A	0.1 mg/cubic m
Warning! This product contains mercury or mercury compounds, chemicals known to the state of California to cause birth defects or other reproductive harm.					

## 3. NON-HAZARDOUS INGREDIENTS EXCEPT WATER (7732-18-5)

NAME	CAS #	%
Potassium Iodide	7681-11-0	6
Water to 100%		

## 4. PHYSICAL DATA

**Appearance:** Clear Light yellow Liquid  
**Solubility in Water:** Soluble    **Odor:** None    **Boiling Point:** Unknown    **Melt. Point:** N/A  
**Vapor Pressure:** Unknown    **Vapor Density:** Unknown    **pH:** 14

## 5. FIRE AND EXPLOSION DATA

**Flash Point (method used):** N/A    **Flammable Limit: LEL:** N/A    **UEL:** N/A  
**Extinguishing Media:** Not a fire hazard  
**HMIS Hazard: Health - 3    Flammability - 0    Reactivity - 2    Scale: 4 = Extreme, 3 = High, 2 = Moderate, 1 = Slight, 0 = Least**  
**Special Fire Fighting Procedures:**  
 N/A  
**Unusual Fire & Explosion Hazard:**  
 N/A

## 6. REACTIVITY DATA

**Stability:**    **Conditions to avoid:** N/A  
 **Stable**    **Incompatibility (Materials to avoid):**  
 Strong acids, metals  
 **Unstable**    **Hazardous Decomposition Products:** N/A

## 7. HEALTH HAZARD DATA

**Toxicity:** orl rat LD50: 1 mg/kg; skin rat LD50: 41 mg/kg (for mercuric chloride solid)  
**Primary Route of Entry:**     **Inhalation**     **Skin**    **Carcinogenicity:**     **None**     **NTP**  
 **Ingestion**     **N/A**     **OSHA**     **IARC**  
**Other Health Related Comments:**  
 Mercuric chloride can have toxic effects on nervous system and is a possible mutagen.  
**Target Organs:** Corrosive to all body parts,  
**Signs and symptoms of exposure:**  
 Poisonous. Causes severe burns, may be fatal if swallowed.  
**Medical Condition Aggravated by Exposure:** N/A

## 8. EMERGENCY FIRST AID PROCEDURES

**Eye Contact:** Immediately flush with water for 15 minutes. Get prompt medical attention.  
**Ingestion:** Do not induce vomiting. Rinse out mouth. Drink plenty of water. Call a doctor immediately!  
**Inhalation:**  
 Remove to fresh air. Consult a physician.  
**Skin Contact:**  
 Immediately flush with water for 15 minutes while removing affected clothing and shoes. Consult physician.

## 9. SPILL AND DISPOSAL PROCEDURES

**Spill and Leak:**  
 Absorb on inert material or spill pads. Place into a clean, dry plastic pail and cover with lid. Dispose of as hazardous waste. Do not pour down sinks and drains.  
**Disposal:**  
 Any free liquid waste may be treated with ammonium hydroxide to precipitate the mercury; the precipitated mercury "sludge" must be disposed of as hazardous waste, in accordance with federal, state and local regulations.

## 10. PRECAUTIONARY MEASURES

**In Handling:**     **Gloves**     **Eye Protection**     **N/A**     **Other:** Lab Coat  
**Ventilation:**     **Normal**     **Mechanical**     **Respiratory Protection**  
**Work/Hygienic Practices:** No eating or smoking while handling. Wash after handling.

## 11. SPECIAL PRECAUTIONS

Avoid contact with skin and clothing.

**DATE:** 5/27/03    The above information is believed to be correct but does not claim to be all inclusive and should be used only as a guide.

▲ This is a toxic chemical subject to reporting requirements of section 313 of EPCRA and 40CFR372.



PO Box 329 • 802 Washington Avenue • Chestertown, MD 21620 • USA

Telephone Number For Information 410-778-3100

24 Hour Emergency Number (CHEM-TEL) : USA, Canada, Puerto Rico 800-255-3924;

Outside North American continent: 813-248-0585 (call collect)

# MSDS

## Material Safety Data Sheet

### 1. Product Identification

<b>Product Code:</b>	<b>6310</b>	<b>Manufactured By:</b>	LaMotte Company
<b>Product Description:</b>	Buffer Reagent		802 Washington Avenue Chestertown, MD 21620

### 2. Composition/Information on Ingredients

Hazardous	Name	CAS #	%	OSHA PEL	ACGIH TLV
Yes	Citric Acid, anhydrous	5949-29-1	26	N/E	N/E
Yes	Sodium Phosphate, Dibasic	7558-79-4	74	N/E	N/E

### 3. Hazards Overview

**Primary Route of Entry:** Inhalation

Dust may irritate eyes, skin, respiratory tract.

**HMIS Hazard:** (Scale: 4 = Extreme, 3 = High, 2 = Moderate, 1 = Slight, 0 = Least)

Health: 1      Flammability: 0      Reactivity: 0

**Carcinogenicity:** None

**Other Health Related Comments:**

### 4. First Aid Measures

**Eye Contact:** Flush with water for 15 minutes.

**Skin Contact:** Flush with water. Wash with soap and water.

**Ingestion:** Drink plenty of water. Consult a physician.

**Inhalation:** Remove to fresh air.

### 5. Fire Fighting Measures

**Flash Point:** N/A    **LEL:** N/A    **UEL:** N/A

#### Fire Rating

**Extinguishing Media:** Not a fire hazard

**Special Fire Fighting Procedures:** N/A

**Hazardous Combustion and/or Decomposition Products:** N/A

**Unusual Fire & Explosion Hazard:** N/A

### 6. Accidental Release Measures

Spray with water to keep dust to minimum. Sweep up, dissolve in water, and flush to drain with excess water.

---

**Product Code: 6310**

**Product Description: Manganese Buffer Reagent**

---

**7. Handling & Storage**

Store in cool, dry area.

---

**8. Exposure Controls/Personal Protection**

**Ventilation**

Use with adequate ventilation.

**Protection When Handling**

Gloves Eye Protection Lab Coat

**Work/Hygienic Practices:** Wash after handling

---

**9. Physical & Chemical Properties**

**Appearance:** White Crystalline powder

**Boiling Point:** Unknown

**Melting Point:** Unknown

**pH:** 6 (0.1g/10ml water)

**Odor:** None

**Vapor Density:** N/A

**Solubility in Water:** Soluble

**Vapor Pressure:** N/A

---

**10. Stability & Reactivity**

**Stable:** Yes

**Conditions to Avoid:** N/A

**Materials to Avoid:** N/A

**Hazardous Decomposition Products:** N/A

---

**11. Toxicological Information**

Non-toxic

**Target Organs:** N/A

---

**12. Ecological Information**

Information not Available

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**13. Disposal Considerations**

Dissolve and wash down drain with water. Dispose according to federal, state and local regulations.

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**14. Transport Information**

Not regulated for transport

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**Product Code: 6310****Product Description: Manganese Buffer Reagent**

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**15. Regulatory Information****Chemical Inventory Status**

<b>Ingredient</b>	<b>USA</b>	<b>Europe</b>	<b>---Canada---</b>		<b>Australia</b>	<b>Japan</b>
	<b>TSCA</b>	<b>EC</b>	<b>DSL</b>	<b>NDSL</b>		
Citric Acid	Yes	Yes	Yes	No	Yes	Yes
Sodium Phosphate, Dibasic	Yes	Yes	Yes	No	Yes	Yes

**Federal, State, & International Regulations**

<b>Ingredient</b>	<b>---SARA 302---</b>		<b>----- SARA 313 -----</b>			<b>RCRA</b>	<b>TSCA</b>
	<b>RQ</b>	<b>TPQ</b>	<b>Listed</b>	<b>Chemical Category</b>	<b>CERCLA</b>	<b>261.33</b>	<b>8(D)</b>
Citric Acid	No	No	No	No	No	No	No
Sodium Phosphate, Dibasic	No	No	No	No	5000	No	No

<b>Ingredient</b>	<b>----- SARA 311/312 -----</b>	<b>----- Australia -----</b>		<b>This MSDS is WHMIS Compliant</b>
	<b>Hazard Categories</b>	<b>Hazchem Code</b>	<b>Poison Schedule</b>	
Citric Acid	Acute: Yes Chronic: No Fire: No Pressure: No Reactivity: No (Pure/Solid)	None Allocated	None Allocated	
Sodium Phosphate, Dibasic	Acute: Yes Chronic: No Fire: No Pressure: No Reactivity: No (Pure/Solid)	None Allocated	None Allocated	
<b>For product #6310 mixture, as a whole</b>	Acute: Yes Chronic: No Fire: No Pressure: No Reactivity: No (Mixture/Solid)	None Allocated	None Allocated	Yes

---

**16. Other Information****Prepared By: IP****Revised: 6/05/2008**

# MATERIAL SAFETY DATA SHEET

LaMOTTE COMPANY  
PO BOX 329 - CHESTERTOWN - MARYLAND - 21620  
TELEPHONE # FOR INFORMATION 410-778-3100

24 Hour Emergency Number (CHEM-TEL) 800-255-3924

## 1. PRODUCT IDENTIFICATION

Calcium Test Solution

Code Nr. **5108**

## 2. HAZARDOUS INGREDIENTS

NAME	CAS #	TSCA #	%	PEL	TLV
Sodium Oxalate	62-76-0		4	N/E	N/E

## 3. NON-HAZARDOUS INGREDIENTS EXCEPT WATER (7732-18-5)

NAME	CAS #	%
Water to 100%		

## 4. PHYSICAL DATA

Appearance: Clear Colorless Liquid			
Solubility in Water: Soluble	Odor: None	Boiling Point: >100 deg C	Melt. Point: N/A
Vapor Pressure: <17 @ 20 deg C	Vapor Density: <1 (Air=1)	pH: 7	

## 5. FIRE AND EXPLOSION DATA

Flash Point (method used) N/A	Flammable Limit: LEL: N/A	UEL: N/A
Extinguishing Media: Not a fire hazard		
HMIS Hazard: Health - 2 Flammability - 0 Reactivity - 0 Scale: 4 = Extreme, 3 = High, 2 = Moderate, 1 = Slight, 0 = Least		
Special Fire Fighting Procedures: N/A		
Unusual Fire & Explosion Hazard: N/A		

## 6. REACTIVITY DATA

Stability:	Conditions to avoid: N/A
<input checked="" type="checkbox"/> Stable	Incompatibility (Materials to avoid): N/A
<input type="checkbox"/> Unstable	Hazardous Decomposition Products: N/A

## 7. HEALTH HAZARD DATA

Toxicity: LD50 (oral human) approx. 15 grams sodium oxalate solid.	
Primary Route of Entry:	<input type="checkbox"/> Inhalation <input checked="" type="checkbox"/> Skin <input type="checkbox"/> N/A
	Carcinogenicity: <input checked="" type="checkbox"/> None <input type="checkbox"/> NTP <input type="checkbox"/> OSHA <input type="checkbox"/> IARC
Other Health Related Comments:	
Target Organs: Gastro-Intestinal System,	
Signs and symptoms of exposure: Harmful if swallowed. Irritation of skin and gastrointestinal tract.	
Medical Condition Aggravated by Exposure: N/A	

## 8. EMERGENCY FIRST AID PROCEDURES

Eye Contact: Flush with water for 15 minutes. Consult physician.
Ingestion: Rinse out mouth. Drink glass of water or milk. Call a doctor immediately.
Inhalation: N/A
Skin Contact: Remove affected clothing and flush skin thoroughly with water. Wash skin with soap and water.

## 9. SPILL AND DISPOSAL PROCEDURES

Spill and Leak: Mop up. Flush down drain with excess water.
Disposal: Flush down drain with excess water. Dispose according to federal, state and local regulations.

## 10. PRECAUTIONARY MEASURES

In Handling: <input checked="" type="checkbox"/> Gloves <input checked="" type="checkbox"/> Eye Protection <input type="checkbox"/> N/A <input checked="" type="checkbox"/> Other: Lab Coat
Ventilation <input checked="" type="checkbox"/> Normal <input type="checkbox"/> Mechanical <input type="checkbox"/> Respiratory Protection
Work/Hygienic Practices: Avoid contact with skin. Wash after handling.

## 11. SPECIAL PRECAUTIONS

Keep solution away from food & drink; it is toxic by ingestion.

DATE: 5/24/02 The above information is believed to be correct but does not claim to be all inclusive and should be used only as a guide.

▲ This is a toxic chemical subject to reporting requirements of section 313 of EPCRA and 40CFR372.



MATERIAL SAFETY DATA SHEET

LaMOTTE COMPANY
PO BOX 329 - CHESTERTOWN - MARYLAND - 21620
TELEPHONE # FOR INFORMATION 410-778-3100

24 Hour Emergency Number (CHEM-TEL) 800-255-3924

1. PRODUCT IDENTIFICATION

Chloride Test Solution

Code Nr. 5111

2. HAZARDOUS INGREDIENTS

Table with 7 columns: NAME, CAS #, TSCA #, %, PEL, TLV. Row 1: Silver Nitrate, 7761-88-8, 5, 0.01 mg/cubic m as Ag, 0.01 mg/cubic m as Ag.

3. NON-HAZARDOUS INGREDIENTS EXCEPT WATER (7732-18-5)

Table with 3 columns: NAME, CAS #, %. Row 1: Water to 100%.

4. PHYSICAL DATA

Appearance: Clear Colorless Liquid
Solubility in Water: Soluble
Odor: None
Boiling Point: Unknown
Melt. Point: N/A
Vapor Pressure: <17 @ 20 deg C
Vapor Density: <1 (Air=1)
pH: 4

5. FIRE AND EXPLOSION DATA

Flash Point (method used) N/A
Flammable Limit: LEL: N/A
UEL: N/A
Extinguishing Media: Not a fire hazard
HMIS Hazard: Health - 2 Flammability - 0 Reactivity - 0
Scale: 4 = Extreme, 3 = High, 2 = Moderate, 1 = Slight, 0 = Least
Special Fire Fighting Procedures: N/A
Unusual Fire & Explosion Hazard: N/A

6. REACTIVITY DATA

Stability: Conditions to avoid: Heat, light
Stable
Incompatibility (Materials to avoid): N/A
Unstable
Hazardous Decomposition Products: N/A

7. HEALTH HAZARD DATA

Toxicity: unk man LDLo: 29 mg/kg for solid silver nitrate
Primary Route of Entry: Inhalation, Skin, Ingestion
Carcinogenicity: None, OSHA, IARC
Other Health Related Comments:
Target Organs: N/A
Signs and symptoms of exposure: May stain skin. Harmful if swallowed.
Medical Condition Aggravated by Exposure: N/A

8. EMERGENCY FIRST AID PROCEDURES

Eye Contact: Immediately flush with water for 15 minutes. Consult a physician.
Ingestion: Rinse out mouth. Drink glass of water. Get prompt medical attention.
Inhalation: Remove to fresh air.
Skin Contact: Flush thoroughly with water. Remove affected clothing and wash skin with soap and water. Consult physician.

9. SPILL AND DISPOSAL PROCEDURES

Spill and Leak: Wear gloves to mop up carefully and wash spill area with water. Collect spilled liquid. Treat as follows or send to hazardous waste disposal.
Disposal: Do not flush to sewer. Precipitate the silver with dilute HCl and sodium chloride. collect the solid and dispose of as hazardous waste. Neutralize the liquid and flush to drain with water. Dispose according to federal, state and local regulations.

10. PRECAUTIONARY MEASURES

In Handling: Gloves, Eye Protection, Other: Lab Coat
Ventilation: Normal, Mechanical, Respiratory Protection
Work/Hygienic Practices: Avoid contact with skin.

11. SPECIAL PRECAUTIONS

Store out of light.
DATE: 6/26/02
The above information is believed to be correct but does not claim to be all inclusive and should be used only as a guide.

This is a toxic chemical subject to reporting requirements of section 313 of EPCRA and 40CFR372.



# MSDS

P.O. Box 329 - 802 Washington Avenue Chestertown, MD 21620 - USA

## MATERIAL SAFETY DATA SHEET

TELEPHONE # FOR INFORMATION 410 778-3100

24 HOUR EMERGENCY NUMBER (CHEM-TEL): USA, Canada, Puerto Rico 800-255-3924;

Outside North American Continent 813-248-0585 (call Collect)

### 1. Product Identification

**Product Code:** 5267

**Product Description:** Copper Test Solution

**Manufactured By:** LaMotte Company

802 Washington Avenue

Chestertown, MD 21620

### 2. Composition/Information On Ingredients

Hazard	CAS#/Name	%	PEL	TLV
Yes	1336-21-6 Ammonium Hydroxide (16% w/w aqueous ammonia)	57	50 ppm as NH <sub>3</sub>	25 ppm as NH <sub>3</sub>
Yes	12125-02-9 Ammonium Chloride	7	10 mg/cubic m	10 mg/cubic m NH <sub>4</sub> Cl fume
No	7732-18-5 Water	to 100%		

### 3. Hazards Overview

**Primary Route Of Entry:** Eye Skin Ingestion Inhalation

Danger! Corrosive. Can cause severe irritation or burns to eyes, skin, and lungs. Harmful or fatal if swallowed.

#### HMIS Hazard

Scale: 4 = Extreme, 3 = High, 2 = Moderate, 1 = Slight, 0 = Least

Health: 2      Flammability: 1      Reactivity: 1

**Carcinogenicity:** None:

#### **Other Health Related Comments:**

See Section 11.

---

**Product Code:** 5267

**Product Description:** Copper Test Solution

---

#### **4. First Aid Measures**

**Eye Contact:** Immediately flush with water for 15 minutes. Consult physician.

**Skin Contact:** Immediately flush skin with water for 15 minutes while removing affected clothing.

**Ingestion:** Do not induce vomiting. Rinse mouth. Drink plenty of water. Get medical attention immediately.

**Inhalation:** Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen.

---

#### **5. Fire Fighting Measures**

**Flash Point (Method Used):** N/A

**LEL:** N/A

**UEL:** N/A

**Extinguishing Media:** Water spray

**Special Fire Fighting Procedures:** Firefighters wear SCBA.

**Unusual Fire & Explosion Hazard:** Gives off flammable vapors. Closed containers exposed to heat may explode.

---

#### **6. Accidental Release Measures**

Ventilate spill area. Do not breathe vapor. Wear gloves and eye protection. Wear NIOSH approved respirator with ammonia vapor cartridge if airborne concentration exceeds TLV. Carefully neutralize with dilute hydrochloric acid. Mop up and flush down.

---

#### **7. Handling & Storage**

Store tightly closed in cool, dry place away from heat, light, acids, and chlorine bleaches.

---

---

**Product Code:** 5267

**Product Description:** Copper Test Solution

---

## **8. Exposure Controls/Personal Protection**

### **Ventilation**

Mechanical

Work in fume hood. Avoid inhalation of vapor.

### **Protection When Handling**

Eye Protection Gloves Lab Coat

**Work/Hygenic Practices:** Use only with adequate ventilation and avoid contact with skin or clothing. Wash after handling.

---

## **9. Physical & Chemical Properties**

**Appearance:** Clear Colorless Liquid

**Solubility In Water:** Soluble

**Odor:** Pungent, ammonia

**pH:** 11

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

**Vapor Pressure:** ca. 32mm Hg @ 25 C

**Boiling Point:** Unknown

**Melting Point:** N/A

---

## **10. Stability & Reactivity**

**Stable:** Yes

**Conditions To Avoid:** Heat, light

**Incompatibility (Materials To Avoid):** Strong acids, metals, chlorine and bleaches

**Hazardous Decomposition Products:** Ammonia, NOx

---

## **11. Toxicological Information**

Oral rat LD50: 350 mg/kg for ammonium hydroxide; 1650 mg/kg for ammonium chloride. Investigated as a mutagen.

**Target Organs:** Eyes Lung Skin

**Pre-Existing Conditions Aggravated By Exposure:** Respiratory conditions

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---

**Product Code:** 5267

**Product Description:** Copper Test Solution

---

## **12. Ecological Information**

Information Not Yet Available

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## **13. Disposal Considerations**

Wear gloves & eye protection. Pour into water. Neutralize with dilute HCl and flush down drain with excess water. Dispose according to federal, state and local regulations.

---

## **14. Transportation Information**

### **Proper Shipping Name:**

**DOT:** AMMONIA SOLUTIONS  
>10%, <35% AMMONIA

**IATA:** AMMONIA SOLUTION  
>10%, <35% AMMONIA

### **Hazard Class/Div:**

**DOT:** 8

**IATA:** 8

**UN:** 2672

**Packing Group:** III

---

## **15. Regulatory Information**

### **Chemical Inventory Status**

Hazard	Ingredient	USA	Europe	--- Canada ---		Australia	Japan
		TSCA	EC	DSL	NDSL		
Yes	1336-21-6 Ammonium Hydroxide	Yes	Yes	Yes	No	Yes	Yes
Yes	12125-02-9 Ammonium Chloride	Yes	Yes	Yes	No	Yes	Yes
No	7732-18-5 Distilled Water	Yes	Yes	Yes	No	Yes	Yes

---

**Product Code:** 5267

**Product Description:** Copper Test Solution

---

**Federal, State, & International Regulations**

<b>Ingredient</b>	<b>--- SARA 302 ---</b>		<b>----- SARA 313 -----</b>		<b>CERCLA</b>	<b>RCRA 261.33</b>	<b>TSCA 8(D)</b>
	<b>RQ</b>	<b>TPQ</b>	<b>Listed</b>	<b>Chemical Category</b>			
1336-21-6 Ammonium Hydroxide	No	No	No	No	1000	No	No
12125-02-9 Ammonium Chloride	No	No	No	No	5000	No	No
7732-18-5 Distilled Water	No	No	No	No	No	No	No

---

**Product Code:** 5267

**Product Description:** Copper Test Solution

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--- SARA 311/312 ---

----- Australia -----

**Hazard Categories**

**Hazchem  
Code**

**Poison  
Schedule**

**This MSDS Is  
WHMIS Compliant**

**Ingredient**   **Acute**   **Chronic**   **Fire**   **Pressure**   **Reactivity**

1336-21-6   Yes   Yes   No   No   No  
Ammonium Hydroxide

12125-02-9   Yes   No   No   No   No  
Ammonium Chloride

7732-18-5   No   No   No   No   No  
Distilled Water

2P

S6

None Allocated

None Allocated

None Allocated

None Allocated

**product  
5267  
as a whole**

Yes   Yes

No   No   No

2P

S6

Yes

---

**16. Other Information**

**Prepared By:** IP, Regulatory Affairs Department

**Revised:** 8/7/2006

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MATERIAL SAFETY DATA SHEET

LaMOTTE COMPANY
PO BOX 329 - CHESTERTOWN - MARYLAND - 21620
TELEPHONE # FOR INFORMATION 410-778-3100

24 Hour Emergency Number (CHEM-TEL) 800-255-3924

1. PRODUCT IDENTIFICATION

Ferric Iron Test Solution

Code Nr. 5116

2. HAZARDOUS INGREDIENTS

Table with 6 columns: NAME, CAS #, TSCA #, %, PEL, TLV. Row 1: Potassium Thiocyanate, 333-20-0, 10, N/A, N/A.

3. NON-HAZARDOUS INGREDIENTS EXCEPT WATER (7732-18-5)

Table with 3 columns: NAME, CAS #, %. Row 1: Water to 100%.

4. PHYSICAL DATA

Appearance: Clear Colorless Liquid
Solubility in Water: Soluble
Odor: None
Boiling Point: >100 deg C
Melt. Point: N/A
Vapor Pressure: <17 @ 20 deg C
Vapor Density: <1 (Air=1)
pH: 7

5. FIRE AND EXPLOSION DATA

Flash Point (method used) N/A
Flammable Limit: LEL: N/A
UEL: N/A
Extinguishing Media: Not a fire hazard
HMIS Hazard: Health - 1, Flammability - 0, Reactivity - 0
Scale: 4 = Extreme, 3 = High, 2 = Moderate, 1 = Slight, 0 = Least
Special Fire Fighting Procedures: N/A
Unusual Fire & Explosion Hazard: N/A

6. REACTIVITY DATA

Stability: Conditions to avoid: Heat
Stable (checked)
Incompatibility (Materials to avoid): Nitric acid, strong oxidizers
Unstable (unchecked)
Hazardous Decomposition Products: HCN, SOx, NOx

7. HEALTH HAZARD DATA

Toxicity: orl rat LD50: 854 mg/kg for Potassium Thiocyanate solid
Primary Route of Entry: Inhalation (unchecked), Skin (checked), Ingestion (checked), N/A (unchecked)
Carcinogenicity: None (checked), OSHA (unchecked), NTP (unchecked), IARC (unchecked)
Other Health Related Comments:
Target Organs: N/A
Signs and symptoms of exposure: Harmful if swallowed. May cause weakness and collapse.
Medical Condition Aggravated by Exposure: N/A

8. EMERGENCY FIRST AID PROCEDURES

Eye Contact: Immediately flush with water for at least 15 minutes. Consult physician.
Ingestion: Induce vomiting immediately. Get prompt medical attention.
Inhalation: Remove to fresh air.
Skin Contact: Flush with water. Remove all affected clothing. Wash skin with soap and water.

9. SPILL AND DISPOSAL PROCEDURES

Spill and Leak: Mop up and flush down drain with excess water.
Disposal: Dispose according to federal, state and local regulations.

10. PRECAUTIONARY MEASURES

In Handling: Gloves (checked), Eye Protection (checked), N/A (unchecked), Other: Lab Coat (checked)
Ventilation: Normal (checked), Mechanical (unchecked), Respiratory Protection (unchecked)
Work/Hygiene Practices: Avoid contact with skin and clothing.

11. SPECIAL PRECAUTIONS

N/A

DATE: 10/3/01 The above information is believed to be correct but does not claim to be all inclusive and should be used only as a guide.

This is a toxic chemical subject to reporting requirements of section 313 of EPCRA and 40CFR372.



## MATERIAL SAFETY DATA SHEET

PO#: 3C01944  
HACH ORDER#: 499452

MSDS DATE: 1/05/93  
CHANGE NO.: 8745

For Assistance, Contact:  
Regulatory Affairs Dept.  
PO Box 907 Ames, IA 50010  
(800) 227-4224

HACH COMPANY  
PO BOX 907  
AMES, IA 50010

Emergency Telephone #  
Rocky Mountain Poison Ctr.  
(303) 623-5716

## I. PRODUCT IDENTIFICATION

PRODUCT NAME: Ferrrous Iron Reagent  
CAS NO.: NA CHEMICAL NAME: Not applicable  
FORMULA: Not applicable CHEMICAL FAMILY: Not applicable

## II. INGREDIENTS

Sodium Bicarbonate  
PCT: <100 CAS NO.: 144-55-8 SARA: NOT LISTED  
TLV: Not established PEL: Not established  
HAZARD: Moderately toxic

1,10-Phenanthroline, Monohydrate  
PCT: <10 CAS NO.: 5144-89-8 SARA: NOT LISTED  
TLV: Not established PEL: Not established  
HAZARD: Very toxic; irritating

## III. PHYSICAL DATA

STATE: solid APPEARANCE: White powder ODOR: Not determined  
SOLUBILITY IN: WATER: Slightly soluble ACID: Slightly soluble  
OTHER: Not determined BOILING POINT: NA MELTING PT.: 50C decomp.  
SPEC GRAVITY: 2.10 pH: Not determined VAPOR PRESSURE: Not applicable  
VAPOR DENSITY (air=1): NA EVAPORATION RATE: NA  
METAL CORROSIVITY - ALUMINUM: ND STEEL: ND  
STABILITY: See Conditions to Avoid  
STORAGE PRECAUTIONS: Store in a cool, dry place.

## IV. FIRE, EXPLOSION HAZARD AND REACTIVITY DATA

FLASH PT.: Not applicable METHOD: NA  
FLAMMABILITY LIMITS - LOWER: NA UPPER: NA  
SUSCEPTIBILITY TO SPONTANEOUS HEATING: None  
SHOCK SENSITIVITY: None AUTOIGNITION PT.: ND  
EXTINGUISHING MEDIA: water, carbon dioxide, or dry chemical  
FIRE/EXPLOSION HAZARDS: May emit toxic fumes and acrid smoke in fire  
HAZARDOUS DECOMP. PRODUCTS: May emit toxic fumes and acrid smoke in fire  
OXIDIZER: No NFPA Codes: Health: 1 Flammability: 0 Reactivity: 0  
CONDITIONS TO AVOID: Heat, moisture, contact with oxidizers, phosphates

## V. HEALTH HAZARD DATA

THIS PRODUCT MAY BE: Irritating to eyes, skin and respiratory tract.  
ACUTE TOXICITY: Moderately toxic  
ROUTES OF EXPOSURE: ingestion, inhalation  
TARGET ORGANS: Not determined  
CHRONIC TOXICITY: Not determined  
ROUTES OF EXPOSURE: Not determined  
TARGET ORGANS: Not determined  
CANCER INFORMATION: Not applicable  
ROUTES OF EXPOSURE: Not applicable  
TARGET ORGANS: Not applicable  
OVEREXPOSURE: May cause eye, skin and respiratory tract irritation.  
Ingestion of large doses may cause stomach distention and rupture and systemic alkalosis.  
MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: Pre-existing eye, skin and respiratory tract conditions

## VI. PRECAUTIONARY MEASURES

Avoid contact with eyes and skin.  
Do not breathe dust.  
Wash thoroughly after handling.  
PROTECTIVE EQUIPMENT: adequate ventilation, lab grade goggles, disposable latex gloves

## VII. FIRST AID

EYE AND SKIN CONTACT: Immediately flush eyes with water for 15 minutes. Consult physician. Wash skin with soap and plenty of water.  
INGESTION: Give large quantities of water. Call physician immediately.  
INHALATION: Remove to fresh air.

## VIII. SPILL AND DISPOSAL PROCEDURES

IN CASE OF SPILL OR RELEASE: Sweep up powder. Avoid breathing material. Dissolve in water. Flush down the drain with excess water.  
DISPOSE OF IN ACCORDANCE WITH ALL FEDERAL, STATE, AND LOCAL REGULATIONS.

## IX. TRANSPORTATION DATA

D.O.T. PROPER SHIPPING NAME: Not Currently Regulated  
HAZARD CLASS: Not applicable ID: NA

I.C.A.O. PROPER SHIPPING NAME: Not Currently Regulated  
HAZARD CLASS: NA ID: NA GROUP: NA

I.M.O. PROPER SHIPPING NAME: Not Currently Regulated  
HAZARD CLASS: NA ID: NA GROUP: NA

## X. REFERENCES

- 1) TLV's Threshold Limit Values and Biological Exposure Indices for 1988-1989. American Conference of Governmental Industrial Hygienists. 1988
- 2) Air Contaminants, Federal Register, Vol. 54, No. 12, Thursday, January 19, 1989. pp. 2332-2983.
- 3) In-house information
- 4) Technical judgment
- 5) Sax, N. Irving. Dangerous Properties of Industrial Materials, 5th Ed. New York: Van Nostrand Reinhold Co. 1984.

**MATERIAL SAFETY DATA SHEET**

LaMOTTE COMPANY  
 PO BOX 329 - CHESTERTOWN - MARYLAND - 21620  
 TELEPHONE # FOR INFORMATION 410-778-3100  
**24 Hour Emergency Number (CHEM-TEL) 800-255-3924**

**1. PRODUCT IDENTIFICATION**

**Humus Screening Reagent**

*Code Nr. 5119*

**2. HAZARDOUS INGREDIENTS**

NAME	CAS #	TSCA #	%	PEL	TLV
Ethylenediaminetetraacetic acid, disodium salt (EDTA)	6381-92-6	139-33-3	88 - 92	N/E	N/E
Nitrilotriacetic acid, disodium salt (NTA)	15467-20-6		0.6	N/E	N/E
Warning! This product contains NTA or its salts, chemicals known to the state of California to cause cancer.					

**3. NON-HAZARDOUS INGREDIENTS EXCEPT WATER (7732-18-5)**

NAME	CAS #	%
Water (moisture in powder)		<8

**4. PHYSICAL DATA**

*Appearance:* White Crystalline powder  
*Solubility in Water:* Soluble    *Odor:* None    *Boiling Point:* N/A    *Melt. Point:* Unknown  
*Vapor Pressure:* N/A    *Vapor Density:* N/A    *pH:* 5 (0.1 g in 10 mL water)

**5. FIRE AND EXPLOSION DATA**

*Flash Point (method used):* N/A    *Flammable Limit: LEL:* N/A    *UEL:* N/A  
*Extinguishing Media:* Dry chemical, CO2, water spray, or alcohol-resistant foam  
*HMS Hazard: Health - 2 Flammability - 1 Reactivity - 0 Scale: 4 = Extreme, 3 = High, 2 = Moderate, 1 = Slight, 0 = Least*  
*Special Fire Fighting Procedures:*  
 N/A  
*Unusual Fire & Explosion Hazard:*  
 N/A

**6. REACTIVITY DATA**

*Stability:* *Conditions to avoid:* Heat, moisture  
 *Stable*    *Incompatibility (Materials to avoid):*  
 Oxidizers, metals  
 *Unstable*  
*Hazardous Decomposition Products:* Burning may produce COx, NOx, or ammonia

**7. HEALTH HAZARD DATA**

*Toxicity:* orl rat LD50: 2000 mg/kg for EDTA, disodium salt  
*Primary Route of Entry:*  *Inhalation*     *Skin*    *Carcinogenicity:*  *None*     *NTP*  
 *Ingestion*     *N/A*     *OSHA*     *IARC*  
*Other Health Related Comments:*  
 NTA(CAS#139-13-9)and/or its salts listed by NTP as carcinogens,based on findings of urinary tract tumors in animals  
*Target Organs:* N/A  
*Signs and symptoms of exposure:*  
 May be harmful if swallowed. May irritate eyes, skin, respiratory tract.  
*Medical Condition Aggravated by Exposure:* N/A

**8. EMERGENCY FIRST AID PROCEDURES**

*Eye Contact:* Flush thoroughly with water for 15 minutes. Consult physician.  
*Ingestion:* Drink water. Consult physician.  
*Inhalation:*  
 Remove to fresh air.  
*Skin Contact:*  
 Flush skin with water. Wash with soap and water.

**9. SPILL AND DISPOSAL PROCEDURES**

*Spill and Leak:*  
 Sweep up, dissolve in water, and flush to drain with excess water.  
*Disposal:*  
 Small amt.--Dissolve in water. Flush to drain with excess water. Dispose according to federal, state and local regulations.

**10. PRECAUTIONARY MEASURES**

*In Handling:*  *Gloves*     *Eve Protection*     *N/A*     *Other: Lab Coat*  
*Ventilation*     *Normal*     *Mechanical*     *Respiratory Protection*  
*Work/Hygienic Practices:* Avoid inhalation of dust and prolonged or repeated contact with skin.

**11. SPECIAL PRECAUTIONS**

Do not store in aluminum or other metal containers. Store between 0 and 120 deg. F

**DATE:** 4/14/99    The above information is believed to be correct but does not claim to be all inclusive and should be used only as a guide.

† This is a toxic chemical subject to reporting requirements of section 313 of EPCRA and 40CFR372.



# MSDS

P.O. Box 329 - 802 Washington Avenue Chestertown, MD 21620 - USA

## MATERIAL SAFETY DATA SHEET

TELEPHONE # FOR INFORMATION 410 778-3100

24 HOUR EMERGENCY NUMBER (CHEM-TEL): USA, Canada, Puerto Rico 800-255-3924;

Outside North American Continent 813-248-0585 (call Collect)

### 1. Product Identification

**Product Code:** 5275

**Product Description:** Iron Reagent Powder

**Manufactured By:** LaMotte Company

802 Washington Avenue

Chestertown, MD 21620

### 2. Composition/Information On Ingredients

Hazard	CAS#/Name	%	PEL	TLV
Yes	5329-14-6 Sulfamic Acid	100	N/E	N/E

### 3. Hazards Overview

**Primary Route Of Entry:** Skin Ingestion Inhalation

Danger! Corrosive. Can cause severe irritation or burns to eyes, skin, and lungs. Harmful or fatal if swallowed.

#### HMIS Hazard

Scale: 4 = Extreme, 3 = High, 2 = Moderate, 1 = Slight, 0 = Least

Health: 3      Flammability: 0      Reactivity: 2

**Carcinogenicity:** None:

#### **Other Health Related Comments:**

See Section 11.

---

**Product Code:** 5275

**Product Description:** Iron Reagent Powder

---

#### **4. First Aid Measures**

**Eye Contact:** Flush with water for 15 minutes. Get medical attention.

**Skin Contact:** Flush thoroughly with water while removing affected clothing. Wash skin with soap and water. Consult a physician if irritation develops.

**Ingestion:** Rinse out mouth. Drink plenty of water. Get medical attention immediately.

**Inhalation:** Remove to fresh air. Give oxygen if breathing is difficult. Get medical attention immediately.

---

#### **5. Fire Fighting Measures**

**Flash Point (Method Used):** N/A

**LEL:** N/A

**UEL:** N/A

**Extinguishing Media:** Appropriate to surrounding fire

**Special Fire Fighting Procedures:** Firefighters wear self-contained breathing apparatus

**Unusual Fire & Explosion Hazard:** Emits toxic fumes under fire conditions.

---

#### **6. Accidental Release Measures**

Avoid raising or breathing dust. Wear dust mask, gloves, and eye protection. Carefully sweep up, dissolve in water, neutralize with soda ash (sodium carbonate) or sodium bicarbonate. Wash down drain with excess water.

---

#### **7. Handling & Storage**

Store container tightly closed in cool, dry, ventilated area away from such incompatible materials as strong oxidizers, nitric acid, or bleaches. Solutions of sulfamic acid are strong acids and react violently with bases.

---

---

**Product Code:** 5275

**Product Description:** Iron Reagent Powder

---

## **8. Exposure Controls/Personal Protection**

### **Ventilation**

Mechanical

Use with adequate ventilation.

### **Protection When Handling**

Eye Protection Gloves Lab Coat

**Work/Hygenic Practices:** Avoid breathing dust & contact with eyes, skin, clothing. Moist powder is corrosive--may cause burns

---

## **9. Physical & Chemical Properties**

**Appearance:** White Crystals

**Solubility In Water:** Soluble

**Odor:** None

**pH:** 1(0.1g in 10mL water)

**Vapor Density:** 3.3 (Air=1)

**Vapor Pressure:** N/A

**Boiling Point:** N/A

**Melting Point:** decomposes 205 C

---

## **10. Stability & Reactivity**

**Stable:** Yes

**Conditions To Avoid:** Heating while confined

**Incompatibility (Materials To Avoid):** Strong acids, bases, oxidizers, chlorine and bleaches.

**Hazardous Decomposition Products:** SOx, NOx, ammonia

---

## **11. Toxicological Information**

Oral rat LD50: 2140 mg/kg

**Target Organs:** Skin

---

---

**Product Code:** 5275

**Product Description:** Iron Reagent Powder

---

**12. Ecological Information**

Information Not Yet Available

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**13. Disposal Considerations**

Wear gloves and eye protection. In fume hood, dissolve in water, neutralize as above and wash down drain with water. Dispose according to federal, state and local regulations.

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**14. Transportation Information**

**Proper Shipping Name:**

**DOT:** SULFAMIC ACID

**IATA:** SULPHAMIC ACID

**Hazard Class/Div:**

**DOT:** 8

**IATA:** 8

**UN:** 2967

**Packing Group:** III

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**15. Regulatory Information**

**Chemical Inventory Status**

Hazard	Ingredient	USA TSCA	Europe EC	--- Canada --- DSL NDSL		Australia	Japan
Yes	5329-14-6	Yes	Yes	Yes	No	Yes	Yes

**Federal, State, & International Regulations**

Ingredient	--- SARA 302 ---		----- SARA 313 -----		CERCLA	RCRA 261.33	TSCA 8(D)
	RQ	TPQ	Listed	Chemical Category			
5329-14-6 Sulfamic Acid	No	No	No	No	No	No	No

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**Product Code:** 5275

**Product Description:** Iron Reagent Powder

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--- SARA 311/312 ---

----- Australia -----

**Hazard Categories**

**Hazchem**

**Poison**

**This MSDS Is**

**Ingredient**   **Acute**   **Chronic**   **Fire**   **Pressure**   **Reactivity**   **Code**   **Schedule**   **WHMIS Compliant**

5329-14-6   Yes   No   No   No   No   No   2T   S6  
Sulfamic Acid

**product**   Yes   No   No   No   No   No   2T   S6   Yes  
**5275**  
**as a whole**

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**16. Other Information**

**Prepared By:** IP, Regulatory Affairs Department

**Revised:** 8/4/2006

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# MATERIAL SAFETY DATA SHEET

LaMOTTE COMPANY  
 PO BOX 329 - CHESTERTOWN - MARYLAND - 21620  
 TELEPHONE # FOR INFORMATION 410-778-3100  
 24 Hour Emergency Number (CHEM-TEL) 800-255-3924

## 1. PRODUCT IDENTIFICATION

**Magnesium Test Solution #1**

Code Nr. **5140**

## 2. HAZARDOUS INGREDIENTS

NAME	CAS #	TSCA #	%	PEL	TLV
^ Methanol	67-56-1		50	260 mg/cubic m	200 ppm

## 3. NON-HAZARDOUS INGREDIENTS EXCEPT WATER (7732-18-5)

NAME	CAS #	%
Clayton Yellow dye	N/A	0.05
Water to 100%		

## 4. PHYSICAL DATA

*Appearance:* Clear Yellow Liquid  
*Solubility in Water:* Soluble      *Odor:* Alcohol      *Boiling Point:* ca. 65 degC      *Melt. Point:* N/A  
*Vapor Pressure:* ca. 96mm @20 C      *Vapor Density:* 1.1 (Air=1)      *pH:* N/A

## 5. FIRE AND EXPLOSION DATA

*Flash Point (method used):* 22 deg C (CC)      *Flammable Limit: LEL:* 6.7%      *UEL:* 36%  
*Extinguishing Media:* Dry chemical, CO2, or water spray  
*HMIS Hazard: Health - 2    Flammability - 2    Reactivity - 0    Scale: 4 = Extreme, 3 = High, 2 = Moderate, 1 = Slight, 0 = Least*  
*Special Fire Fighting Procedures:*  
 Firefighters wear self-contained breathing apparatus  
*Unusual Fire & Explosion Hazard:*  
 Vapors may travel to ignition source and flash back.

## 6. REACTIVITY DATA

*Stability:*  Stable      *Conditions to avoid:* Heat, sources of ignition  
 Unstable      *Incompatibility (Materials to avoid):*  
 Strong oxidizers  
*Hazardous Decomposition Products:* COx and formaldehyde

## 7. HEALTH HAZARD DATA

*Toxicity:* orl hmn LDLo: 143 mg/kg for methanol  
*Primary Route of Entry:*  Inhalation       Skin      *Carcinogenicity:*  None       NTP  
 Ingestion       N/A       OSHA       IARC  
*Other Health Related Comments:*  
*Target Organs:* Central Nervous System  
*Signs and symptoms of exposure:*  
 Headaches, nausea, dizziness, blurred vision, respiratory failure; ingestion may cause blindness.  
*Medical Condition Aggravated by Exposure:* N/A

## 8. EMERGENCY FIRST AID PROCEDURES

*Eye Contact:* Immediately flush with water for 15 minutes. Consult physician.  
*Ingestion:* Drink water. Call a physician immediately.  
*Inhalation:*  
 Remove to fresh air. If breathing has stopped give artificial respiration. If breathing is difficult, give oxygen.  
*Skin Contact:*  
 Flush with water. Wash with soap and water.

## 9. SPILL AND DISPOSAL PROCEDURES

*Spill and Leak:*  
 Eliminate all sources of ignition. Absorb on paper. Evaporate on iron pan in hood.  
*Disposal:*  
 Small quantity: Flush down drain with excess water. Large quantity: Atomize in incinerator. Dispose according to federal, state and local regulations.

## 10. PRECAUTIONARY MEASURES

*In Handling:*  Gloves       Eye Protection       N/A       Other: Lab Coat  
*Ventilation:*  Normal       Mechanical       Respiratory Protection  
*Work/Hygienic Practices:* Use with adequate ventilation and avoid contact with skin.

## 11. SPECIAL PRECAUTIONS

Do not use near heat or flame.

**DATE:** 4/11/2000      The above information is believed to be correct but does not claim to be all inclusive and should be used only as a guide.

^ This is a toxic chemical subject to reporting requirements of section 313 of FPCRA and 40CFR372



# MATERIAL SAFETY DATA SHEET

LaMOTTE COMPANY  
 PO BOX 329 - CHESTERTOWN - MARYLAND - 21620  
 TELEPHONE # FOR INFORMATION 410-778-3100

**24 Hour Emergency Number (CHEM-TEL) 800-255-3924**

## 1. PRODUCT IDENTIFICATION

**Manganese-Magnesium Test Solution #2** *Code Nr. 5145*

## 2. HAZARDOUS INGREDIENTS

NAME	CAS #	TSCA #	%	PEL	TLV
Sodium Hydroxide	1310-73-2		15	2 mg/cubic m	C 2 mg/cubic m

## 3. NON-HAZARDOUS INGREDIENTS EXCEPT WATER (7732-18-5)

NAME	CAS #	%
Water		85

## 4. PHYSICAL DATA

*Appearance:* Clear Colorless Liquid  
*Solubility in Water:* Soluble     *Odor:* None     *Boiling Point:* 107 deg C     *Melt. Point:* ca. -10 deg  
*Vapor Pressure:* <13 @ 20 deg C     *Vapor Density:* Unknown     *pH:* 14

## 5. FIRE AND EXPLOSION DATA

*Flash Point (method used)* N/A     *Flammable Limit: LEL:* N/A     *UEL:* N/A  
*Extinguishing Media:* Not a fire hazard  
*HMIS Hazard: Health - 3    Flammability - 0    Reactivity - 2*     *Scale: 4 = Extreme, 3 = High, 2 = Moderate, 1 = Slight, 0 = Least*  
*Special Fire Fighting Procedures:*  
 Wear protective equipment.  
*Unusual Fire & Explosion Hazard:*  
 Can react with metals to produce hydrogen gas which can form an explosive mixture with air.

## 6. REACTIVITY DATA

*Stability:*     *Conditions to avoid:* Heat  
 *Stable*     *Incompatibility (Materials to avoid):*  
 Strong acids, metals  
 *Unstable*     *Hazardous Decomposition Products:* N/A

## 7. HEALTH HAZARD DATA

*Toxicity:* Unknown  
*Primary Route of Entry:*      *Inhalation*      *Skin*     *Carcinogenicity:*      *None*      *NTP*  
     *Ingestion*      *N/A*                                      *OSHA*      *IARC*  
*Other Health Related Comments:*  
*Target Organs:* Corrosive to all body parts, Eyes, Skin.  
*Signs and symptoms of exposure:*  
 Severe burns, may be fatal if swallowed  
*Medical Condition Aggravated by Exposure:* N/A

## 8. EMERGENCY FIRST AID PROCEDURES

*Eye Contact:* Immediately flush with water for 15 minutes. Call a doctor immediately.  
*Ingestion:* Do not induce vomiting. Rinse out mouth. Drink plenty of water or milk. Call a doctor immediately.  
*Inhalation:*  
 Remove to fresh air. If breathing is difficult give oxygen.  
*Skin Contact:*  
 Immediately flush with water for 15 minutes while removing affected clothing and shoes. Consult physician.

## 9. SPILL AND DISPOSAL PROCEDURES

*Spill and Leak:*  
 Wearing safety goggles and gloves, carefully neutralize with 6M hydrochloric acid. Flush down drain with excess water.  
*Disposal:*  
 Pour into water. Carefully neutralize with 6M-HCl. Flush down drain with excess water. Dispose according to federal, state and local regulations.

## 10. PRECAUTIONARY MEASURES

*In Handling:*      *Gloves*      *Eye Protection*      *N/A*      *Other:* Lab Coat  
*Ventilation*      *Normal*      *Mechanical*      *Respiratory Protection*  
*Work/Hygiene Practices:* Avoid contact with skin and clothing.

## 11. SPECIAL PRECAUTIONS

N/A  
**DATE:** 2/1/02     The above information is believed to be correct but does not claim to be all inclusive and should be used only as a guide.

▲ This is a toxic chemical subject to reporting requirements of section 313 of EPCRA and 40CFR372.

**MATERIAL SAFETY DATA SHEET**  
 LaMOTTE COMPANY  
 PO BOX 329 - CHESTERTOWN - MARYLAND - 21620  
 TELEPHONE # FOR INFORMATION 410-778-3100  
**24 Hour Emergency Number (CHEM-TEL) 800-255-3924**

**1. PRODUCT IDENTIFICATION**

**Manganese Periodate Reagent** Code Nr. **6311**

**2. HAZARDOUS INGREDIENTS**

NAME	CAS #	TSCA #	%	PEL	TLV
Sodium metaperiodate	7790-28-5		100	N/E	N/E

**3. NON-HAZARDOUS INGREDIENTS EXCEPT WATER (7732-18-5)**

NAME	CAS #	%
None		

**4. PHYSICAL DATA**

*Appearance:* White Crystalline powder  
*Solubility in Water:* Soluble *Odor:* Slight *Boiling Point:* N/A *Melt. Point:* 300 deg F  
*Vapor Pressure:* N/A *Vapor Density:* N/A *pH:* 4 (0.1g/10mL water)

**5. FIRE AND EXPLOSION DATA**

*Flash Point (method used):* N/A *Flammable Limit: LEL:* N/A *UEL:* N/A  
*Extinguishing Media:* Not a fire hazard  
*HMIS Hazard: Health - 1 Flammability - 0 Reactivity - 1 Scale: 4 = Extreme, 3 = High, 2 = Moderate, 1 = Slight, 0 = Least*  
*Special Fire Fighting Procedures:*  
 Firefighters wear self-contained breathing apparatus  
*Unusual Fire & Explosion Hazard:*  
 Contact with combustibles (wood, paper, oil, etc.) may cause fire or explosion. Emits toxic fumes under fire conditions.

**6. REACTIVITY DATA**

*Stability:* *Conditions to avoid:* Heat, moisture  
 *Stable* *Incompatibility (Materials to avoid):*  
 Strong reducing agents, organic materials, combustible materials  
 *Unstable* *Hazardous Decomposition Products:* N/A

**7. HEALTH HAZARD DATA**

*Toxicity:* Unknown  
*Primary Route of Entry:*  *Inhalation*  *Skin* *Carcinogenicity:*  *None*  *NTP*  
 *Ingestion*  *N/A*  *OSHA*  *IARC*  
*Other Health Related Comments:*  
*Target Organs:* N/A  
*Signs and symptoms of exposure:*  
 Harmful if swallowed or inhaled. May irritate eyes, skin, respiratory system. Ingestion causes nausea, vomiting.  
*Medical Condition Aggravated by Exposure:* N/A

**8. EMERGENCY FIRST AID PROCEDURES**

*Eye Contact:* Flush with water for 15 minutes. Consult physician.  
*Ingestion:* Drink plenty of water. Induce vomiting. Consult a physician.  
*Inhalation:*  
 Remove to fresh air.  
*Skin Contact:*  
 Flush thoroughly with water. Wash with soap and water.

**9. SPILL AND DISPOSAL PROCEDURES**

*Spill and Leak:*  
 Keep combustibles away from spill. Avoid breathing dust. Carefully sweep up spilled material and place in clean, dry, covered container. Wash spill area with water.  
*Disposal:*  
 Small quantity: Pour into an excess of water and neutralize with soda ash. Flush to drain with excess water. Large quantity: Containerize dry material and dispose of as hazardous waste, according to federal, state and local regulations.

**10. PRECAUTIONARY MEASURES**

*In Handling:*  *Gloves*  *Eye Protection*  *N/A*  *Other:* Lab Coat  
*Ventilation*  *Normal*  *Mechanical*  *Respiratory Protection*  
*Work/Hygienic Practices:* Avoid contact with eyes, skin and clothing.

**11. SPECIAL PRECAUTIONS**

Store in cool, dry place away from combustibles.

DATE: 2/18/99 The above information is believed to be correct but does not claim to be all inclusive and should be used only as a guide.

† This is a toxic chemical subject to reporting requirements of section 313 of EPCRA and 40CFR372.

**MATERIAL SAFETY DATA SHEET**  
 LaMOTTE COMPANY  
 PO BOX 329 - CHESTERTOWN - MARYLAND - 21620  
 TELEPHONE # FOR INFORMATION 410-778-3100  
**24 Hour Emergency Number (CHEM-TEL) 800-255-3924**

**1. PRODUCT IDENTIFICATION**

**Nitrate Reagent 1** *Code Nr. 5146*

**2. HAZARDOUS INGREDIENTS**

NAME	CAS #	TSCA #	%	PEL	TLV
Sodium Bisulfate Monohydrate	10034-88-5		25	N/E	N/E
† Ammonium Sulfate	7783-20-2		8	N/E	N/E

**3. NON-HAZARDOUS INGREDIENTS EXCEPT WATER (7732-18-5)**

NAME	CAS #	%
Cresol Red	1733-12-6	<0.1
Water to 100%		

**4. PHYSICAL DATA**

*Appearance:* Clear Pink Liquid  
*Solubility in Water:* Soluble    *Odor:* None    *Boiling Point:* Unknown    *Melt. Point:* N/A  
*Vapor Pressure:* Unknown    *Vapor Density:* Unknown    *pH:* <1

**5. FIRE AND EXPLOSION DATA**

*Flash Point (method used):* N/A    *Flammable Limit: LEL:* N/A    *UEL:* N/A  
*Extinguishing Media:* Not a fire hazard  
*HMIS Hazard: Health - 1    Flammability - 0    Reactivity - 1    Scale: 4 = Extreme, 3 = High, 2 = Moderate, 1 = Slight, 0 = Least*  
*Special Fire Fighting Procedures:*  
 N/A  
*Unusual Fire & Explosion Hazard:*  
 Emits toxic fumes under fire conditions. Can react with metals to form hydrogen, or with bleaches to form chlorine gas.

**6. REACTIVITY DATA**

*Stability:* *Conditions to avoid:* Heat  
 *Stable*    *Incompatibility (Materials to avoid):*  
 Strong alkalis, oxidizers, aqueous hypochlorites (bleach)  
 *Unstable*    *Hazardous Decomposition Products:* ammonia, NOx, SOx, hydrogen gas

**7. HEALTH HAZARD DATA**

*Toxicity:* oral rat LD50: 2490 mg/kg for sodium bisulfate solid  
*Primary Route of Entry:*     *Inhalation*     *Skin*    *Carcinogenicity:*     *None*     *NTP*  
     *Ingestion*     *N/A*      *OSHA*     *IARC*  
*Other Health Related Comments:*  
  
*Target Organs:* N/A  
*Signs and symptoms of exposure:*  
 Corrosive. Irritating to eyes, skin, nose, throat and respiratory system. Harmful if swallowed.  
*Medical Condition Aggravated by Exposure:* N/A

**8. EMERGENCY FIRST AID PROCEDURES**

*Eye Contact:* Immediately flush with water for 15 minutes. Consult a physician.  
*Ingestion:* Do not induce vomiting. Rinse out mouth. Drink plenty of water. Consult physician immediately.  
*Inhalation:*  
 Remove to fresh air.  
*Skin Contact:*  
 Immediately flush with water for 15 minutes while removing affected clothing. Wash skin with soap and water.

**9. SPILL AND DISPOSAL PROCEDURES**

*Spill and Leak:*  
 Cover contaminated area with sodium bicarbonate. Scoop up neutralized slurry and flush to drain with excess water.  
  
*Disposal:*  
 Add slowly to a solution of soda ash and slaked lime. Pour neutralized solution down drain with excess water. Dispose according to federal, state and local regulations.

**10. PRECAUTIONARY MEASURES**

*In Handling:*     *Gloves*     *Eye Protection*     *N/A*     *Other: Lab Coat*  
*Ventilation*     *Normal*     *Mechanical*     *Respiratory Protection*  
*Work/Hygienic Practices:* Avoid contact with eyes, skin and clothing.

**11. SPECIAL PRECAUTIONS**

Store away from alkalis.

**DATE:** 3/21/97    The above information is believed to be correct but does not claim to be all inclusive and should be used only as a guide.

† This is a toxic chemical subject to reporting requirements of section 313 of EPCRA and 40CFR372.



# MSDS

P.O. Box 329 - 802 Washington Avenue Chestertown, MD 21620 - USA

## MATERIAL SAFETY DATA SHEET

TELEPHONE # FOR INFORMATION 410 778-3100

24 HOUR EMERGENCY NUMBER (CHEM-TEL): USA, Canada, Puerto Rico 800-255-3924;

Outside North American Continent 813-248-0585 (call Collect)

### 1. Product Identification

**Product Code:** 5147

**Product Description:** Nitrate Reagent #2

**Manufactured By:** LaMotte Company

802 Washington Avenue

Chestertown, MD 21620

### 2. Composition/Information On Ingredients

Hazard	CAS#/Name	%	PEL	TLV
Yes	10034-96-5 Manganous Sulfate Monohydrate	1.5	C 5 mg/cubic m (comp. as Mn)	0.2 mg/cubic m (inorg comp as Mn)
Yes	7440-66-6 Zinc Dust	6	N/E	10 mg/cubic m, ZnO fume
Yes	7727-43-7 Barium Sulfate	63	10 mg/cubic m total dust	10 mg/cubic m total dust
Yes	63-74-1 Sulfanilamide	<1	N/E	N/E
Yes	1465-25-4 N-1-Naphthyl-ethylenediamine dihydrochloride	<1	N/E	N/E
Yes	57-50-1 Sugar	28	5 mg/cubic m (respirable)	10 mg/cubic m (total dust)

---

**Product Code:** 5147

**Product Description:** Nitrate Reagent #2

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### **3. Hazards Overview**

**Primary Route Of Entry:** Ingestion Inhalation Skin

Harmful by dust inhalation and if swallowed. May cause skin irritation.

#### **HMIS Hazard**

**Scale: 4 = Extreme, 3 = High, 2 = Moderate, 1 = Slight, 0 = Least**

**Health: 1      Flammability: 0      Reactivity: 0**

**Carcinogenicity:** None

#### **Other Health Related Comments:**

Manganese sulfate and sulfanilamide are possible mutagens, which may cause heritable genetic damage.

---

### **4. First Aid Measures**

**Eye Contact:** Flush thoroughly with water.

**Skin Contact:** Wash with soap and water.

**Ingestion:** Drink water. Consult a physician.

**Inhalation:** Remove to fresh air.

---

### **5. Fire Fighting Measures**

**Flash Point (Method Used):** N/A                      **LEL:** N/A                      **UEL:** N/A

**Extinguishing Media:** Not a fire hazard

**Special Fire Fighting Procedures:** N/A

**Unusual Fire & Explosion Hazard:** N/A

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### **6. Accidental Release Measures**

Small quantity: Sweep up, dissolve in water and flush down drain. Large quantity: Sweep up. Place in clean, dry, closed container. Send to approved landfill or to hazardous waste disposal.

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**Product Code:** 5147

**Product Description:** Nitrate Reagent #2

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## **7. Handling & Storage**

Store tightly closed in cool, dry place away from heat, moisture, and strong acids.

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## **8. Exposure Controls/Personal Protection**

### **Ventilation**

Mechanical

### **Protection When Handling**

Gloves Eye Protection Lab Coat

**Work/Hygenic Practices:** Avoid contact with skin and clothing and inhalation of dust. Wash after handling.

---

## **9. Physical & Chemical Properties**

**Appearance:** Off white Powder

**Solubility In Water:** Partial

**Odor:** None

**pH:** 6 (0.1g/10mL water)

**Vapor Density:** N/A

**Vapor Pressure:** N/A

**Boiling Point:** N/A

**Melting Point:** Unknown

---

## **10. Stability & Reactivity**

**Stable:** Yes

**Conditions To Avoid:** Heat, moisture

**Incompatibility (Materials To Avoid):** Strong acids

**Hazardous Decomposition Products:** N/A

---

---

**Product Code:** 5147

**Product Description:** Nitrate Reagent #2

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### 11. Toxicological Information

Manganese sulfate monohydrate--Oral rat LD50: 2150 mg/kg. Sulfanilamide--Oral rat LD50: 3900mg/kg . Both chemicals have been investigated as possible tumorigens, mutagens, or reproductive effectors.

**Target Organs:** Blood Central Nervous System Kidney Lung Skin

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### 12. Ecological Information

Information Not Yet Available

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### 13. Disposal Considerations

Dispose according to federal, state and local regulations.

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### 14. Transportation Information

Not Regulated For Transport

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### 15. Regulatory Information

#### Chemical Inventory Status

Hazard	Ingredient	USA	Europe	--- Canada ---		Australia	Japan
		TSCA	EC	DSL	NDSL		
Yes	7785-87-7 Manganese Sulfate, anhydrous	Yes	Yes	Yes	No	Yes	Yes
Yes	7440-66-6 Zinc Dust	Yes	Yes	Yes	No	Yes	No
Yes	7727-43-7 Barium Sulfate	Yes	Yes	Yes	No	Yes	Yes
Yes	63-74-1 Sulfanilamide	Yes	Yes	Yes	No	Yes	Yes
Yes	1465-25-4 N-1-(Naphthyl) ethylenediamine dihydrochloride	Yes	Yes	Yes	No	Yes	No
Yes	57-50-1 Sucrose	Yes	Yes	Yes	No	Yes	Yes

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**Product Code:** 5147**Product Description:** Nitrate Reagent #2

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**Federal, State, & International Regulations**

<b>Ingredient</b>	<b>--- SARA 302 ---</b>		<b>----- SARA 313 -----</b>		<b>CERCLA</b>	<b>RCRA 261.33</b>	<b>TSCA 8(D)</b>
	<b>RQ</b>	<b>TPQ</b>	<b>Listed</b>	<b>Chemical Category</b>			
7785-87-7 Manganese Sulfate, anhydrous	No	No	No	Manganese cmpnd	1	No	No
7440-66-6 Zinc Dust	No	No	Yes	No	1000	No	No
7727-43-7 Barium Sulfate	No	No	No	No	No	No	No
63-74-1 Sulfanilamide	No	No	No	No	No	No	No
1465-25-4 N-1-(Naphthyl) ethylenediamine dihydrochloride	No	No	No	No	No	No	No
57-50-1 Sucrose	No	No	No	No	No	No	No



**Product Code:** 5147

**Product Description:** Nitrate Reagent #2

--- SARA 311/312 ---

----- Australia -----

**Hazard Categories**

**Hazchem  
Code**

**Poison  
Schedule**

**This MSDS Is  
WHMIS Compliant**

<b>Ingredient</b>	<b>Acute</b>	<b>Chronic</b>	<b>Fire</b>	<b>Pressure</b>	<b>Reactivity</b>			
7785-87-7 Manganese Sulfate, anhydrous	Yes	Yes	No	No	No	None Allocated	None Allocated	
7440-66-6 Zinc Dust	Yes	No	Yes	No	Yes	4Y	S6	
7727-43-7 Barium Sulfate	Yes	No	No	No	No	None Allocated	None Allocated	
63-74-1 Sulfanilamide	Yes	No	No	No	No	None Allocated	None Allocated	
1465-25-4 N-1-(Naphthyl) ethylenediamine dihydrochloride	Yes	No	No	No	No	None Allocated	None Allocated	
57-50-1 Sucrose	No	No	Yes	No	No	None Allocated	None Allocated	
<b>product 5147 as a whole</b>	Yes	Yes	Yes	No	No	None Allocated	None Allocated	Yes

**16. Other Information**

**Prepared By:** IP, Regulatory Affairs Department

**Revised:** 7/28/2006

**MATERIAL SAFETY DATA SHEET**  
 LaMOTTE COMPANY  
 PO BOX 329 - CHESTERTOWN - MARYLAND - 21620  
 TELEPHONE # FOR INFORMATION 410-778-3100  
**24 Hour Emergency Number (CHEM-TEL) 800-255-3924**

1. PRODUCT IDENTIFICATION

**Nitrite-Nitrogen Test Reagent #1**

*Code Nr. 5151*

2. HAZARDOUS INGREDIENTS

NAME	CAS #	TSCA #	%	PEL	TLV
† Phenol	108-95-2		1.4	19 mg/cubic m (skin)	19 mg/cubic m (skin)
Ammonium Chloride	12125-02-9		28	20 mg/cubic m (fume)	10 mg/cubic m (fume)
† Hydrochloric Acid	7647-01-0		<1	C 5ppm	C 7.5mg/cubic m

3. NON-HAZARDOUS INGREDIENTS EXCEPT WATER (7732-18-5)

NAME	CAS #	%
All other ingredients are proprietary, NJTSRN #80100291-5041p		

4. PHYSICAL DATA

*Appearance:* Clear Colorless Liquid  
*Solubility in Water:* Soluble     *Odor:* Glue     *Boiling Point:* Unknown     *Melt. Point:* N/A  
*Vapor Pressure:* Unknown     *Vapor Density:* Unknown     *pH:* <1

5. FIRE AND EXPLOSION DATA

*Flash Point (method used):* N/A     *Flammable Limit: LEL:* N/A     *UEL:* N/A  
*Extinguishing Media:* Not a fire hazard  
*HMIS Hazard: Health - 1 Flammability - 0 Reactivity - 0 Scale: 4 = Extreme, 3 = High, 2 = Moderate, 1 = Slight, 0 = Least*  
*Special Fire Fighting Procedures:*  
 N/A  
*Unusual Fire & Explosion Hazard:*  
 N/A

6. REACTIVITY DATA

*Stability:* *Conditions to avoid:* Heat  
 *Stable*     *Incompatibility (Materials to avoid):*  
 Strong oxidizers, bases, silver compounds, metals  
 *Unstable*  
*Hazardous Decomposition Products:* HCl gas, ammonia

7. HEALTH HAZARD DATA

*Toxicity:* orl rat LD50: 317 mg/kg for phenol; 1650 mg/kg for ammonium chloride solid  
*Primary Route of Entry:*  *Inhalation*      *Skin*     *Carcinogenicity:*  *None*      *NTP*  
 *Ingestion*      *N/A*      *OSHA*      *IARC*  
*Other Health Related Comments:*  
  
*Target Organs:* N/A  
*Signs and symptoms of exposure:*  
 Harmful if swallowed. May irritate eyes, nose, skin.  
*Medical Condition Aggravated by Exposure:* N/A

8. EMERGENCY FIRST AID PROCEDURES

*Eye Contact:* Flush with water for 15 minutes. Contact a physician.  
*Ingestion:* Do not induce vomiting. Rinse out mouth. Drink plenty of water. Contact a physician.  
*Inhalation:*  
 Remove to fresh air.  
*Skin Contact:*  
 Flush skin with water while removing affected clothing. Wash skin with soap and water.

9. SPILL AND DISPOSAL PROCEDURES

*Spill and Leak:*  
 Cover spill with sodium bicarbonate. Small spill: Flush neutralized slurry down drain with excess water. Large spill: Collect slurry, containerize, and hold for disposal as hazardous waste.  
*Disposal:*  
 Add to solution of soda ash and slaked lime. Small spill: Add neutralized solution to running water & wash down drain. Large spill: Containerize and hold for disposal as hazardous waste, according to federal, state and local regulations.

10. PRECAUTIONARY MEASURES

*In Handling:*  *Gloves*      *Eve Protection*      *N/A*      *Other:* Lab Coat  
*Ventilation*      *Normal*      *Mechanical*      *Respiratory Protection*  
*Work/Hygienic Practices:* Avoid contact with skin or clothing.

11. SPECIAL PRECAUTIONS

N/A

*DATE:* 2/14/97     The above information is believed to be correct but does not claim to be all inclusive and should be used only as a guide.  
 † This is a toxic chemical subject to reporting requirements of section 313 of EPCRA and 40CFR372.

**MATERIAL SAFETY DATA SHEET**  
 LaMOTTE COMPANY  
 PO BOX 329 - CHESTERTOWN - MARYLAND - 21620  
 TELEPHONE # FOR INFORMATION 410-778-3100  
**24 Hour Emergency Number (CHEM-TEL) 800-255-3924**

1. PRODUCT IDENTIFICATION

**Nitrite-Nitrogen Test Reagent** Code Nr. **5152**  
**#2**

2. HAZARDOUS INGREDIENTS

NAME	CAS #	TSCA #	%	PEL	TLV
† Hydrochloric Acid	7647-01-0		20	C 7 mg/cubic m	C 5 ppm

3. NON-HAZARDOUS INGREDIENTS EXCEPT WATER (7732-18-5)

NAME	CAS #	%
Water to 100%		

4. PHYSICAL DATA

Appearance: Clear Colorless Liquid  
 Solubility in Water: Soluble Odor: Slight chlorine Boiling Point: Unknown Melt. Point: N/A  
 Vapor Pressure: >1atm @ 20 degC Vapor Density: >1 (Air=1) pH: <1

5. FIRE AND EXPLOSION DATA

Flash Point (method used) N/A Flammable Limit: LEL: N/A UEL: N/A  
 Extinguishing Media: Appropriate to surrounding fire  
 HMIS Hazard: Health - 2 Flammability - 0 Reactivity - 1 Scale: 4 = Extreme, 3 = High, 2 = Moderate, 1 = Slight, 0 = Least  
 Special Fire Fighting Procedures:  
 Firefighters wear self-contained breathing apparatus  
 Unusual Fire & Explosion Hazard:  
 May emit flammable hydrogen gas upon contact with metal.

6. REACTIVITY DATA

Stability: Conditions to avoid: Heat  
 Stable Incompatibility (Materials to avoid):  
 Metals, strong caustics, sulfides and sulfites. Contact with metals causes formation of flammable and explosive hydrogen gas.  
 Unstable Hazardous Decomposition Products: Hydrogen chloride gas, hydrogen, chlorine

7. HEALTH HAZARD DATA

Toxicity: Unknown  
 Primary Route of Entry:  Inhalation  Skin  N/A Carcinogenicity:  None  NTP  
 Ingestion  OSHA  IARC  
 Other Health Related Comments:  
 Target Organs: Corrosive to all body parts, Respiratory System  
 Signs and symptoms of exposure:  
 Severe burns. Ingestion may be fatal. Inhalation can cause coughing, chest pains, damage to lungs.  
 Medical Condition Aggravated by Exposure: N/A

8. EMERGENCY FIRST AID PROCEDURES

Eye Contact: Immediately flush with water for at least 15 minutes. Consult a physician.  
 Ingestion: Do not induce vomiting. Rinse out mouth. Drink plenty of water. Call a doctor immediately.  
 Inhalation:  
 Remove to fresh air. Give artificial respiration if not breathing. If breathing is difficult, give oxygen.  
 Skin Contact:  
 Immediately flush with water for at least 15 minutes while removing affected clothing. Consult a physician.

9. SPILL AND DISPOSAL PROCEDURES

Spill and Leak:  
 Cover with sodium bicarbonate or soda ash/slaked lime mixture. Mix and carefully add water to form slurry. Scoop up and wash down drain with excess water.  
 Disposal:  
 Add very slowly with stirring to a large volume of soda ash & slaked lime (sodium carbonate & calcium hydroxide). Pour this neutralized solution down drain with excess water. Dispose according to federal, state and local regulations.

10. PRECAUTIONARY MEASURES

In Handling:  Gloves  Eye Protection  N/A  Other: Lab Coat  
 Ventilation  Normal  Mechanical  Respiratory Protection  
 Work/Hygienic Practices: Avoid contact with skin and clothing and inhalation of vapor.

11. SPECIAL PRECAUTIONS

Store away from incompatible items--strong bases, metals, etc.

DATE: 2/2/99 The above information is believed to be correct but does not claim to be all inclusive and should be used only as a guide.

† This is a toxic chemical subject to reporting requirements of section 313 of EPCRA and 40CFR372.



# MSDS

P.O. Box 329 - 802 Washington Avenue Chestertown, MD 21620 - USA

## MATERIAL SAFETY DATA SHEET

TELEPHONE # FOR INFORMATION 410 778-3100

24 HOUR EMERGENCY NUMBER (CHEM-TEL): USA, Canada, Puerto Rico 800-255-3924;

Outside North American Continent 813-248-0585 (call Collect)

### 1. Product Identification

**Product Code:** 5153

**Product Description:** Nitrite-Nitrogen  
Reagent 3

**Manufactured By:** LaMotte Company  
802 Washington Avenue  
Chestertown, MD 21620

### 2. Composition/Information On Ingredients

Hazard	CAS#/Name	%	PEL	TLV
Yes	1310-73-2 Sodium Hydroxide	15	C 2 mg/m <sup>3</sup>	C 2 mg/m <sup>3</sup>
No	7732-18-5 Water	85	None Established	None Established

### 3. Hazards Overview

**Primary Route Of Entry:** Eye Skin Ingestion Inhalation

Poison! Danger! Corrosive. Liquid and mist cause severe burns to all body tissue. Inhalation may cause coughing, chest pains, damage to lungs. Ingestion may be fatal. Reacts with water, acids, and other materials.

#### HMIS Hazard

Scale: 4 = Extreme, 3 = High, 2 = Moderate, 1 = Slight, 0 = Least

Health: 3      Flammability: 0      Reactivity: 2

**Carcinogenicity:** None:

#### **Other Health Related Comments:**

Sodium hydroxide has been investigated as a mutagen.

---

**Product Code:** 5153

**Product Description:** Nitrite-Nitrogen  
Reagent 3

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#### **4. First Aid Measures**

**Eye Contact:** Immediately flush with water for 15 minutes while periodically lifting upper and lower eyelids. Contact physician immediately.

**Skin Contact:** Flush with water for 15 minutes while removing affected clothing/shoes. Wash. Contact physician. Wash clothing prior to reuse.

**Ingestion:** DO NOT induce vomiting. Drink several glasses of water or milk. Contact physician immediately.

**Inhalation:** Remove to fresh air. If breathing is difficult, give oxygen. If not breathing, begin artificial respiration and seek immediate medical attention.

---

#### **5. Fire Fighting Measures**

**Flash Point (Method Used):** N/A

**LEL:** N/A

**UEL:** N/A

**Extinguishing Media:** Not a fire hazard

**Special Fire Fighting Procedures:** Wear protective equipment.

**Unusual Fire & Explosion Hazard:** Can react with metals to produce hydrogen gas which can form an explosive mixture with air.

---

#### **6. Accidental Release Measures**

Wear appropriate PPE and ventilate area. Neutralize spill with 6M hydrochloric (or similar) acid, place into chemical waste container, and hold for disposal. Dispose according to federal, state, and local regulations.

---

#### **7. Handling & Storage**

Store in cool, dry, area away from incompatible materials such as strong acids and metals

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---

**Product Code:** 5153

**Product Description:** Nitrite-Nitrogen  
Reagent 3

---

## **8. Exposure Controls/Personal Protection**

### **Ventilation**

Normal

### **Protection When Handling**

Eye Protection Gloves Lab Coat

chemical gloves

safety glasses

**Work/Hygenic Practices:** Avoid all contact with eyes, skin, or clothing. Wash after handling.

---

## **9. Physical & Chemical Properties**

**Appearance:** Clear Colorless Liquid

**Solubility In Water:** Soluble

**Odor:** None

**pH:** 14

**Vapor Density:** Unknown

**Vapor Pressure:** <13 mm @ 20° C

**Boiling Point:** 107° C

**Melting Point:** ca. -10° C

---

## **10. Stability & Reactivity**

**Stable:** Yes

**Conditions To Avoid:** Heat

**Incompatibility (Materials To Avoid):** Strong acids, metals

**Hazardous Decomposition Products:** N/A

---

## **11. Toxicological Information**

**Target Organs:** Corrosive to all body parts Eyes Skin

---

**Product Code:** 5153

**Product Description:** Nitrite-Nitrogen  
Reagent 3

---

## 12. Ecological Information

Information Not Yet Available

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## 13. Disposal Considerations

Dispose according to federal, state, and local regulations.

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## 14. Transportation Information

**Proper Shipping Name:**

**DOT:** SODIUM HYDROXIDE SOLUTION

**IATA:** SODIUM HYDROXIDE SOLUTION

**Hazard Class/Div:**

**DOT:** 8

**IATA:** 8

**UN:** 1824

**Packing Group:** II

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## 15. Regulatory Information

### Chemical Inventory Status

Hazard	Ingredient	USA	Europe	--- Canada ---		Australia	Japan
		TSCA	EC	DSL	NDSL		
Yes	1310-73-2 Sodium Hydroxide	Yes	Yes	Yes	No	Yes	Yes
No	7732-18-5 Distilled Water	Yes	Yes	Yes	No	Yes	Yes

### Federal, State, & International Regulations

Ingredient	--- SARA 302 ---		----- SARA 313 -----		CERCLA	RCRA 261.33	TSCA 8(D)
	RQ	TPQ	Listed	Chemical Category			
1310-73-2 Sodium Hydroxide	No	No	No	No	1000	No	No
7732-18-5 Distilled Water	No	No	No	No	No	No	No

---

**Product Code:** 5153

**Product Description:** Nitrite-Nitrogen  
Reagent 3

---

--- SARA 311/312 ---

**Hazard Categories**

----- Australia -----

**Hazchem  
Code**

**Poison  
Schedule**

**This MSDS Is  
WHMIS Compliant**

**Ingredient**    **Acute**    **Chronic**    **Fire**    **Pressure**    **Reactivity**

1310-73-2    Yes    No    No    No    Yes  
Sodium Hydroxide

7732-18-5    No    No    No    No    No    None Allocated    None Allocated  
Distilled Water

**product 5153**    Yes    Yes    No    No    Yes    2R    S6    Yes  
**as a whole**

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**16. Other Information**

Keep out of reach of children.

**Prepared By:** Regulatory Affairs Department

**Revised:** 7/10/2009

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**MATERIAL SAFETY DATA SHEET**  
 LaMOTTE COMPANY  
 PO BOX 329 - CHESTERTOWN - MARYLAND - 21620  
 TELEPHONE # FOR INFORMATION 410-778-3100  
**24 Hour Emergency Number (CHEM-TEL) 800-255-3924**

1. PRODUCT IDENTIFICATION

**Phosphorus Reagent 2**

Code Nr. **5156**

2. HAZARDOUS INGREDIENTS

NAME	CAS #	TSCA #	%	PEL	TLV
Acetic Acid	64-19-7		10	10 ppm	25 mg/cubic m
Sodium Molybdate, dihydrate	10102-40-6		2.5	5 mg/cubic m as Mo	5 mg/cubic m as Mo

3. NON-HAZARDOUS INGREDIENTS EXCEPT WATER (7732-18-5)

NAME	CAS #	%
Water to 100%		

4. PHYSICAL DATA

*Appearance:* Clear Colorless Liquid  
*Solubility in Water:* Soluble     *Odor:* Vinegar     *Boiling Point:* Unknown     *Melt. Point:* N/A  
*Vapor Pressure:* Unknown     *Vapor Density:* Unknown     *pH:* 4

5. FIRE AND EXPLOSION DATA

*Flash Point (method used):* N/A     *Flammable Limit: LEL:* N/A     *UEL:* N/A  
*Extinguishing Media:* Not a fire hazard  
*HMIS Hazard: Health - 1    Flammability - 0    Reactivity - 1    Scale: 4 = Extreme, 3 = High, 2 = Moderate, 1 = Slight, 0 = Least*  
*Special Fire Fighting Procedures:*  
 N/A  
*Unusual Fire & Explosion Hazard:*  
 N/A

6. REACTIVITY DATA

*Stability:* *Conditions to avoid:* Heat  
 *Stable*     *Incompatibility (Materials to avoid):*  
 Bases, metals  
 *Unstable*     *Hazardous Decomposition Products:* COx

7. HEALTH HAZARD DATA

*Toxicity:* Unknown  
*Primary Route of Entry:*      *Inhalation*      *Skin*     *Carcinogenicity:*      *None*      *NTP*  
     *Ingestion*      *N/A*      *OSHA*      *IARC*  
*Other Health Related Comments:*  
  
*Target Organs:* N/A  
*Signs and symptoms of exposure:*  
 May be harmful if swallowed. May irritate eyes, nose, skin and respiratory tract.  
*Medical Condition Aggravated by Exposure:* N/A

8. EMERGENCY FIRST AID PROCEDURES

*Eye Contact:* Immediately flush with water for 15 minutes. Consult a physician.  
*Ingestion:* Do not induce vomiting. Rinse out mouth. Drink plenty of water. Consult a physician.  
*Inhalation:*  
 Remove to fresh air.  
*Skin Contact:*  
 Immediately flush with water while removing affected clothing. Wash skin with soap and water.

9. SPILL AND DISPOSAL PROCEDURES

*Spill and Leak:*  
 Cover with sodium bicarbonate. Mop up neutralized slurry and wash down drain with excess water.  
  
*Disposal:*  
 Neutralize with dilute sodium hydroxide or sodium bicarbonate. Flush down drain with excess water. Dispose according to federal, state and local regulations.

10. PRECAUTIONARY MEASURES

*In Handling:*      *Gloves*      *Eve Protection*      *N/A*      *Other: Lab Coat*  
*Ventilation*      *Normal*      *Mechanical*      *Respiratory Protection*  
*Work/Hygienic Practices:* Avoid contact with skin and clothing. Wash after handling.

11. SPECIAL PRECAUTIONS

Keep tightly closed. Use with adequate ventilation.

**DATE:** 5/6/99     The above information is believed to be correct but does not claim to be all inclusive and should be used only as a guide.

† This is a toxic chemical subject to reporting requirements of section 313 of EPCRA and 40CFR372.



# MSDS

P.O. Box 329 - 802 Washington Avenue Chestertown, MD 21620 - USA

## MATERIAL SAFETY DATA SHEET

TELEPHONE # FOR INFORMATION 410 778-3100

24 HOUR EMERGENCY NUMBER (CHEM-TEL): USA, Canada, Puerto Rico 800-255-3924;

Outside North American Continent 813-248-0585 (call Collect)

### 1. Product Identification

**Product Code:** 5157

**Product Description:** Phosphorus Reagent #3 tablets

**Manufactured By:** LaMotte Company

802 Washington Avenue

Chestertown, MD 21620

### 2. Composition/Information On Ingredients

Hazard	CAS#/Name	%	PEL	TLV
Yes	10025-69-1 Stannous Chloride Dihydrate	1.5	2 mg/cubic m as Sn	2 mg/cubic m as Sn
Yes	7447-40-7 Potassium Chloride	>98%	15 mg/cubic m (dust)	10 mg/cubic m

### 3. Hazards Overview

**Primary Route Of Entry:** Ingestion

May irritate eyes and skin. Ingestion of large quantities may cause gastrointestinal irritation and circulatory problems.

#### HMIS Hazard

Scale: 4 = Extreme, 3 = High, 2 = Moderate, 1 = Slight, 0 = Least

Health: 1      Flammability: 0      Reactivity: 0

**Carcinogenicity:** None

**Other Health Related Comments:**

---

**Product Code:** 5157

**Product Description:** Phosphorus Reagent #3 tablets

---

#### **4. First Aid Measures**

**Eye Contact:** Flush thoroughly with water.

**Skin Contact:** Flush with water. Wash with soap and water.

**Ingestion:** Drink glass of water. Consult a physician.

**Inhalation:** N/A

---

#### **5. Fire Fighting Measures**

**Flash Point (Method Used):** N/A

**LEL:** N/A

**UEL:** N/A

**Extinguishing Media:** Not a fire hazard

**Special Fire Fighting Procedures:** N/A

**Unusual Fire & Explosion Hazard:** N/A

---

#### **6. Accidental Release Measures**

Sweep up. Dissolve in water and flush down drain with excess water.

---

#### **7. Handling & Storage**

Store in cool, dry place away from heat and moisture.

---

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**Product Code:** 5157

**Product Description:** Phosphorus Reagent #3 tablets

---

## **8. Exposure Controls/Personal Protection**

### **Ventilation**

Normal

### **Protection When Handling**

Eye Protection

**Work/Hygenic Practices:** Avoid handling tablets. Wash after handling.

---

## **9. Physical & Chemical Properties**

<b>Appearance:</b>	White Tablet	<b>Vapor Density:</b>	N/A
<b>Solubility In Water:</b>	Soluble	<b>Vapor Pressure:</b>	N/A
<b>Odor:</b>	None	<b>Boiling Point:</b>	N/A
<b>pH:</b>	3 (1 tablet/10mL water)	<b>Melting Point:</b>	ca.750 deg C

---

## **10. Stability & Reactivity**

<b>Stable:</b>	Yes
<b>Conditions To Avoid:</b>	Moisture, extreme heat or cold
<b>Incompatibility (Materials To Avoid):</b>	N/A
<b>Hazardous Decomposition Products:</b>	N/A

---

## **11. Toxicological Information**

Oral rat LD50: 2600 mg/kg for potassium chloride; investigated as a mutagen. Stannous chloride, anhydrous--Oral rat LD50:700 mg/kg. Investigated as a tumorigen, mutagen, reproductive effector. Hydrate: investigated as a mutagen, reproductive effector.

**Target Organs:** Unknown

**Pre-Existing Conditions Aggravated By Exposure:** Persons with impaired kidney function

---

**Product Code:** 5157

**Product Description:** Phosphorus Reagent #3 tablets

---

## **12. Ecological Information**

Information Not Yet Available

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## **13. Disposal Considerations**

Dissolve in water and flush down drain with excess water. Dispose according to federal, state and local regulations.

---

## **14. Transportation Information**

Not Regulated For Transport

---

## **15. Regulatory Information**

### **Chemical Inventory Status**

Hazard	Ingredient	USA	Europe	--- Canada ---		Australia	Japan
		TSCA	EC	DSL	NDSL		
Yes	7772-99-8 Stannous Chloride anhydrous	Yes	Yes	Yes	No	Yes	Yes
Yes	7447-40-7 Potassium Chloride	Yes	Yes	Yes	No	Yes	Yes

### **Federal, State, & International Regulations**

Ingredient	--- SARA 302 ---		----- SARA 313 -----		CERCLA	RCRA 261.33	TSCA 8(D)
	RQ	TPQ	Listed	Chemical Category			
7772-99-8 Stannous Chloride anhydrous	No	No	No	No	No	No	No
7447-40-7 Potassium Chloride	No	No	No	No	No	No	No

---

**Product Code:** 5157

**Product Description:** Phosphorus Reagent #3 tablets

---

--- SARA 311/312 ---

**Hazard Categories**

----- Australia -----

**Hazchem  
Code**

**Poison  
Schedule**

**This MSDS Is  
WHMIS Compliant**

**Ingredient**    **Acute**    **Chronic**    **Fire**    **Pressure**    **Reactivity**

7772-99-8    Yes    Yes    No    No    No    None Allocated    None Allocated  
Stannous Chloride anhydrous

7447-40-7    Yes    No    No    No    No    None Allocated    None Allocated  
Potassium Chloride

**product**    Yes    No    No    No    No    None Allocated    None Allocated    Yes  
**5157**  
**as a whole**

---

**16. Other Information**

**Prepared By:** IP, Regulatory Affairs Department

**Revised:** 7/28/2006

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# MATERIAL SAFETY DATA SHEET

LaMOTTE COMPANY  
PO BOX 329 - CHESTERTOWN - MARYLAND - 21620  
TELEPHONE # FOR INFORMATION 410-778-3100

**24 Hour Emergency Number (CHEM-TEL) 800-255-3924**

## 1. PRODUCT IDENTIFICATION

**Potassium Reagent B Tablets**

*Code Nr.* **5161**

## 2. HAZARDOUS INGREDIENTS

NAME	CAS #	TSCA #	%	PEL	TLV
^ Sodium Nitrite	7632-00-0		60	N/E	N/E
^ Sodium Cobaltinitrite	13600-98-1		29	N/E	N/E

## 3. NON-HAZARDOUS INGREDIENTS EXCEPT WATER (7732-18-5)

NAME	CAS #	%
Sodium Benzoate	532-32-1	11

## 4. PHYSICAL DATA

<i>Appearance:</i> Small Gold Tablet			
<i>Solubility in Water:</i> Soluble	<i>Odor:</i> N/A	<i>Boiling Point:</i> N/A	<i>Melt. Point:</i> Unknown
<i>Vapor Pressure:</i> N/A	<i>Vapor Density:</i> N/A	<i>pH:</i> 6(1 tablet in 10mL water)	

## 5. FIRE AND EXPLOSION DATA

<i>Flash Point (method used):</i> N/A	<i>Flammable Limit: LEL:</i> N/A	<i>UEL:</i> N/A
<i>Extinguishing Media:</i> Water spray		
<i>HMIS Hazard: Health - 2    Flammability - 0    Reactivity - 1    Scale: 4 = Extreme, 3 = High, 2 = Moderate, 1 = Slight, 0 = Least</i>		
<i>Special Fire Fighting Procedures:</i> N/A		
<i>Unusual Fire &amp; Explosion Hazard:</i> May emit toxic fumes or explode under fire conditions.		

## 6. REACTIVITY DATA

<i>Stability:</i>	<i>Conditions to avoid:</i> Heat, moisture
<input checked="" type="checkbox"/> <i>Stable</i>	<i>Incompatibility (Materials to avoid):</i> Strong reducers, acids, organics
<input type="checkbox"/> <i>Unstable</i>	<i>Hazardous Decomposition Products:</i> NOx

## 7. HEALTH HAZARD DATA

<i>Toxicity:</i> orl rat LD50: 85 mg/kg for sodium nitrite	
<i>Primary Route of Entry:</i>	<input checked="" type="checkbox"/> <i>Inhalation</i> <input checked="" type="checkbox"/> <i>Skin</i> <input type="checkbox"/> <i>N/A</i>
	<i>Carcinogenicity:</i> <input checked="" type="checkbox"/> <i>None</i> <input type="checkbox"/> <i>NTP</i> <input type="checkbox"/> <i>OSHA</i> <input type="checkbox"/> <i>IARC</i>
<i>Other Health Related Comments:</i>	
<i>Target Organs:</i> Blood, Heart, Lungs,	
<i>Signs and symptoms of exposure:</i> Toxic, irritant, sensitizer. Harmful if swallowed or inhaled.	
<i>Medical Condition Aggravated by Exposure:</i> Asthma	

## 8. EMERGENCY FIRST AID PROCEDURES

<i>Eye Contact:</i> Flush thoroughly with water for 15 minutes.
<i>Ingestion:</i> Induce vomiting immediately. Consult a physician.
<i>Inhalation:</i> Remove to fresh air.
<i>Skin Contact:</i> Flush thoroughly with water. Wash with soap and water.

## 9. SPILL AND DISPOSAL PROCEDURES

<i>Spill and Leak:</i> Avoid crushing tablets and raising dust. Sweep up, dissolve in water and flush down drain.
<i>Disposal:</i> Dissolve in water and flush down drain. Dispose according to federal, state and local regulations.

## 10. PRECAUTIONARY MEASURES

<i>In Handling:</i> <input checked="" type="checkbox"/> <i>Gloves</i> <input checked="" type="checkbox"/> <i>Eye Protection</i> <input type="checkbox"/> <i>N/A</i> <input checked="" type="checkbox"/> <i>Other:</i> Lab Coat
<i>Ventilation:</i> <input checked="" type="checkbox"/> <i>Normal</i> <input type="checkbox"/> <i>Mechanical</i> <input type="checkbox"/> <i>Respiratory Protection</i>
<i>Work/Hygiene Practices:</i> Avoid handling tablets.

## 11. SPECIAL PRECAUTIONS

<i>Wash after handling.</i>
<b>DATE:</b> 5/15/02    The above information is believed to be correct but does not claim to be all inclusive and should be used only as a guide.

^ This is a toxic chemical subject to reporting requirements of section 313 of EPCRA and 40CFR372.

# MATERIAL SAFETY DATA SHEET

LaMOTTE COMPANY  
PO BOX 329 - CHESTERTOWN - MARYLAND - 21620  
TELEPHONE # FOR INFORMATION 410-778-3100

**24 Hour Emergency Number (CHEM-TEL) 800-255-3924**

## 1. PRODUCT IDENTIFICATION

**Potassium Reagent C**

*Code Nr.* **5162**

## 2. HAZARDOUS INGREDIENTS

NAME	CAS #	TSCA #	%	PEL	TLV
Ethyl Alcohol	64-17-5		80	1900 mg/cubic m	1000 ppm
Λ Methyl Alcohol	67-56-1		4	260 mg/cubic m	200 ppm
Sodium Hydroxide	1310-73-2		<0.1	2mg/cubic m	2mg/cubic m

## 3. NON-HAZARDOUS INGREDIENTS EXCEPT WATER (7732-18-5)

NAME	CAS #	%
Methyl Red	493-52-7	<0.1
Water to 100%		

## 4. PHYSICAL DATA

<i>Appearance:</i> Clear Yellow Liquid			
<i>Solubility in Water:</i> Soluble	<i>Odor:</i> Alcohol	<i>Boiling Point:</i> ca. 80 deg C	<i>Melt. Point:</i> N/A
<i>Vapor Pressure:</i> ca. 40 @ 20 deg	<i>Vapor Density:</i> >1 (Air=1)	<i>pH:</i> N/A	

## 5. FIRE AND EXPLOSION DATA

<i>Flash Point (method used)</i> 22 deg C-closed cup	<i>Flammable Limit: LEL:</i> 3.3%	<i>UEL:</i> 19%
<i>Extinguishing Media:</i> Dry chemical, CO <sub>2</sub> , or water spray		
<i>HMIS Hazard: Health - 1    Flammability - 3    Reactivity - 0    Scale: 4 = Extreme, 3 = High, 2 = Moderate, 1 = Slight, 0 = Least</i>		
<i>Special Fire Fighting Procedures:</i> N/A		
<i>Unusual Fire &amp; Explosion Hazard:</i> Vapors may travel distance to ignition source and flash back.		

## 6. REACTIVITY DATA

<i>Stability:</i>	<i>Conditions to avoid:</i> Heat, sources of ignition
<input checked="" type="checkbox"/> <i>Stable</i>	<i>Incompatibility (Materials to avoid):</i> Contact with nitric acid or other strong oxidizers
<input type="checkbox"/> <i>Unstable</i>	<i>Hazardous Decomposition Products:</i> CO <sub>x</sub>

## 7. HEALTH HAZARD DATA

<i>Toxicity:</i> orl hmn LDLo: 1400 mg/kg for ethanol, 143 mg/kg for methanol			
<i>Primary Route of Entry:</i>	<input checked="" type="checkbox"/> <i>Inhalation</i>	<input checked="" type="checkbox"/> <i>Skin</i>	<i>Carcinogenicity:</i> <input checked="" type="checkbox"/> <i>None</i> <input type="checkbox"/> <i>NTP</i>
	<input checked="" type="checkbox"/> <i>Ingestion</i>	<input type="checkbox"/> <i>N/A</i>	<input type="checkbox"/> <i>OSHA</i> <input type="checkbox"/> <i>IARC</i>
<i>Other Health Related Comments:</i>			
<i>Target Organs:</i> Central Nervous System			
<i>Signs and symptoms of exposure:</i> Vapors and liquid harmful. Inhalation can cause headache, dizziness, nausea. May be irritating to eyes and skin. Harmful if swallowed: Ingestion may be fatal or cause blindness.			
<i>Medical Condition Aggravated by Exposure:</i> N/A			

## 8. EMERGENCY FIRST AID PROCEDURES

<i>Eye Contact:</i> Flush thoroughly with water. Contact a physician.
<i>Ingestion:</i> Call a physician immediately.
<i>Inhalation:</i> Remove to fresh air.
<i>Skin Contact:</i> Flush with water. Wash with soap and water.

## 9. SPILL AND DISPOSAL PROCEDURES

<i>Spill and Leak:</i> Eliminate all sources of ignition. Absorb on paper. Evaporate on iron pan in hood.
<i>Disposal:</i> Small quantity: Flush down drain with excess water. Large quantity: Atomize into an incinerator. Dispose according to federal, state and local regulations.

## 10. PRECAUTIONARY MEASURES

<i>In Handling:</i> <input checked="" type="checkbox"/> <i>Gloves</i> <input checked="" type="checkbox"/> <i>Eye Protection</i> <input type="checkbox"/> <i>N/A</i> <input checked="" type="checkbox"/> <i>Other:</i> Lab Coat
<i>Ventilation</i> <input type="checkbox"/> <i>Normal</i> <input checked="" type="checkbox"/> <i>Mechanical</i> <input type="checkbox"/> <i>Respiratory Protection</i>
<i>Work/Hygiene Practices:</i> Use with adequate ventilation and avoid contact with skin.

## 11. SPECIAL PRECAUTIONS

Do not use near heat or flame.

**DATE:** 3/11/02                      The above information is believed to be correct but does not claim to be all inclusive and should be used only as a guide.

Λ This is a toxic chemical subject to reporting requirements of section 313 of EPCRA and 40CFR372.





# MSDS

P.O. Box 329 - 802 Washington Avenue Chestertown, MD 21620 - USA

## MATERIAL SAFETY DATA SHEET

TELEPHONE # FOR INFORMATION 410 778-3100

24 HOUR EMERGENCY NUMBER (CHEM-TEL): USA, Canada, Puerto Rico 800-255-3924;

Outside North American Continent 813-248-0585 (call Collect)

### 1. Product Identification

**Product Code:** 5643

**Product Description:** Soil Flocculating Reagent  
Acrylamide homopolymer in H2O

**Manufactured By:** LaMotte Company  
802 Washington Avenue  
Chestertown, MD 21620

### 2. Composition/Information On Ingredients

Hazard	CAS#/Name	%	PEL	TLV
	N/A Polyacrylamide (Superfloc N-300 flocculant)	<0.1		
No	7732-18-5 water	>99		

### 3. Hazards Overview

**Primary Route Of Entry:** Ingestion

N/A

#### HMIS Hazard

Scale: 4 = Extreme, 3 = High, 2 = Moderate, 1 = Slight, 0 = Least

Health: 0      Flammability: 0      Reactivity: 0

**Carcinogenicity:** None:

#### **Other Health Related Comments:**

Non-hazardous, non-toxic

---

**Product Code:** 5643

**Product Description:** Soil Flocculating Reagent  
Acrylamide homopolymer in H2O

---

#### **4. First Aid Measures**

**Eye Contact:** Flush with water.

**Skin Contact:** Wash hands.

**Ingestion:** None

**Inhalation:** N/A

---

#### **5. Fire Fighting Measures**

**Flash Point (Method Used):** N/A

**LEL:** N/A

**UEL:** N/A

**Extinguishing Media:** Not a fire hazard

**Special Fire Fighting Procedures:** N/A

**Unusual Fire & Explosion Hazard:** N/A

---

#### **6. Accidental Release Measures**

Mop up and flush down drain with water.

---

#### **7. Handling & Storage**

Store in cool, dry, place. Keep solution from freezing.

---

---

**Product Code:** 5643

**Product Description:** Soil Flocculating Reagent  
Acrylamide homopolymer in H2O

---

## **8. Exposure Controls/Personal Protection**

### **Ventilation**

Normal

### **Protection When Handling**

N/A

**Work/Hygenic Practices:** None

---

## **9. Physical & Chemical Properties**

**Appearance:** Clear Colorless Liquid

**Solubility In Water:** Soluble

**Odor:** None

**pH:** 6 - 7

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

**Vapor Pressure:** 760 mm Hg

**Boiling Point:** 100 deg C

**Melting Point:** 0 deg C

---

## **10. Stability & Reactivity**

**Stable:** Yes

**Conditions To Avoid:** N/A

**Incompatibility (Materials To Avoid):** N/A

**Hazardous Decomposition Products:** N/A

---

## **11. Toxicological Information**

non-toxic

**Target Organs:** N/A

---

---

**Product Code:** 5643

**Product Description:** Soil Flocculating Reagent  
Acrylamide homopolymer in H2O

---

**12. Ecological Information**

Information Not Yet Available

---

**13. Disposal Considerations**

Flush down drain. Dispose according to federal, state and local regulations.

---

**14. Transportation Information**

Not Regulated For Transport

---

**15. Regulatory Information**

**Chemical Inventory Status**

Hazard	Ingredient	USA	Europe	--- Canada ---		Australia	Japan
		TSCA	EC	DSL	NDSL		
No	7732-18-5 Distilled Water	Yes	Yes	Yes	No	Yes	Yes

**Federal, State, & International Regulations**

Ingredient	--- SARA 302 ---		----- SARA 313 -----		CERCLA	RCRA 261.33	TSCA 8(D)
	RQ	TPQ	Listed	Chemical Category			
7732-18-5 Distilled Water	No	No	No	No	No	No	No

---

**Product Code:** 5643

**Product Description:** Soil Flocculating Reagent  
Acrylamide homopolymer in H2O

---

Ingredient	--- SARA 311/312 --- Hazard Categories					----- Australia -----		This MSDS Is WHMIS Compliant
	Acute	Chronic	Fire	Pressure	Reactivity	Hazchem Code	Poison Schedule	
7732-18-5 Distilled Water	No	No	No	No	No	None Allocated	None Allocated	
<b>product 5643 as a whole</b>	No	No	No	No	No	None Allocated	None Allocated	Yes

---

## **16. Other Information**

**Prepared By:** IP, Regulatory Affairs Department

**Revised:** 6/26/2007

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# MATERIAL SAFETY DATA SHEET

LaMOTTE COMPANY  
 PO BOX 329 - CHESTERTOWN - MARYLAND - 21620  
 TELEPHONE # FOR INFORMATION 410-778-3100  
 24 Hour Emergency Number (CHEM-TEL) 800-255-3924

## 1. PRODUCT IDENTIFICATION

**Sulfate Test Solution**

Code Nr. **5171**

## 2. HAZARDOUS INGREDIENTS

NAME	CAS #	TSCA #	%	PEL	TLV
^ Hydrochloric Acid	7647-01-0		0.2	C 7 mg/cubic m	C 5 mg/cubic m
Barium Chloride Dihydrate	10361-37-2		5	0.5 mg/cubic m	0.5 mg/cubic m

## 3. NON-HAZARDOUS INGREDIENTS EXCEPT WATER (7732-18-5)

NAME	CAS #	%
Water to 100%		

## 4. PHYSICAL DATA

*Appearance:* Clear Colorless Liquid  
*Solubility in Water:* Soluble      *Odor:* None      *Boiling Point:* >100 deg C      *Melt. Point:* N/A  
*Vapor Pressure:* Unknown      *Vapor Density:* Unknown      *pH:* 1

## 5. FIRE AND EXPLOSION DATA

*Flash Point (method used):* N/A      *Flammable Limit: LEL:* N/A      *UEL:* N/A  
*Extinguishing Media:* Not a fire hazard  
*HMS Hazard:* Health - 2      *Flammability:* 0      *Reactivity:* 0      *Scale:* 4 = Extreme, 3 = High, 2 = Moderate, 1 = Slight, 0 = Least  
*Special Fire Fighting Procedures:*  
 N/A  
*Unusual Fire & Explosion Hazard:*  
 N/A

## 6. REACTIVITY DATA

*Stability:*      *Conditions to avoid:* N/A  
 *Stable*      *Incompatibility (Materials to avoid):*  
 N/A  
 *Unstable*  
*Hazardous Decomposition Products:* Hydrogen chloride

## 7. HEALTH HAZARD DATA

*Toxicity:* orl rat LD50:118 mg/kg for Barium Chloride solid; orl hmn LDLo: 11 mg/kg, BaCl2 solid  
*Primary Route of Entry:*       *Inhalation*       *Skin*      *Carcinogenicity:*       *None*       *NTP*  
     *Ingestion*       *N/A*            *OSHA*       *IARC*  
*Other Health Related Comments:*  
  
*Target Organs:* Eyes, Skin,  
*Signs and symptoms of exposure:*  
 Harmful if swallowed. May irritate eyes, nose, skin.  
  
*Medical Condition Aggravated by Exposure:* N/A

## 8. EMERGENCY FIRST AID PROCEDURES

*Eye Contact:* Flush thoroughly with water for 15 minutes. Consult a physician.  
*Ingestion:* Rinse out mouth. Induce vomiting. Consult physician immediately.  
*Inhalation:*  
 Remove to fresh air.  
*Skin Contact:*  
 Flush skin with water while removing affected clothing. Wash skin with soap and water.

## 9. SPILL AND DISPOSAL PROCEDURES

*Spill and Leak:*  
 Collect spilled liquid, containerize, and hold for hazardous waste disposal or treat as follows:  
  
*Disposal:*  
 Add dilute sulfuric acid to precipitate barium sulfate. Filter off the insolubles and send to EPA approved landfill. Neutralize liquid with sodium bicarbonate and pour down drain with excess water. Dispose according to federal, state and local regulations.

## 10. PRECAUTIONARY MEASURES

*In Handling:*       *Gloves*       *Eve Protection*       *N/A*       *Other:* Lab Coat  
*Ventilation*       *Normal*       *Mechanical*       *Respiratory Protection*  
*Work/Hygenic Practices:* Avoid contact with skin and clothing. Wash hands after handling.

## 11. SPECIAL PRECAUTIONS

N/A

**DATE:** 4/11/2000      The above information is believed to be correct but does not claim to be all inclusive and should be used only as a guide.

^ This is a toxic chemical subject to reporting requirements of section 313 of FPCRA and 40CFR372

MATERIAL SAFETY DATA SHEET

LaMOTTE COMPANY
PO BOX 329 - CHESTERTOWN - MARYLAND - 21620
TELEPHONE # FOR INFORMATION 410-778-3100

24 Hour Emergency Number (CHEM-TEL) 800-255-3924

1. PRODUCT IDENTIFICATION

Universal Extracting Solution

Code Nr. 5173

2. HAZARDOUS INGREDIENTS

Table with 6 columns: NAME, CAS #, TSCA #, %, PEL, TLV. Row 1: Acetic Acid, 64-19-7, 3, 10 ppm, 25 mg/cubic m.

3. NON-HAZARDOUS INGREDIENTS EXCEPT WATER (7732-18-5)

Table with 3 columns: NAME, CAS #, %. Rows include Sodium Acetate, Magnifloc 905N flocculant, and Water to 100%.

4. PHYSICAL DATA

Appearance: Clear Colorless Liquid
Solubility in Water: Soluble
Odor: Vinegar
Boiling Point: Unknown
Melt. Point: N/A
Vapor Pressure: Unknown
Vapor Density: Unknown
pH: 5

5. FIRE AND EXPLOSION DATA

Flash Point (method used) N/A
Flammable Limit: LEL: N/A
UEL: N/A
Extinguishing Media: Not a fire hazard
HMIS Hazard: Health - 0 Flammability - 0 Reactivity - 0
Scale: 4 = Extreme, 3 = High, 2 = Moderate, 1 = Slight, 0 = Least
Special Fire Fighting Procedures: N/A
Unusual Fire & Explosion Hazard: N/A

6. REACTIVITY DATA

Stability: Conditions to avoid: N/A
Stable
Incompatibility (Materials to avoid): N/A
Unstable
Hazardous Decomposition Products: N/A

7. HEALTH HAZARD DATA

Toxicity: Non-toxic
Primary Route of Entry: Inhalation, Skin, Ingestion
Carcinogenicity: None, OSHA, IARC
Other Health Related Comments:
Target Organs: N/A
Signs and symptoms of exposure: May irritate eyes and skin.
Medical Condition Aggravated by Exposure: N/A

8. EMERGENCY FIRST AID PROCEDURES

Eye Contact: Flush thoroughly with water.
Ingestion: Drink 1 - 2 glasses of water.
Inhalation: Remove to fresh air.
Skin Contact: Flush with water. Wash with soap and water.

9. SPILL AND DISPOSAL PROCEDURES

Spill and Leak: Mop up and flush down drain with excess water.
Disposal: Pour down drain with excess water. Dispose according to federal, state and local regulations.

10. PRECAUTIONARY MEASURES

In Handling: Gloves, Eye Protection, N/A, Other: Lab Coat
Ventilation: Normal, Mechanical, Respiratory Protection
Work/Hygienic Practices: Avoid contact with skin and eyes.

11. SPECIAL PRECAUTIONS

N/A

DATE: 7/201 The above information is believed to be correct but does not claim to be all inclusive and should be used only as a guide.

This is a toxic chemical subject to reporting requirements of section 313 of EPCRA and 40CFR372.

**MATERIAL SAFETY DATA SHEET**  
 LaMOTTE COMPANY  
 PO BOX 329 - CHESTERTOWN - MARYLAND - 21620  
 TELEPHONE # FOR INFORMATION 410-778-3100  
**24 Hour Emergency Number (CHEM-TEL) 800-255-3924**

1. PRODUCT IDENTIFICATION

**Zinc Reagent #4** Code Nr. **5223**

2. HAZARDOUS INGREDIENTS

NAME	CAS #	TSCA #	%	PEL	TLV
Ammonium Hydroxide (16% w/w aqueous ammonia)	1336-21-6		57	35 mg/cubic m as NH3	25 ppm as NH3
Ammonium Chloride	12125-02-9		7	10 mg/cubic m (fume)	10 mg/cubic m (fume)

3. NON-HAZARDOUS INGREDIENTS EXCEPT WATER (7732-18-5)

NAME	CAS #	%
water to 100%		

4. PHYSICAL DATA

*Appearance:* Clear Colorless Liquid  
*Solubility in Water:* Soluble    *Odor:* Pungent, ammonia    *Boiling Point:* Unknown    *Melt. Point:* Unknown  
*Vapor Pressure:* about 32@ 25 C    *Vapor Density:* Unknown    *pH:* 11

5. FIRE AND EXPLOSION DATA

*Flash Point (method used):* N/A    *Flammable Limit: LEL:* N/A    *UEL:* N/A  
*Extinguishing Media:* Water spray  
*HMIS Hazard: Health - 2 Flammability - 1 Reactivity - 1*    *Scale: 4 = Extreme, 3 = High, 2 = Moderate, 1 = Slight, 0 = Least*  
*Special Fire Fighting Procedures:*  
 Firefighters wear SCBA.  
*Unusual Fire & Explosion Hazard:*  
 Gives off flammable vapors. Closed containers exposed to heat may explode.

6. REACTIVITY DATA

*Stability:* *Conditions to avoid:* Heat, light  
 *Stable*    *Incompatibility (Materials to avoid):*  
 Strong acids, metals, chlorine and bleaches  
 *Unstable*    *Hazardous Decomposition Products:* Ammonia, NOx

7. HEALTH HAZARD DATA

*Toxicity:* orl rat LD50: 350 mg/kg for ammonium hydroxide  
*Primary Route of Entry:*  *Inhalation*     *Skin*    *Carcinogenicity:*  *None*     *NTP*  
 *Ingestion*     *N/A*     *OSHA*     *IARC*  
*Other Health Related Comments:*  
*Target Organs:* Eyes, Lungs, Skin,  
*Signs and symptoms of exposure:*  
 Vapors harmful to mucous membranes. Causes severe burns, may be fatal if swallowed.  
*Medical Condition Aggravated by Exposure:* Respiratory conditions

8. EMERGENCY FIRST AID PROCEDURES

*Eye Contact:* Immediately flush with water for 15 minutes. Consult physician.  
*Ingestion:* Do not induce vomiting. Rinse mouth. Drink plenty of water. Call a doctor.  
*Inhalation:*  
 Remove to fresh air. If breathing has stopped give artificial respiration. If breathing is difficult, give oxygen.  
*Skin Contact:*  
 Immediately flush skin with water for 15 minutes while removing affected clothing.

9. SPILL AND DISPOSAL PROCEDURES

*Spill and Leak:*  
 Do not breathe vapor. Wear NIOSH approved respirator with ammonia vapor cartridge if airborne concentration exceeds TLV. Carefully neutralize with dilute HCl.  
 Mop up and flush down drain with excess water.  
*Disposal:*  
 Pour into water. Neutralize with dilute HCl and flush down drain with excess water. Dispose according to federal, state and local regulations.

10. PRECAUTIONARY MEASURES

*In Handling:*  *Gloves*     *Eye Protection*     *N/A*     *Other:* Lab Coat  
*Ventilation*     *Normal*     *Mechanical*     *Respiratory Protection*  
*Work/Hygienic Practices:* Use only with adequate ventilation. Avoid contact w/ skin and clothing.

11. SPECIAL PRECAUTIONS

Store tightly closed, away from heat, light, and acids.

DATE: 9/3/97    The above information is believed to be correct but does not claim to be all inclusive and should be used only as a guide.

† This is a toxic chemical subject to reporting requirements of section 313 of EPCRA and 40CFR372.



**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: 613-996-6666

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.

# MAGNESIUM OXIDE

## 1. Product Identification

**Synonyms:** Calcinated magnesia; Magnesia; Calcined Magnesite

**CAS No.:** 1309-48-4

**Molecular Weight:** 40.32

**Chemical Formula:** MgO

**Product Codes:**

J.T. Baker: 2476, 2480, 2484

Mallinckrodt: 12133, 5641, 6010, 6017, 6018

## 2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
Magnesium Oxide	1309-48-4	93 - 100%	Yes

## 3. Hazards Identification

### Emergency Overview

**CAUTION! MAY CAUSE IRRITATION TO 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: 2 - Moderate

Contact Rating: 1 - Slight

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

Storage Color Code: Green (General Storage)

### Potential Health Effects

---

**Inhalation:**

Nuisance dust. May cause irritation to the nasal passages, respiratory tract. 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.

**Ingestion:**

Magnesium oxide is slowly absorbed. Ingestion may cause rapid bowel evacuation.

**Skin Contact:**

No adverse effects expected.

**Eye Contact:**

May cause 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 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:**

Not considered to be a fire hazard.

**Explosion:**

Magnesium oxide reacts violently or ignites with interhalogens such as chlorine trifluoride (ClF<sub>3</sub>) or bromine pentafluoride (BrF<sub>5</sub>), and incandescently with phosphorus pentachloride (PCl<sub>5</sub>).

**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:**

Magnesium Oxide:

- OSHA Permissible Exposure Limit (PEL) -

15 mg/m<sup>3</sup> (TWA).

- ACGIH Threshold Limit Value (TLV) -

10 mg/m<sup>3</sup> (TWA), Inhalable fraction, 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 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:**

Bulky white powder.

### **Odor:**

Odorless.

### **Solubility:**

Insoluble in water.

### **Specific Gravity:**

3.58 @ 25C (77F)

### **pH:**

10.3

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

0

### **Boiling Point:**

3600C (6512F)

### **Melting Point:**

2800C (5072F)

### **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. Absorbs carbon dioxide and water from air.

**Hazardous Decomposition Products:**

None known.

**Hazardous Polymerization:**

Will not occur.

**Incompatibilities:**

Acids, interhalogens, phosphorus pentachloride, and chlorine trifluoride.

**Conditions to Avoid:**

Air, moisture, and incompatibles.

## 11. Toxicological Information

No LD50/LC50 information found relating to normal routes of occupational exposure. Investigated as a tumorigen.

-----\Cancer Lists\-----			
Ingredient	---NTP Known	Carcinogen--- Anticipated	IARC Category
Magnesium Oxide (1309-48-4)	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
Magnesium Oxide (1309-48-4)	Yes	Yes	Yes	Yes

-----\Chemical Inventory Status - Part 2\-----				
Ingredient	Korea	---Canada--- DSL	NDSL	Phil.
Magnesium Oxide (1309-48-4)	Yes	Yes	No	Yes

-----\Federal, State & International Regulations - Part 1\-----				
Ingredient	-SARA 302- RQ TPQ		-SARA 313- List	Chemical Catg.
Magnesium Oxide (1309-48-4)	No	No	No	No

-----\Federal, State & International Regulations - Part 2\-----	
	-RCRA- -TSCA-

Ingredient	CERCLA	261.33	8(d)
Magnesium Oxide (1309-48-4)	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 EYES AND RESPIRATORY TRACT.

**Label Precautions:**

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

**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.

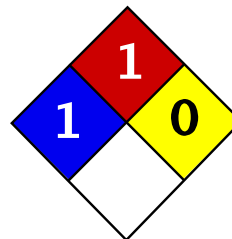
**Disclaimer:**

\*\*\*\*\*

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\*\*\*\*\*

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



Health	1
Fire	1
Reactivity	0
Personal Protection	E

## Material Safety Data Sheet Methyl green MSDS

### Section 1: Chemical Product and Company Identification

**Product Name:** Methyl green

**Catalog Codes:** SLM1810

**CAS#:** 14855-76-6

**RTECS:** PN3518500

**TSCA:** TSCA 8(b) inventory: Methyl green

**CI#:** 42585

**Synonym:**

4-[[4-(Dimethylamino)phenyl]][4-(dimethylimino)-2,5-cyclohexadien-1-ylidene]methyl-N,N-dimethylbenzylammonium bromide chloride

**Chemical Name:** Not available.

**Chemical Formula:** C27-H35-Br-Cl-N3

**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
Methyl green	14855-76-6	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. Cold water may be used. 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. Cold water may be used.

**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:** Not available.

**Flash Points:** Not available.

**Flammable Limits:** Not available.

**Products of Combustion:** These products are carbon oxides (CO, CO<sub>2</sub>), nitrogen oxides (NO, NO<sub>2</sub>...), halogenated compounds.

**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:**

Slightly explosive in presence of open flames and sparks.

Non-explosive in presence of shocks.

**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:** As with most organic solids, fire is possible at elevated temperatures

**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.

### 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:** Not available.

### Section 9: Physical and Chemical Properties

**Physical state and appearance:** Solid.

**Odor:** Not available.

**Taste:** Not available.

**Molecular Weight:** 516.95g/mole

**Color:** dark Red to Brown.

**pH (1% soln/water):** Not available.

**Boiling Point:** Not available.

**Melting Point:** Not available.

**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:** See solubility in water.

**Solubility:** Soluble in cold water, hot water.

### Section 10: Stability and Reactivity Data

**Stability:** The product is stable.

**Instability Temperature:** Not available.

**Conditions of Instability:** Excess heat, incompatible materials, dust generation

**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:** 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:

Skin: May cause skin irritation.

Eyes: May cause eye irritation.

Inhalation: May cause respiratory tract irritation.

Ingestion: May cause digestive tract irritation.

The toxicological properties of this substance have not been fully investigated.

### 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 more toxic than the product itself.

**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:** TSCA 8(b) inventory: Methyl green

**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.

S24/25- Avoid contact with skin and eyes.

**HMIS (U.S.A.):**

**Health Hazard:** 1

**Fire Hazard:** 1

**Reactivity:** 0

**Personal Protection:** E

**National Fire Protection Association (U.S.A.):**

**Health:** 1

**Flammability:** 1

**Reactivity:** 0

**Specific hazard:**

**Protective Equipment:**

Gloves.  
Lab coat.  
Dust respirator. Be sure to use an approved/certified respirator or equivalent.  
Safety glasses.

## Section 16: Other Information

**References:** Not available.

**Other Special Considerations:** Not available.

**Created:** 10/11/2005 01:26 PM

**Last Updated:** 11/06/2008 12:00 PM

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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.

# METHYL RED

## 1. Product Identification

**Synonyms:** 2-((4-(dimethylamino)phenyl)azo)-benzoic acid, hydrochloride; methyl red hydrochloride  
**CAS No.:** 63451-28-5  
**Molecular Weight:** 305.77  
**Chemical Formula:** C<sub>15</sub>H<sub>15</sub>N<sub>3</sub>O<sub>2</sub>.HCl  
**Product Codes:** 2696

## 2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
Methyl Red	63451-28-5	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: 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:**

May cause mild irritation to the mucous membranes. Systemic toxic effects have not been identified.

**Ingestion:**

Large oral doses may cause gastrointestinal disturbances. Systemic toxic effects have not been identified.

**Skin Contact:**

May cause mild irritation. Systemic toxic effects have not been identified.

**Eye Contact:**

May cause mild 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:**

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

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, stored in a cool, dry, ventilated area. Protect against physical damage. Isolate from any source of heat or ignition. Isolate from oxidizing materials. 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:**

Fine, bluish-purple crystals

### **Odor:**

Odorless.

### **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:**

175C (347F)

### **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:**

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 Known	Carcinogen Anticipated	IARC Category
Methyl Red (63451-28-5)	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
Methyl Red (63451-28-5)	Exempt	Yes	No	No

-----\Chemical Inventory Status - Part 2\-----				
Ingredient	Korea	--Canada-- DSL	NDSL	Phil.
Methyl Red (63451-28-5)	No	Yes	No	Yes

-----\Federal, State & International Regulations - Part 1\-----				
Ingredient	-SARA 302- RQ TPQ		SARA 313 List	Chemical Catg.
Methyl Red (63451-28-5)	No	No	No	No

-----\Federal, State & International Regulations - Part 2\-----			
Ingredient	CERCLA	-RCRA- 261.33	-TSCA- 8(d)
Methyl Red (63451-28-5)	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:**

INTENDED FOR R & D USE ONLY.  
NOT ON THE TSCA INVENTORY.

**Label First Aid:**

Not applicable.

**Product Use:**

Research and Development Use Only.

**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.)



# Methyl Red Hydrochloride

## Material Safety Data Sheet

### Section 1. Product and Company Identification

**Product Name** Methyl Red Hydrochloride

**Product Code** MX1400

**Manufacturer** EMD Chemicals Inc.

P.O. Box 70  
480 Democrat Road  
Gibbstown, NJ 08027

Prior to January 1, 2003 EMD Chemicals Inc. was  
EM Industries, Inc. or EM Science, Division of  
EM Industries, Inc.

**Effective Date** 3/3/2003

#### For More Information Call

856-423-6300 Technical Service  
Monday-Friday: 8:00 AM - 5:00 PM

#### In Case of Emergency Call

800-424-9300 CHEMTREC  
(USA)  
613-996-6666 CANUTEC  
(Canada)  
24 Hours/Day: 7 Days/Week

**Synonym** None.

**Material Uses** Analytical reagent.

**Chemical Family** Dyes, Stains and Indicators

---

### Section 2. Composition and Information on Ingredients

**Component**

**CAS # % by Weight**

Methyl Red Hydrochloride

63451-28-5 100

---

### Section 3. Hazards Identification

**Physical State and Appearance** Solid. (Crystals solid.)

**Emergency Overview** CAUTION!

Handling care generally in keeping with safe laboratory practices is recommended.

**Routes of Entry** Inhalation. Ingestion.

#### Potential Acute Health Effects

**Eyes** No known acute effects of this product resulting from eye contact.

**Skin** No known acute effects of this product resulting from skin contact.

**Inhalation** No known acute effects of this product resulting from inhalation.

**Ingestion** No known acute effects of this product resulting from ingestion.

#### Potential Chronic Health Effects

**Carcinogenic Effects** This material is not known to cause cancer in animals or humans.

Additional information See Toxicological Information (section 11)

**Medical Conditions Aggravated by Overexposure:** 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

## Methyl Red Hydrochloride

flush eyes with plenty of water for at least 15 minutes. Cold water may be used. Get medical attention.

<b>Skin Contact</b>	In case of contact, immediately flush skin with plenty of water. Remove contaminated clothing and shoes. Cold water may be used. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention.
<b>Inhalation</b>	If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.
<b>Ingestion</b>	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.

---

### Section 5. Fire Fighting Measures

<b>Flammability of the Product</b>	Non-flammable.
<b>Auto-ignition Temperature</b>	Not applicable.
<b>Flash Points</b>	Not applicable.
<b>Flammable Limits</b>	Not applicable.
<b>Products of Combustion</b>	Not available.
<b>Fire Hazards in Presence of Various Substances</b>	Not applicable.
<b>Explosion Hazards in Presence of Various Substances</b>	<b>Risks of explosion of the product in presence of static discharge:</b> No. <b>Risks of explosion of the product in presence of mechanical impact:</b> No.
<b>Fire Fighting Media and Instructions</b>	Not applicable.
<b>Protective Clothing (Fire)</b>	Not applicable.
<b>Special Remarks on Fire Hazards</b>	Not available.
<b>Special Remarks on Explosion Hazards</b>	Not available.

---

### Section 6. Accidental Release Measures

<b>Small Spill and Leak</b>	Use appropriate tools to put the spilled solid in a convenient waste disposal container.
<b>Large Spill and Leak</b>	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.
<b>Spill Kit Information</b>	No specific spill kit required for this product.

---

### Section 7. Handling and Storage

<b>Handling</b>	Avoid breathing dust. Do not ingest. Avoid contact with skin and eyes.
<b>Storage</b>	Keep container tightly closed. Keep container in a cool, well-ventilated area.

## Methyl Red Hydrochloride

---

### 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

**Eyes** Safety glasses.

**Body** Lab coat.

**Respiratory** Not applicable.

**Hands** Not applicable.

**Feet** Not applicable.

#### Protective Clothing

##### (Pictograms)

**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.

#### Product Name

Methyl Red Hydrochloride

#### Exposure Limits

Not available.

---

### Section 9. Physical and Chemical Properties

**Odor** Not available.

**Color** Purple. Red.

**Physical State and Appearance** Solid. (Crystals solid.)

#### Appearance

**Molecular Weight** 305.77 g/mole

**Molecular Formula** C<sub>15</sub>H<sub>15</sub>N<sub>3</sub>O<sub>2</sub> . HCl

**pH** Not available.

**Boiling/Condensation Point** Not available.

#### Point

**Melting/Freezing Point** Not available.

#### Point

**Specific Gravity** Not available.

**Vapor Pressure** Not available.

**Vapor Density** Not available.

**Odor Threshold** Not available.

**Evaporation Rate** Not available.

**LogKow** Not available.

**Solubility** Partially soluble in water.

---

### Section 10. Stability and Reactivity

**Stability and Reactivity** The product is stable.

#### Conditions of Instability

Not available.

#### Instability

**Incompatibility with Various Substances** Reactive with oxidizing agents.

#### Rem/Incompatibility

Not available.

**Hazardous Decomposition** These products are halogenated compounds.

## Methyl Red Hydrochloride

### Products

**Hazardous** Will not occur.

### Polymerization

---

### Section 11. Toxicological Information

#### RTECS Number:

Methyl Red Hydrochloride, GR Not available.

**Toxicity** LD50: Not available.  
LC50: Not available.

**Chronic Effects on Humans** Not available.

**Acute Effects on Humans** Not available.

**Synergetic Products (Toxicologically)** Not available.

**Irritancy** Draize Test: Not available.

**Sensitization** Not available.

**Carcinogenic Effects** This material is not known to cause cancer in animals or humans.

**Toxicity to Reproductive System** Not available.

#### Teratogenic Effects

Not available.

**Mutagenic Effects** Not available.

---

### Section 12. Ecological Information

**Ecotoxicity** Not available.

**BOD5 and COD** Not available.

**Toxicity of the Products of Biodegradation** The products of degradation are more toxic than the product itself.

---

### Section 13. Disposal Considerations

**EPA Waste Number** Not available.

**Treatment** Material does not have an EPA Waste Number and is not a listed waste, however consultation with a permitted waste disposal site (TSD) should be accomplished. Always contact a permitted waste disposal (TSD) to assure compliance with all current local, state, and Federal Regulations.

---

### Section 14. Transport Information

**DOT Classification** Proper Shipping Name: CHEMICALS, N.O.S.

RQ: Not applicable.

**TDG Classification** Not available.

**IMO/IMDG Classification** Proper Shipping Name: CHEMICALS, N.O.S.

RQ: Not applicable.

**ICAO/IATA Classification** Proper Shipping Name: CHEMICALS, N.O.S.

## Methyl Red Hydrochloride

RQ: Not applicable.

---

### Section 15. Regulatory Information

#### U.S. Federal Regulations

This material is not listed on the TSCA Inventory. For research and development use only, not for manufacturing or commercial purposes. SARA 302/304/311/312 extremely hazardous substances: No products were found.  
SARA 302/304 emergency planning and notification: No products were found.  
SARA 302/304/311/312 hazardous chemicals: No products were found.  
SARA 311/312 MSDS distribution – chemical inventory – hazard identification: No products were found.  
SARA 313 toxic chemical notification and release reporting: No products were found.  
Clean Water Act (CWA) 307: No products were found.  
Clean Water Act (CWA) 311: No products were found.  
Clean air act (CAA) 112 accidental release prevention: No products were found.  
Clean air act (CAA) 112 regulated flammable substances: No products were found.  
Clean air act (CAA) 112 regulated toxic substances: No products were found.

#### WHMIS (Canada)

Not controlled under WHMIS (Canada).  
CEPA DSL: Methyl Red Hydrochloride  
This product has been classified in accordance with the hazard criteria of the Controlled Product Regulations and the MSDS contains all required information.

#### International Regulations

##### EINECS

Methyl Red Hydrochloride 264–190–9

##### DSCL (EEC)

This product is not classified according to the EU regulations.

##### International Lists

Philippines (RA6969): Methyl Red Hydrochloride

China: No products were found.

#### State Regulations

No products were found.

California prop. 65: No products were found.

---

### Section 16. Other Information

**National Fire  
Protection  
Association  
(U.S.A.)**

**0 Fire  
10 Hazard  
Health  
Reactivity**

**Specific  
Hazard**

**Changed Since Last  
Revision** +



**Notice to Reader**

**The statements contained herein are based upon technical data that EMD Chemicals Inc. believes to be reliable, are offered for information purposes only and as a guide to the**

## Methyl Red Hydrochloride

**appropriate precautionary and emergency handling of the material by a properly trained person having the necessary technical skills. Users should consider these data only as a supplement to other information gathered by them and must make independent determinations of suitability and completeness of information from all sources to assure proper use, storage and disposal of these materials and the safety and health of employees and customers and the protection of the environment. EMD CHEMICALS INC. MAKES NO REPRESENTATION OR WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING MERCHANTABILITY OR FITNESS FOR A PARTICULAR USE, WITH RESPECT TO THE INFORMATION HEREIN OR THE PRODUCT TO WHICH THE INFORMATION REFERS.**

---

<b>MSDS</b> <i>Material Safety Data Sheet</i>	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
 	<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.
All non-emergency questions should be directed to Customer Service (1-800-582-2537) for assistance.	

# METHYLENE BLUE

## 1. Product Identification

**Synonyms:** Basic Blue 9, trihydrate; Methylene blue trihydrate; 3,7-Bis(dimethylamino)phenazathionium chloride trihydrate

**CAS No.:** 61-73-4 (Anhydrous); 7220-79-3 (Trihydrate)

**Molecular Weight:** 373.91

**Chemical Formula:** C<sub>16</sub>H<sub>18</sub>CIN<sub>3</sub>S · 3H<sub>2</sub>O

**Product Codes:**

J.T. Baker: 2702, Q473, Q475

Mallinckrodt: 5891, E065

## 2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
Methylene Blue	61-73-4	100%	Yes

## 3. Hazards Identification

### Emergency Overview

**WARNING! HARMFUL IF SWALLOWED.**

**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: 1 - Slight

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

Storage Color Code: Green (General Storage)

## Potential Health Effects

---

This material is relatively nonhazardous in routine industrial situations.

### **Inhalation:**

No adverse health effects expected from inhalation. May cause a short period of rapid or difficult breathing.

### **Ingestion:**

A burning sensation of the mouth may be noted following ingestion of methylene blue. May cause nausea, vomiting, diarrhea, and gastritis. Large doses may cause abdominal and chest pain, headache, profuse sweating, mental confusion, painful micturation, and methemoglobinemia.

### **Skin Contact:**

Not expected to be a health hazard from skin exposure. Methylene blue may color the skin a bluish color. May cause photosensitization.

### **Eye Contact:**

No adverse effects expected. May cause mechanical 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:**

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 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:**

Methylene blue does not burn. 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.



---

## 7. Handling and Storage

Keep in a tightly closed container, stored in a cool, dry, ventilated area. Protect against physical damage. Avoid dust formation and control ignition sources. 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):**

Not expected to require personal respirator usage. 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 crystals with bronze luster or crystalline powder.

### **Odor:**

Odorless.

### **Solubility:**

Soluble in water.

### **Specific Gravity:**

No information found.

### **pH:**

No information found.

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

0

### **Boiling Point:**

Decomposes.

### **Melting Point:**

100 - 110C (212 - 230F)

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

13

### **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:**

May produce oxides of nitrogen, sulfur and carbon when heated to decomposition.

**Hazardous Polymerization:**

Will not occur.

**Incompatibilities:**

Strong oxidizing agents, alkali, dichromates, alkali iodides, reducing agents.

**Conditions to Avoid:**

Heat, flame, ignition sources, dusting and incompatibles.

## 11. Toxicological Information

Methylene Blue: 1180 mg/kg LD50 oral rat. Investigated as a mutagen, reproductive effector.

-----\Cancer Lists\-----			
Ingredient	---NTP Carcinogen---		IARC Category
	Known	Anticipated	
Methylene Blue (61-73-4)	No	No	None

## 12. Ecological Information

**Environmental Fate:**

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 has an estimated bioconcentration factor (BCF) of less than 100. This material is not expected to significantly bioaccumulate. 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 may be removed from the atmosphere to a moderate extent by wet deposition. When released into the air, this material may be removed from the atmosphere to a moderate extent by dry 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
Methylene Blue (61-73-4)	Yes	Yes	Yes	Yes

-----\Chemical Inventory Status - Part 2\-----  
 --Canada--

Ingredient	Korea	DSL	NDSL	Phil.
Methylene Blue (61-73-4)	Yes	Yes	No	Yes

-----\Federal, State & International Regulations - Part 1\-----				
Ingredient	-SARA 302- RQ	TPQ	List	-----SARA 313----- Chemical Catg.
Methylene Blue (61-73-4)	No	No	No	No

-----\Federal, State & International Regulations - Part 2\-----			
Ingredient	CERCLA	-RCRA- 261.33	-TSCA- 8(d)
Methylene Blue (61-73-4)	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: 0 Reactivity: 0

**Label Hazard Warning:**

WARNING! HARMFUL IF SWALLOWED.

**Label Precautions:**

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.

**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** 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: 613-996-6666

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.

# NITRIC ACID, 50-70%

## 1. Product Identification

**Synonyms:** Aqua Fortis; Azotic Acid; Nitric Acid 50%; Nitric Acid 65%; nitric acid 69-70%

**CAS No.:** 7697-37-2

**Molecular Weight:** 63.01

**Chemical Formula:** HNO<sub>3</sub>

**Product Codes:**

J.T. Baker: 5371, 5796, 5801, 5826, 5856, 5876, 5896, 9597, 9598, 9600, 9601, 9602, 9603, 9604, 9606, 9607, 9608, 9610, 9616, 9617, 9670, 9761

Mallinckrodt: 1409, 2704, 2705, 2706, 2707, 2716, 6623, H862, H988, H993, H998, V077, V650

## 2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
Nitric Acid	7697-37-2	50 - 70%	Yes
Water	7732-18-5	30 - 50%	No

## 3. Hazards Identification

### Emergency Overview

**POISON! DANGER! STRONG OXIDIZER. CONTACT WITH OTHER MATERIAL MAY CAUSE FIRE. CORROSIVE. LIQUID AND MIST CAUSE SEVERE BURNS TO ALL BODY TISSUE. MAY BE FATAL IF SWALLOWED OR INHALED. INHALATION MAY CAUSE LUNG AND TOOTH DAMAGE.**

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

Health Rating: 4 - Extreme (Poison)

Flammability Rating: 0 - None

Reactivity Rating: 3 - Severe (Oxidizer)

Contact Rating: 4 - Extreme (Corrosive)

Lab Protective Equip: GOGGLES & SHIELD; LAB COAT & APRON; VENT HOOD; PROPER GLOVES  
Storage Color Code: White (Corrosive)

---

### Potential Health Effects

---

Nitric acid is extremely hazardous; it is corrosive, reactive, an oxidizer, and a poison.

**Inhalation:**

Corrosive! Inhalation of vapors can cause breathing difficulties and lead to pneumonia and pulmonary edema, which may be fatal. Other symptoms may include coughing, choking, and irritation of the nose, throat, and respiratory tract.

**Ingestion:**

Corrosive! Swallowing nitric acid can cause immediate pain and burns of the mouth, throat, esophagus and gastrointestinal tract.

**Skin Contact:**

Corrosive! Can cause redness, pain, and severe skin burns. Concentrated solutions cause deep ulcers and stain skin a yellow or yellow-brown color.

**Eye Contact:**

Corrosive! Vapors are irritating and may cause damage to the eyes. Contact may cause severe burns and permanent eye damage.

**Chronic Exposure:**

Long-term exposure to concentrated vapors may cause erosion of teeth and lung damage. Long-term exposures seldom occur due to the corrosive properties of the acid.

**Aggravation of Pre-existing Conditions:**

Persons with pre-existing skin disorders, eye disease, or cardiopulmonary diseases may be more susceptible to the effects of this substance.

---

## 4. First Aid Measures

Immediate first aid treatment reduces the health effects of this substance.

**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. Thoroughly clean shoes before reuse. Get medical attention immediately.

**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. Can react with metals to release flammable hydrogen gas.

**Explosion:**

Reacts explosively with combustible organic or readily oxidizable materials such as: alcohols, turpentine, charcoal, organic refuse, metal powder, hydrogen sulfide, etc. Reacts with most metals to release hydrogen gas which can form explosive mixtures with air.

**Fire Extinguishing Media:**

Water spray may be used to keep fire exposed containers cool. Do not get water inside container.

**Special Information:**

Increases the flammability of combustible, organic and readily oxidizable materials. 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. Isolate hazard area. Keep unnecessary and unprotected personnel from entering. Contain and recover liquid when possible. Neutralize with alkaline material (soda ash, lime), then 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.

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

---

## 7. Handling and Storage

Store in a cool, dry, ventilated storage area with acid resistant floors and good drainage. Protect from physical damage. Keep out of direct sunlight and away from heat, water, and incompatible materials. Do not wash out container and use it for other purposes. When diluting, the acid should always be added slowly to water and in small amounts. Never use hot water and never add water to the acid. Water added to acid can cause uncontrolled boiling and splashing. 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):

2 ppm (TWA), 4 ppm (STEL)

-ACGIH Threshold Limit Value (TLV):

2 ppm (TWA); 4 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, wear a supplied air, full-facepiece respirator, airlined hood, or full-facepiece self-contained breathing apparatus. Nitric acid is an oxidizer and should not come in contact with cartridges and canisters that contain oxidizable materials, such as activated charcoal. Canister-type respirators using sorbents are ineffective.

**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:**

Colorless to yellowish liquid.

**Odor:**

Suffocating, acrid.

**Solubility:**

Infinitely soluble.

**Specific Gravity:**

1.41

**pH:**

1.0 (0.1M solution)

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

100 (as water and acid)

**Boiling Point:**

122C (252F)

**Melting Point:**

-42C (-44F)

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

2-3

**Vapor Pressure (mm Hg):**

48 @ 20C (68F)

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

No information found.

## 10. Stability and Reactivity

**Stability:**

Stable under ordinary conditions of use and storage. Containers may burst when heated.

**Hazardous Decomposition Products:**

When heated to decomposition, emits toxic nitrogen oxides fumes and hydrogen nitrate. Will react with water or steam to produce heat and toxic and corrosive fumes.

**Hazardous Polymerization:**

Will not occur.

**Incompatibilities:**

A dangerously powerful oxidizing agent, concentrated nitric acid is incompatible with most substances, especially strong bases, metallic powders, carbides, hydrogen sulfide, turpentine, and combustible organics.

**Conditions to Avoid:**

Light and heat.

## 11. Toxicological Information

Nitric acid: Inhalation rat LC50: 244 ppm (NO2)/30M; Investigated as a mutagen, reproductive effector. Oral (human) LDLo: 430 mg/kg.

Ingredient	---NTP Known	Carcinogen--- Anticipated	IARC Category
Nitric Acid (7697-37-2)	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 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:** NITRIC ACID  
**Hazard Class:** 8  
**UN/NA:** UN2031  
**Packing Group:** II  
**Information reported for product/size:** 6.5GL

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

-----  
**Proper Shipping Name:** NITRIC ACID  
**Hazard Class:** 8  
**UN/NA:** UN2031  
**Packing Group:** II  
**Information reported for product/size:** 6.5GL

## 15. Regulatory Information

-----\Chemical Inventory Status - Part 1\-----  
Ingredient TSCA EC Japan Australia  
-----  
Nitric Acid (7697-37-2) Yes Yes Yes Yes  
Water (7732-18-5) Yes Yes Yes Yes

-----\Chemical Inventory Status - Part 2\-----  
Ingredient Korea --Canada-- DSL NDSL Phil.  
-----  
Nitric Acid (7697-37-2) 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.  
-----  
Nitric Acid (7697-37-2) 1000 1000 Yes No  
Water (7732-18-5) No No No No

-----\Federal, State & International Regulations - Part 2\-----  
-RCRA- -TSCA-  
Ingredient CERCLA 261.33 8(d)  
-----  
Nitric Acid (7697-37-2) 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: Yes Pressure: No  
Reactivity: No (Mixture / Liquid)

**Australian Hazchem Code:** 2PE



**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:**

POISON! DANGER! STRONG OXIDIZER. CONTACT WITH OTHER MATERIAL MAY CAUSE FIRE. CORROSIVE. LIQUID AND MIST CAUSE SEVERE BURNS TO ALL BODY TISSUE. MAY BE FATAL IF SWALLOWED OR INHALED. INHALATION MAY CAUSE LUNG AND TOOTH DAMAGE.

**Label Precautions:**

- Do not get in eyes, on skin, or on clothing.
- Do not breathe vapor or mist.
- Use only with adequate ventilation.
- Wash thoroughly after handling.
- Keep from contact with clothing and other combustible materials.
- Do not store near combustible materials.
- Store in a tightly closed container.
- Remove and wash contaminated clothing promptly.

**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 get medical attention immediately.

**Product Use:**

Laboratory Reagent.

**Revision Information:**

MSDS Section(s) changed since last revision of document include: 14.

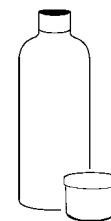
**Disclaimer:**

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



# MATERIAL SAFETY DATA SHEET

## for Petropoxy 154 Curing Agent

### Section I - Material Identification

**Material Name:** Petropoxy 154 Curing Agent

**Family/Chemical Name:** Liquid BF<sub>3</sub>-based Epoxy Catalyst, CAS# TS (Trade Secret)

**Supplier:** Burnham Petrographics LLC  
5029 W. Lodestar Ave.  
Rathdrum, ID 83858 USA

**Emergency Telephone Number:** 208 687 5951, Fax: 208 687 0232

**Revision Date:** 1 January 2009

**Important:** This material is sold to be used for adhering rocks to glass slides, and impregnation or stabilizing rocks, in a laboratory setting, following the instructions provided. Palouse Petro Products is not able to recommend this material as safe and effective for other uses. This product is considered to be a hazardous chemical under federal OSHA hazard communication standard 29 CFR 1910.1200.

### Section II - Hazardous Ingredients

**Hazardous Component:** Boron trifluoride - amine complex.

**OSHA PEL:** Not available.

**ACGIH TLV:** Not available.

**Other Limits Recommended:** Not available.

**Percent (optional):** Not available.

**Note:** Although boron trifluoride is used in the manufacture of this product, no boron trifluoride will be released upon heating of this material, or even if the product is on fire.

### Section III - Physical Data of Curing Agent

**Appearance and Odor:** Amber-colored, viscous liquid. Slight characteristic odor.

**Boiling Point:** >200°C

**Percent Volatile:** Nil

**Solubility In Water:** Insoluble

**pH:** Alkaline

**Evaporation Rate:** Nil

**Vapor Pressure (mm Hg):** No data

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

**Specific Gravity (H<sub>2</sub>O = 1):** 1.2

### Section IV - Fire and Explosion Hazard Data

**Flash Point:** >150°F Closed cup. **Auto Ignition Temperature:** No data.

**Extinguishing Media:** Carbon dioxide, foam, dry chemical, water spray.

**Flammable Limits: Lower Explosion Limit:** No data. **Upper Explosion Limit:** No data

**Fire Fighting Procedures-Special:** Use self-contained breather apparatus, butyl rubber boots, gloves & body suit.

**Unusual Fire and Explosion Hazards:** None known.

### Section V - Reactivity Data

**Stability:** Stable under normal storage conditions.

**Incompatibility (Materials to Avoid):** Mineral and organic acids, oxidizing agents, reactive metals (Sodium, Calcium, Zinc, etc.).

**Hazardous Decomposition Products:** Nitrogen oxides, ammonia gas, carbon monoxide and/or carbon dioxide may be generated upon combustion.

**Hazardous Polymerization:** Will not occur without epoxy resin and elevated temperatures.

**Conditions To Avoid When Used With Supplied Resin:**

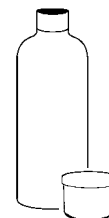
1. Elevated temperatures above those recommended in the instruction manual.
2. Excessive resin-curing agent mass (10ml maximum).

Rev. 01/09



(The new home of Palouse Petro Products.)

Preparation of thin sections for all methods of analysis.  
Petropoxy 154 Thin Section Epoxy • Petrographic Slide Boxes  
5029 W. Lodestar Ave. • Rathdrum, ID 83858 USA  
Toll Free (800) 772-3975 • Phone (208) 687-5951 • Fax (208) 687-0232  
artisans@burnhampetrographics.com • www.burnhampetrographics.com



## Section VI - Health Hazard Data

**Possible Routes of Entry:** Dermal, inhalation, ingestion. Avoid breathing vapors. Wash hands prior to eating, drinking smoking and leaving work.

**Overexposure Effects:** Skin irritation, may cause sensitization and dermatitis. Harmful if swallowed -- may cause damage to mouth, throat and stomach. Contact with eyes causes severe irritation and pain, and may cause burns resulting in permanent damage. Inhalation of vapors may cause irritation in the respiratory tract.

**Medical Conditions Aggravated By Exposure:** Allergy, eczema or skin conditions.

### Emergency and First Aid Procedures:

**Eyes:** Immediately flush eyes with water for at least 15 minutes. Call a physician.

**Skin:** Immediately flush with mild soap and water for as long as 15 minutes. Avoid using alcohol. Cleaning the skin with alcohol, while effective in removing the catalyst from the surface of the skin, may allow the skin to absorb the catalyst-alcohol mixture. Remove contaminated clothing and wash before reuse. Seek medical attention if irritation develops.

**Ingestion:** Seek medical attention immediately. DO NOT induce vomiting. Never give anything by mouth to an unconscious person.

**Inhalation:** Move to fresh air. If breathing has stopped, perform artificial respiration and seek medical attention.

**Carcinogenicity:** This material is not listed as human carcinogen by NTP, IARC, or OSHA.

## Section VII - Spill, Waste Disposal, Storage

**Spill Procedures:** Material cleans up readily with soap and water, or wipe with alcohol.

**Waste Disposal:** No special requirements for small amounts; absorb with inert material.

**Storage:** Keep away from strong acids and oxidizers. Store in a cool, dry place in a tightly closed container to prevent moisture contamination.

## Section VII - Control Measures

**Respiratory Protection and Ventilation:** Respiratory protection is not required under normal conditions in a well-ventilated work area. As a matter of good respiratory hygiene, forced mechanical ventilation is recommended for removing nuisance vapors over hot plates and ovens.

### Protective Clothing and Equipment:

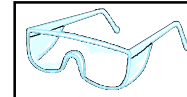
Use nitrile or other impervious gloves.

Wear other appropriate equipment, as required, to prevent exposure and personal contact.

Approved barrier creams can sometimes provide added protection in conjunction with impervious gloves.

Eye Protection: Laboratory safety eyewear.

**Other:** Maintain good housekeeping and personal hygiene standards. Provide readily accessible eye wash stations.



The information and recommendations contained herein are based upon data believed to be correct. However, no guarantee or warranty of any kind, expressed or implied, is made with respect to the information contained herein.

Rev. 01/09



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 artisans@burnhampetrographics.com • www.burnhampetrographics.com

# MATERIAL SAFETY DATA SHEET

## Phenol red solution

Date of Issue: 18 Sept. 06

### STATEMENT OF HAZARDOUS NATURE

Not classified as hazardous according to criteria of Worksafe Australia

### COMPANY DETAILS

**Company:** ProSciTech  
**Address:** PO Box 111, Thuringowa Central Qld. 4817 Australia  
**Street Address:** 1/11 Carlton Street, Kirwan, Qld. 4817 Australia  
**Telephone Number:** (07) 4773 9444  
**Fax Number:** (07) 4773 2244

### IDENTIFICATION SECTION

<b>Product Name</b>	Phenol Red Stain
<b>Other Names</b>	Phenol Red Indicator Solution
<b>Product Code</b>	APHRED-10
<b>U.N. Number</b>	None allocated
<b>Dangerous Goods Class and Subsidiary Risk</b>	None allocated
<b>Hazchem Code</b>	None allocated
<b>Poison Schedule</b>	None allocated
<b>Use</b>	Used in Hospital and pathology laboratories

### Physical Description and Properties

<b>Appearance</b>	Red liquid
<b>Boiling Point/Melting Point</b>	101°C / -1°C
<b>Vapour Pressure</b>	23hPa @ 20°C
<b>Specific Gravity</b>	1.01
<b>Flash Point</b>	
<b>Flammability Limits</b>	Not determined
<b>Solubility in water</b>	Soluble in all proportions

### Other Properties

#### Ingredients

Chemical Name	CAS Number	Proportion
WATER AND OTHER NON-HAZARDOUS SUBSTANCES	Mixture	~99%
Phenol Red Indicator C.I. 60760 (Below Cutoff)	7732-18-5	~1%

# Phenol red solution

## HEALTH HAZARD INFORMATION

### Health Effects:

#### *Acute*

<b>Swallowed:</b>	May cause irritation to mouth, throat and stomach with effects including mucous build up, irritation to the tongue and lips and pains in the stomach.
<b>Eye:</b>	May cause irritation to the eyes, with effects including: tearing, pain, stinging and blurred vision.
<b>Skin:</b>	May cause irritation to the skin, with effects including; Redness and itchiness.
<b>Inhaled:</b>	May cause irritation to the nose, throat and respiratory system with effects including: Dizziness, headache and possible confusion.

**Chronic:** None allocated

### First Aid:

<b>Swallowed:</b>	If swallowed, DO NOT induce vomiting. If victim is conscious give water. If sickness persists transport to hospital or doctor.
<b>Eye:</b>	If material is splashed into eyes, immediately, flush with plenty of water for 15 minutes, ensuring eye lids are held open. If irritation persists transport to hospital or doctor.
<b>Skin:</b>	If material is splashed onto the skin, remove any contaminated clothing and wash skin thoroughly with water and soap if available. If irritation persists transport to hospital or doctor.
<b>Inhaled:</b>	Move victim to fresh air. Apply resuscitation if victim is not breathing - If trained personnel available administer oxygen if breathing is difficult.
<b>First Aid Facilities:</b>	Eye wash fountain, safety shower and normal wash room facilities.
<b>Advice to Doctor</b>	Treat symptomatically.

## PRECAUTIONS FOR USE

<b>Exposure Standards:</b>	No exposure standard established
<b>Engineering Controls:</b>	Maintain adequate ventilation at all times. In most circumstances natural ventilation systems are adequate unless the material is heated, reacted or otherwise changed in some type of chemical reaction, then the use of a local exhaust ventilation system is recommended.
<b>Personal Protection:</b>	CLOTHING: PVC or natural rubber apron or splash suit. GLOVES: PVC or natural rubber. EYES: Chemical goggles or faceshield to protect eyes. RESPIRATORY PROTECTION: Avoid breathing of vapours/gases. Select and use respirators in accordance with AS/NZS 1715/1716. The use of a P1 dust mask (disposable) or with replaceable filters is recommended. Filter capacity and respirator type depends on exposure levels and type of contaminant. If entering spaces where the airborne concentration of a contaminant is unknown then the use of a Self-contained breathing apparatus (SCBA) with positive pressure air supply complying with AS/NZS 1715 / 1716, or any other acceptable International Standard is recommended.
<b>Flammability:</b>	This material is not a flammable or combustible liquid.

## SAFE HANDLING INFORMATION

<b>Storage and Transport:</b>	Store in a cool place and out of direct sunlight. Store away from sources of heat or ignition. Store away from oxidizing agents. Keep containers closed, when not using the product. Store in original packages as approved by manufacturer.
<b>Spills and Disposal:</b>	Material may be slippery when spilt. Walk cautiously. Ventilate area. Wear protective equipment to prevent skin and eye contact, as outlined under personal protection in this MSDS. Bund area using sand or soil - to prevent run off into drains and waterways. Use absorbent (soil, sand, vermiculite or other

## Phenol red solution

### Fire/Explosion Hazard:

inert material). Collect and seal in properly labeled containers for disposal. Remainder of material can be washed to drain with plenty of water. If safe to do so, move undamaged containers from fire area.  
Hazardous Decomposition Products: Decomposes on heating emitting oxides of carbon.  
Fire Fighting Procedures: Fire fighters to wear Self-contained breathing apparatus (SCBA) in confined spaces, in oxygen deficient atmospheres or if exposed to products of decomposition. Full protective clothing is also recommended.  
Extinguishing Media: Use extinguishing media suitable for surrounding fire situation.

### OTHER INFORMATION

#### Incompatibilities

(Materials to avoid)

#### Animal Toxicity Data:

Strong alkalis, acids, oxidizing agents.

---

The information published in this Material Safety Data Sheet has been compiled from data in various technical publications. It is the user's responsibility to determine the suitability of this information for adoption of necessary safety precautions. We reserve the right to revise Material Safety Data Sheets as new information becomes available. Copies may be made for non-profit use.



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.

# PHENOL RED, SODIUM SALT

## 1. Product Identification

**Synonyms:** Phenol red, indicator grade (water soluble); phenolsulfonphthalein sodium salt; 4,4'-(3H-2,1-benzoxathiol-3-ylidene) bis-phenol, S,S-dioxide, sodium salt

**CAS No.:** 34487-61-1

**Molecular Weight:** 376.36

**Chemical Formula:** C<sub>19</sub>H<sub>14</sub>O<sub>5</sub> Na

**Product Codes:** T265

## 2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
Phenol Red, Sodium Salt	34487-61-1	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:**

Large oral doses may cause irritation to the gastrointestinal tract. Ingestion effects have not been studied completely but may exhibit symptoms similar to phenolphthalein such as fall of blood pressure or an itching skin rash. May be a strong laxative.

**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:**

Dry chemical, 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 the dust or mist is apparent, a half-face dust/mist respirator may be worn. 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:**

Dark red to brown crystalline powder.

### **Odor:**

Odorless.

### **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:**

285C (545F)

### **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:**

This substance does not polymerize.

**Incompatibilities:**

Strong oxidizers.

**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
-----
Phenol Red, Sodium Salt
(34487-61-1)              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
-----
Phenol Red, Sodium Salt (34487-61-1)  Yes   Yes  No     No

-----\Chemical Inventory Status - Part 2\-----
Ingredient                Korea  DSL  NDSL  Phil.
-----
Phenol Red, Sodium Salt (34487-61-1)  Yes   Yes  No     Yes

-----\Federal, State & International Regulations - Part 1\-----
Ingredient                -SARA 302-  -SARA 313-
                          RQ   TPQ   List  Chemical Catg.
-----
Phenol Red, Sodium Salt (34487-61-1)  No    No    No     No

-----\Federal, State & International Regulations - Part 2\-----
Ingredient                CERCLA  -RCRA-  -TSCA-
                          261.33  8(d)
-----
Phenol Red, Sodium Salt (34487-61-1)  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: 3.

**Disclaimer:**

\*\*\*\*\*

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\*\*\*\*\*

**Prepared by:** Environmental Health & Safety

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

**MSDS** *Material Safety Data Sheet*

From: Mallinckrodt Baker, Inc.  
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Phillipsburg, NJ 08865



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**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.

# PHENOL, LIQUEFIED

## 1. Product Identification

**Synonyms:** Carboic acid; Phenic acid; Phenylic acid; Hydroxybenzene; Monohydroxybenzene

**CAS No.:** 108-95-2

**Molecular Weight:** 94.11

**Chemical Formula:** C6H5OH in H2O

**Product Codes:**

J.T. Baker: 2856, 2859, 2864, 2865

Mallinckrodt: 0025, 0221, 0276, 0610

## 2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
Phenol	108-95-2	88 - 92%	Yes
Water	7732-18-5	8 - 12%	No

## 3. Hazards Identification

### Emergency Overview

**POISON! DANGER! MAY BE FATAL IF SWALLOWED, INHALED OR ABSORBED THROUGH SKIN. RAPIDLY ABSORBED THROUGH SKIN. CORROSIVE. CAUSES SEVERE BURNS TO EVERY AREA OF CONTACT. AFFECTS CENTRAL NERVOUS SYSTEM, LIVER AND KIDNEYS. COMBUSTIBLE 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: 1 - Slight

Contact Rating: 4 - Extreme (Corrosive)

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

CLASS B EXTINGUISHER  
Storage Color Code: White Stripe (Store Separately)

---

### Potential Health Effects

---

The major hazard of phenol is its ability to penetrate the skin rapidly, particularly when liquid, causing severe injury which can be fatal. Phenol also has a strong corrosive effect on body tissue causing severe chemical burns. Due to its local anesthetizing properties, skin burns may be painless.

#### **Inhalation:**

Breathing vapor, dust or mist results in digestive disturbances (vomiting, difficulty in swallowing, diarrhea, loss of appetite). Will irritate, possibly burn respiratory tract. Other symptoms listed under ingestion may also occur.

#### **Ingestion:**

Poison. Symptoms may include burning pain in mouth and throat, abdominal pain, nausea, vomiting, headache, dizziness, muscular weakness, central nervous system effects, increase in heart rate, irregular breathing, coma, and possibly death. Acute exposure is also associated with kidney and liver damage. Ingestion of 1 gram has been lethal to humans.

#### **Skin Contact:**

Corrosive. Rapidly absorbed through the skin with systemic poisoning effects to follow. Discoloration and severe burns may occur, but may be disguised by a loss in pain sensation.

#### **Eye Contact:**

Corrosive. Eye burns with redness, pain, blurred vision may occur. May cause severe damage and blindness.

#### **Chronic Exposure:**

Repeated exposure may cause symptoms described for acute poisoning as well as eye and skin discoloration.

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

Persons with pre-existing skin, eye or central nervous system disorders, or impaired liver, kidney, or pulmonary function may be more susceptible to the effects of this substance.

---

## 4. First Aid Measures

IN CASE OF PHENOL POISONING, start first aid treatment immediately, then get medical attention. People administering first aid should take precautions to avoid contact with phenol. A phenol antidote kit (castor oil or other vegetable oil, polyethylene glycol 300) should be available in any phenol work area. Actions to be taken in case of phenol poisoning should be planned and practiced before beginning work with phenol. Castor oil and or polyethylene glycol can be given by a first responder before medical help arrives.

#### **Inhalation:**

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

#### **Ingestion:**

If swallowed, immediately administer castor oil or other vegetable oil. Never give anything by mouth to an unconscious person. Be ready to induce vomiting at the advice of physician or poison control center. Castor oil (or vegetable oil) dosage should be between 15 and 30 cc. Get medical attention immediately.

#### **Skin Contact:**

In case of skin contact, immediately flush skin with large amounts of water while removing contaminated clothing and shoes. As soon as possible, repeatedly apply polyethylene glycol to affected area. Destroy contaminated clothing and shoes. Flush skin with water for at least 30 minutes. It is very important to avoid rubbing or wiping affected parts which would aggravate irritation and cause product dispersion. Continue treatment until the burned area changes color from white to pink. Expect that this can take a long period of time (20 minutes or more). The polyethylene glycol application should be done during transportation to the hospital. If polyethylene glycol is not available, flush with water for at least 30 minutes prior to going to hospital. Get medical attention immediately.

#### **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:**

Treat ingestion with gastric lavage using 40% aqueous Bacto-Peptone, milk or water until phenolic odor is eliminated. Then give 15 to 50 cc castor or vegetable oil. Debride necrotic skin. Monitor vital signs, fluid status, electrolytes, BUN, renal and hepatic function, and electrocardiogram. Manage sedation, seizures, renal failure, and fluid electrolyte imbalances symptomatically as indicated.

---

## 5. Fire Fighting Measures

**Fire:**

Flash point: 79C (174F) CC

Autoignition temperature: 715C (1319F)

Flammable limits in air % by volume:

lcl: 1.3; ucl: 8.6

Combustible. Contact with strong oxidizers may cause fire.

**Explosion:**

Above flash point, vapor-air mixtures are explosive within flammable limits noted above. Sealed containers may rupture when heated.

**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. Structural firefighter's protective clothing is ineffective for fires involving this material. Stay away from sealed containers.

---

## 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! Dry lime or soda ash may be used on spill for neutralization. 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. All phenol workers should be properly trained on its hazards and the proper protective measures required. This training should also include emergency actions. All phenol operations should be enclosed to eliminate any potential exposure routes. 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:**

Phenol:

-OSHA Permissible Exposure Limit (PEL):

5 ppm (TWA) (skin)

-ACGIH Threshold Limit Value (TLV):

5 ppm (TWA) (skin)

**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 organic vapor cartridge and 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. Butyl rubber and neoprene are suitable materials for personal protective equipment.

**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

Congealing Point: 10.5-14C (50.9-57.2F)

**Appearance:**

Colorless to light pink liquid.

**Odor:**

Sharp, medicinal, sweet, tarry.

**Solubility:**

1 g/15 ml of water; very soluble in alcohol.

**Specific Gravity:**

1.06 @ 20C/4C

**pH:**

ca. 6.0 Aqueous solution

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

100

**Boiling Point:**

182C (360F)

**Melting Point:**

No information found.

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

3.2

**Vapor Pressure (mm Hg):**

0.4 @ 20C (68F)

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

< 0.01

---

## 10. Stability and Reactivity

**Stability:**

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

**Hazardous Decomposition Products:**

Carbon dioxide and carbon monoxide may form when heated to decomposition. Toxic gases and vapors may be released if involved in a fire.

**Hazardous Polymerization:**

Will not occur.

**Incompatibilities:**

Oxidizers, aluminum chloride and nitrobenzene, calcium hypochlorite, butadiene, halogens, formaldehyde, mineral oxidizing acids, isocyanates, sodium nitrite and many other materials. Hot liquid phenol will attack aluminum, magnesium, lead, and zinc metals.

**Conditions to Avoid:**

Heat, flames, ignition sources and incompatibles.

---

## 11. Toxicological Information

Oral rat LD50: 317 mg/Kg; skin rabbit LD50:630 mg/kg; inhalation rat LC50: 316 mg/m3; irritation data: skin rabbit, standard Draize, 500 mg/24H severe; eye rabbit, standard Draize 5 mg/30S rinse, mild. Investigated as a tumorigen, mutagen, reproductive effector.

```
-----\Cancer Lists\-----
Ingredient                ---NTP Carcinogen---
                          Known    Anticipated    IARC Category
-----
Phenol (108-95-2)         No           No             3
Water (7732-18-5)        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 leach into groundwater. When released into the soil, this material may evaporate to a moderate extent. When released into the soil, this material is expected to have a half-life between 1 and 10 days. When released into water, this material is expected to readily biodegrade. When released into water, this material is not expected to evaporate significantly. When released into water, this material is expected to have a half-life between 10 and 30 days. This material has an estimated bioconcentration factor (BCF) of less than 100. This material is not expected to significantly bioaccumulate. 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 may be moderately degraded by photolysis. When released into the air, this material is expected to have a half-life of less than 1 day.

**Environmental Toxicity:**

This material is expected to be toxic to aquatic life. The LC50/96-hour values for fish are between 10 and 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:** PHENOL SOLUTIONS

**Hazard Class:** 6.1

**UN/NA:** UN2821

**Packing Group:** II

**Information reported for product/size:** 50LB

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



-----  
**Proper Shipping Name:** PHENOL SOLUTIONS  
**Hazard Class:** 6.1  
**UN/NA:** UN2821  
**Packing Group:** II  
**Information reported for product/size:** 50LB

---

## 15. Regulatory Information

-----\Chemical Inventory Status - Part 1\-----  
Ingredient TSCA EC Japan Australia  
-----  
Phenol (108-95-2) Yes Yes Yes Yes  
Water (7732-18-5) Yes Yes Yes Yes

-----\Chemical Inventory Status - Part 2\-----  
Ingredient Korea DSL NDSL Phil.  
-----  
Phenol (108-95-2) 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.  
-----  
Phenol (108-95-2) 1000 500\* Yes No  
Water (7732-18-5) No No No No

-----\Federal, State & International Regulations - Part 2\-----  
Ingredient CERCLA -RCRA- -TSCA-  
261.33 8(d)  
-----  
Phenol (108-95-2) 1000 U188 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: No (Mixture / Liquid)

**Australian Hazchem Code:** 2X  
**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: 4 Flammability: 2 Reactivity: 0

**Label Hazard Warning:**

POISON! DANGER! MAY BE FATAL IF SWALLOWED, INHALED OR ABSORBED THROUGH SKIN. RAPIDLY ABSORBED THROUGH SKIN. CORROSIVE. CAUSES SEVERE BURNS TO EVERY AREA OF CONTACT. AFFECTS CENTRAL NERVOUS SYSTEM, LIVER AND KIDNEYS. COMBUSTIBLE LIQUID AND VAPOR.

**Label Precautions:**

Do not breathe vapor.  
Do not get in eyes, on skin, or on clothing.  
Keep container closed.  
Use only with adequate ventilation.  
Wash thoroughly after handling.  
Keep away from heat, sparks and flame.

**Label First Aid:**

IN ALL CASES, GET MEDICAL ATTENTION IMMEDIATELY. KEEP A PHENOL ANTIDOTE KIT in

area of product use or storage. Administer castor oil and/or polyethylene glycol per pre-planned directions. If swallowed, immediately administer castor oil or other vegetable oil. Never give anything by mouth to an unconscious person. In case of skin contact, immediately flush skin with large amounts of water while removing contaminated clothing and shoes. As soon as possible, repeatedly apply polyethylene glycol to affected area. Destroy contaminated clothing and shoes. If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. In case of eye contact, immediately flush eyes with plenty of water for at least 15 minutes while lifting lower and upper eyelids.

**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** *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: 613-996-6666

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 (1-800-582-2537) for assistance.

# PHENOLPHTHALEIN

## 1. Product Identification

**Synonyms:** 3,3-bis(p-hydroxyphenyl) phthalide; 3,3-bis(4-hydroxyphenyl)-1(3H)-isobenzofuranone

**CAS No.:** 77-09-8

**Molecular Weight:** 318.33

**Chemical Formula:** C<sub>20</sub>H<sub>14</sub>O<sub>4</sub>

**Product Codes:**

J.T. Baker: 2870, 2872

Mallinckrodt: 6600

## 2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
Phenolphthalein	77-09-8	100%	Yes

## 3. Hazards Identification

### Emergency Overview

**WARNING! HARMFUL IF SWALLOWED. SUSPECT CANCER HAZARD. CONTAINS PHENOLPHTHALEIN WHICH MAY CAUSE CANCER. Risk of cancer depends on level and duration of exposure.**

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

Health Rating: 2 - Moderate (Cancer)

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

---

### **Inhalation:**

Nuisance dust. May cause coughing and sneezing.

### **Ingestion:**

Cathartic. Very active, even in small amounts (30-100 mg). May cause purging, collapse, and fall of blood pressure or an itching skin rash that can become ulcerous. Other systemic effects are not well known.

### **Skin Contact:**

Not classified as an irritant but may be absorbed via moist or oily surfaces. Symptoms may resemble those from ingestion exposure.

### **Eye Contact:**

Slight irritant.

### **Chronic Exposure:**

Suspect cancer hazard; contains phenolphthalein which may cause cancer. Risk of cancer depends on level and duration of exposure.

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

Persons with pre-existing skin disorders or impaired respiratory 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:**

Wash exposed area with soap and water. Get medical advice 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:**

Dry chemical, 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, 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. 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 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 to pale yellow crystals.

### **Odor:**

Odorless.

### **Solubility:**

Slightly soluble in water.

### **Density:**

1.299

### **pH:**

No information found.

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

No information found.

### **Boiling Point:**

Not applicable.

### **Melting Point:**

258 - 262C (496 - 504F)

### **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. Investigated as a tumorigen and mutagen.

```
-----\Cancer Lists\-----
Ingredient                               ---NTP Carcinogen---
Known      Anticipated      IARC Category
-----
Phenolphthalein (77-09-8)                No          Yes          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
-----
Phenolphthalein (77-09-8)                Yes   Yes  Yes    Yes

-----\Chemical Inventory Status - Part 2\-----
Ingredient                               Korea  --Canada--
Korea  DSL  NDSL  Phil.
-----
Phenolphthalein (77-09-8)                Yes   Yes  No     Yes

-----\Federal, State & International Regulations - Part 1\-----
```

Ingredient	-SARA 302-		-----SARA 313-----	
	RQ	TPQ	List	Chemical Catg.
Phenolphthalein (77-09-8)	No	No	No	No

Ingredient	-----\Federal, State & International Regulations - Part 2\-----		
	CERCLA	-RCRA- 261.33	-TSCA- 8(d)
Phenolphthalein (77-09-8)	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)

**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: 1 Flammability: 1 Reactivity: 0

**Label Hazard Warning:**

WARNING! HARMFUL IF SWALLOWED. SUSPECT CANCER HAZARD. CONTAINS PHENOLPHTHALEIN WHICH MAY CAUSE CANCER. Risk of cancer depends on level and duration of exposure.

**Label Precautions:**

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.

**Product Use:**

Laboratory Reagent.

**Revision Information:**

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

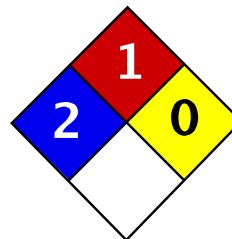
**Disclaimer:**

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\*\*\*\*\*

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



Health	2
Fire	1
Reactivity	0
Personal Protection	E

## Material Safety Data Sheet Phenol red MSDS

### Section 1: Chemical Product and Company Identification

**Product Name:** Phenol red

**Catalog Codes:** SLP1927, SLP3736

**CAS#:** 143-74-8

**RTECS:** SJ7490000

**TSCA:** TSCA 8(b) inventory: Phenol red

**CI#:** Not available.

**Synonym:** Phenolsulfonphthalein

**Chemical Name:** Not available.

**Chemical Formula:** C<sub>19</sub>H<sub>14</sub>O<sub>5</sub>S

**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
Phenol red	143-74-8	100

**Toxicological Data on Ingredients:** Phenol red LD50: Not available. LC50: Not available.

### Section 3: Hazards Identification

**Potential Acute Health Effects:**

Hazardous in case of eye contact (irritant), of ingestion. Slightly hazardous in case of skin contact (irritant, permeator), of inhalation.

**Potential Chronic Health Effects:**

CARCINOGENIC EFFECTS: Not available.

MUTAGENIC EFFECTS: Not available.

TERATOGENIC EFFECTS: Not available.

DEVELOPMENTAL TOXICITY: Not available.

The substance is toxic to lungs, mucous membranes.

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. Immediately flush eyes with running water for at least 15 minutes, keeping eyelids open. Cold water may be used. 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. Wash contaminated clothing before reusing.

**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:** May be combustible at high temperature.

**Auto-Ignition Temperature:** Not available.

**Flash Points:** Not available.

**Flammable Limits:** Not available.

**Products of Combustion:** These products are carbon oxides (CO, CO<sub>2</sub>).

**Fire Hazards in Presence of Various Substances:** Not available.

**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:**

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:

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 dust. Avoid contact with eyes. Wear suitable protective clothing. If you feel unwell, seek medical attention and show the label when possible.

### Storage:

Keep container dry. Keep in a cool place. Ground all equipment containing material. Keep container tightly closed. Keep in a cool, well-ventilated place. Combustible materials should be stored away from extreme heat and away from strong oxidizing agents.

## 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:** 354.38 g/mole

**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:** Very slightly soluble in cold water.

### 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. Ingestion.

**Toxicity to Animals:**

LD50: Not available.

LC50: Not available.

**Chronic Effects on Humans:** The substance is toxic to lungs, mucous membranes.

**Other Toxic Effects on Humans:**

Hazardous in case of ingestion.

Slightly hazardous in case of skin contact (irritant, permeator), 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:** 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 more toxic.

**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: Phenol red

**Other Regulations:** OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200).

**Other Classifications:**

**WHMIS (Canada):** CLASS D-2A: Material causing other toxic effects (VERY TOXIC).

**DSCL (EEC):** R36- Irritating to eyes.

**HMIS (U.S.A.):**

**Health Hazard:** 2

**Fire Hazard:** 1

**Reactivity:** 0

**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.

Splash goggles.

### Section 16: Other Information



**References:** Not available.

**Other Special Considerations:** Not available.

**Created:** 10/10/2005 11:18 AM

**Last Updated:** 11/06/2008 12:00 PM

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<b>MSDS</b> <i>Material Safety Data Sheet</i>	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
 	<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.

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

# POTASSIUM CHLORIDE

## 1. Product Identification

**Synonyms:** Potassium monochloride

**CAS No.:** 7447-40-7

**Molecular Weight:** 74.55

**Chemical Formula:** KCl

**Product Codes:**

J.T. Baker: 3040, 3044, 3045, 3046, 3052, 4001

Mallinckrodt: 0865, 0890, 3279, 3610, 3619, 3925, 4251, 4858, 4910, 5480, 6156, 6205, 6230, 6275, 6307, 6335, 6363, 6788, 6801, 6838, 6841, 6842, 6845, 6849, 6851, 6858, 6867, 7207, 7535, 7590, 7618, 7769, V483

## 2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
Potassium Chloride	7447-40-7	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: 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

---

### **Inhalation:**

Inhalation of high concentrations of dust may cause nasal or lung irritation.

### **Ingestion:**

Large quantities can produce gastrointestinal irritation and vomiting. May produce weakness and circulatory problems. May affect heart. In severe cases, ingestion may be fatal.

### **Skin Contact:**

Contact may cause irritation or rash, particularly with moist skin.

### **Eye Contact:**

Potassium chloride is moderate eye irritant. Redness, tearing, possible abrasion can occur.

### **Chronic Exposure:**

No information found.

### **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. If not breathing, give artificial respiration. If breathing is difficult, give oxygen.

### **Ingestion:**

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

### **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.

---

## 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.

---

## 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 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 crystals or powder.

### **Odor:**

Odorless.

### **Solubility:**

28.1 g/100g of water @ 0C.

### **Density:**

1.987

### **pH:**

ca. 7 Saturated aq. sl. @ 15C

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

0

### **Boiling Point:**

1500C (2732F) Sublimes.

### **Melting Point:**

772C (1422F)

### **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 the contained metal and halogen, possibly also free, or ionic halogen.

**Hazardous Polymerization:**

Will not occur.

**Incompatibilities:**

Bromine trifluoride; potassium permanganate plus sulfuric acid.

**Conditions to Avoid:**

No information found.

---

## 11. Toxicological Information

Oral rat LD50: 2600 mg/kg; irritation eye rabbit (standard Draize): 500 mg/24 hr mild; investigated as a mutagen.

```
-----\Cancer Lists\-----
Ingredient                ---NTP Carcinogen---
                          Known   Anticipated   IARC Category
-----
Potassium Chloride (7447-40-7)   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 Chloride (7447-40-7)   Yes   Yes   Yes    Yes
```

```
-----\Chemical Inventory Status - Part 2\-----
Ingredient                Korea  --Canada--
                          DSL   NDSL   Phil.
-----
Potassium Chloride (7447-40-7)   Yes   Yes   No    Yes
```

```
-----\Federal, State & International Regulations - Part 1\-----
Ingredient                -SARA 302-   -SARA 313-
                          RQ   TPQ   List  Chemical Catg.
-----
Potassium Chloride (7447-40-7)   No   No    No    No
```

```
-----\Federal, State & International Regulations - Part 2\-----
Ingredient                CERCLA   -RCRA-   -TSCA-
                          261.33  8(d)
-----
```

Potassium Chloride (7447-40-7) 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: 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.
- Keep container closed.
- Use with adequate ventilation.
- Avoid contact with eyes, skin and clothing.
- 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. 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:**

No Changes.

**Disclaimer:**

\*\*\*\*\*

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\*\*\*\*\*

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



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.

# POTASSIUM FLUORIDE, ANHYDROUS

## 1. Product Identification

**Synonyms:** None  
**CAS No.:** 7789-23-3  
**Molecular Weight:** 58.10  
**Chemical Formula:** KF  
**Product Codes:** 3123

## 2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
Potassium Fluoride	7789-23-3	90 - 100%	Yes

## 3. Hazards Identification

### Emergency Overview

**DANGER! MAY BE FATAL IF SWALLOWED OR INHALED. CORROSIVE. AFFECTS RESPIRATORY SYSTEM, HEART, SKELETON, CIRCULATORY SYSTEM, CENTRAL NERVOUS SYSTEM AND KIDNEYS. CAUSES IRRITATION AND BURNS TO SKIN, EYES AND RESPIRATORY TRACT. IRRITATION AND BURN EFFECTS MAY BE DELAYED. HARMFUL IF ABSORBED THROUGH SKIN.**

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: 3 - Severe

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

Storage Color Code: Blue (Health)

## Potential Health Effects

---

There is limited information available on the hazards of this chemical. It is assumed that it will behave similarly to other soluble fluoride salts. If inhaled or swallowed, this compound can cause fluoride poisoning. Early symptoms include nausea, vomiting, diarrhea, and weakness. Later effects include central nervous system effects, cardiovascular effects and death.

### **Inhalation:**

May cause irritation and burns to the respiratory tract, symptoms may include coughing, sore throat, and labored breathing. May be absorbed through inhalation of dust; symptoms may parallel those from ingestion exposure. Irritation and burning effects may not appear immediately.

### **Ingestion:**

May cause salivation, nausea, vomiting, diarrhea, and abdominal pain, followed by weakness, tremors, shallow respiration, cardopedal spasm, convulsions, and coma. May cause brain and kidney damage. Death may be caused by respiratory paralysis. Affects heart and circulatory system.

### **Skin Contact:**

Causes severe irritation and possibly burns to the skin. May be absorbed through the skin. Effects may not appear immediately.

### **Eye Contact:**

Causes irritation. May be extremely irritating with possible burns to eye tissue and permanent eye damage may result.

### **Chronic Exposure:**

Chronic exposure may cause mottling of teeth and bone damage (osteosclerosis) and fluorosis. Symptoms of fluorosis include brittle bones, weight loss, anemia, calcified ligaments, general ill health and joint stiffness.

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

Populations that appear to be at increased risk from the effects of fluoride are individuals that suffer from diabetes insipidus or some forms of renal impairment.

---

## 4. First Aid Measures

First aid procedures should be pre-planned for fluoride compound emergencies.

### **Inhalation:**

If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. CALL A PHYSICIAN IMMEDIATELY.

### **Ingestion:**

Administer milk, chewable calcium carbonate tablets or milk of magnesia. Never give anything by mouth to an unconscious person. CALL A PHYSICIAN IMMEDIATELY.

### **Skin Contact:**

Wipe off any excess material from skin and then immediately flush skin with large amounts of soapy water. Remove contaminated clothing and shoes. Wash clothing before re-use. Apply bandages soaked in magnesium sulfate. CALL A PHYSICIAN IMMEDIATELY.

### **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:**

For large exposures, systemic effects (hypocalcemia and hypomagnesia) may occur.

---

## 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. Water spray will also reduce fumes 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. 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 acids and alkalis. 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):

2.5 mg (F)/m<sup>3</sup> (TWA)

- ACGIH Threshold Limit Value (TLV):

2.5 mg (F)/m<sup>3</sup> (TWA) 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 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 powder.

**Odor:**

Odorless.

**Solubility:**

Appreciable in water.

**Specific Gravity:**

2.48

**pH:**

No information found.

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

0

**Boiling Point:**

1505C (2741F)

**Melting Point:**

860C (1580F)

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

2.0

**Vapor Pressure (mm Hg):**

1 @ 885C (1625F)

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

No information found.

## 10. Stability and Reactivity

**Stability:**

Stable under ordinary conditions of use and storage. Attracts moisture from the air.

**Hazardous Decomposition Products:**

Burning may produce hydrogen fluoride vapors.

**Hazardous Polymerization:**

Will not occur.

**Incompatibilities:**

Platinum plus bromine trifluoride; reacts with strong acids to form hydrogen fluoride. Corrodes glass and porcelain.

**Conditions to Avoid:**

Moisture and incompatibles.

## 11. Toxicological Information

KF: Oral rat LD50: 245 mg/kg. Investigated as a mutagen, reproductive effector.

-----\Cancer Lists\-----			
Ingredient	---NTP Carcinogen---		IARC Category
	Known	Anticipated	
Potassium Fluoride (7789-23-3)	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:** POTASSIUM FLUORIDE, SOLID  
**Hazard Class:** 6.1  
**UN/NA:** UN1812  
**Packing Group:** III  
**Information reported for product/size:** 250LB

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

-----  
**Proper Shipping Name:** POTASSIUM FLUORIDE, SOLID  
**Hazard Class:** 6.1  
**UN/NA:** UN1812  
**Packing Group:** III  
**Information reported for product/size:** 250LB

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

-----  
**Proper Shipping Name:** POTASSIUM FLUORIDE, SOLID  
**Hazard Class:** 6.1  
**UN/NA:** UN1812  
**Packing Group:** III  
**Information reported for product/size:** 250LB

## 15. Regulatory Information

```
-----\Chemical Inventory Status - Part 1\-----
Ingredient                                     TSCA  EC  Japan  Australia
-----
Potassium Fluoride (7789-23-3)                Yes  Yes  Yes    Yes
```

```
-----\Chemical Inventory Status - Part 2\-----
Ingredient                                     Korea  --Canada--  Phil.
                                     DSL  NDSL
-----
Potassium Fluoride (7789-23-3)                Yes  Yes  No    Yes
```

```
-----\Federal, State & International Regulations - Part 1\-----
Ingredient                                     -SARA 302-  -SARA 313-
                                     RQ  TPQ  List  Chemical Catg.
-----
Potassium Fluoride (7789-23-3)                No  No    No    No
```

```
-----\Federal, State & International Regulations - Part 2\-----
Ingredient                                     CERCLA  -RCRA-  -TSCA-
                                     261.33  8(d)
-----
Potassium Fluoride (7789-23-3)                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: 2Z**

**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! MAY BE FATAL IF SWALLOWED OR INHALED. CORROSIVE. AFFECTS RESPIRATORY SYSTEM, HEART, SKELETON, CIRCULATORY SYSTEM, CENTRAL NERVOUS SYSTEM AND KIDNEYS. CAUSES IRRITATION AND BURNS TO SKIN, EYES AND RESPIRATORY TRACT. IRRITATION AND BURN EFFECTS MAY BE DELAYED. HARMFUL IF ABSORBED THROUGH SKIN.

**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 all cases call a physician immediately. First Aid procedures should be pre-planned for fluoride compound emergencies. If swallowed, administer milk, chewable calcium carbonate tablets or milk of magnesia. Never give anything by mouth to an unconscious person. If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing difficult, give artificial respiration. In case of skin contact wipe off any excess material then immediately flush skin with large amounts of soapy water. Remove contaminated clothing and shoes. Wash clothing before re-use. Apply bandages soaked in magnesium sulfate. In case of eye contact, immediately flush eyes with gentle but large stream of water for at least 15 minutes, lifting upper and lower eyelids occasionally.

**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** *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: 613-996-6666

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.

# POTASSIUM HYDROXIDE

## 1. Product Identification

**Synonyms:** Caustic potash; potassium hydrate

**CAS No.:** 1310-58-3

**Molecular Weight:** 56.11

**Chemical Formula:** KOH

**Product Codes:**

J.T. Baker: 3140, 3141, 3146, 3150, 3152, 5685

Mallinckrodt: 6964, 6976, 6984, 7704, 7815

## 2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
Potassium Hydroxide	1310-58-3	85 - 90%	Yes
Water	7732-18-5	10 - 15%	No

## 3. Hazards Identification

### Emergency Overview

**POISON! DANGER! CORROSIVE. CAUSES SEVERE BURNS TO SKIN, EYES, RESPIRATORY TRACT, AND GASTROINTESTINAL TRACT. MATERIAL IS EXTREMELY DESTRUCTIVE TO ALL BODY TISSUES. MAY BE FATAL IF SWALLOWED. HARMFUL IF INHALED.**

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

Health Rating: 3 - Severe (Poison)

Flammability Rating: 0 - None

Reactivity Rating: 2 - Moderate

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:**

Severe irritant. Effects from inhalation of dust or mist vary from mild irritation to serious damage of the upper respiratory tract, depending on the severity of exposure. Symptoms may include coughing, sneezing, damage to the nasal or respiratory tract. High concentrations can cause lung damage.

### **Ingestion:**

Toxic! Swallowing may cause severe burns of mouth, throat and stomach. Other symptoms may include vomiting, diarrhea. Severe scarring of tissue and death may result. Estimated lethal dose: 5 grams.

### **Skin Contact:**

Corrosive! Contact with skin can cause irritation or severe burns and scarring with greater exposures.

### **Eye Contact:**

Highly Corrosive! Causes irritation of eyes with tearing, redness, swelling. Greater exposures cause severe burns with possible blindness resulting.

### **Chronic Exposure:**

Prolonged contact with dilute solutions or dust of potassium hydroxide has a destructive effect on tissue.

### **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

### **Inhalation:**

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

### **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:**

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. Thoroughly clean shoes before reuse. Get medical attention immediately.

### **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 contact with water or moisture may generate enough heat to ignite combustibles.

### **Explosion:**

Can react with chemically reactive metals such as aluminum, zinc, magnesium, copper, etc. to release hydrogen gas which can form explosive mixtures with air.

### **Fire Extinguishing Media:**

Use any means suitable for extinguishing surrounding fire.

### **Special Information:**

Solution process causes formation of corrosive mists. Hot or molten material can react violently with water. 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. 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 solutions of this product.

---

## 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. Protect from moisture. Addition to water releases heat which can result in violent boiling and spattering. Always add slowly and in small amounts. Never use hot water. 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):

2 mg/m<sup>3</sup> Ceiling

- 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:**

Rubber or neoprene gloves and additional protection including impervious boots, apron, or coveralls, as needed in areas of unusual exposure.

### **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:**

White deliquescent solid

**Odor:**

Odorless.

**Solubility:**

52.8% in water @ 20C (68F)

**Specific Gravity:**

2.04

**pH:**

13.5 (0.1 molar solution)

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

0

**Boiling Point:**

1320C (2408F)

**Melting Point:**

360C (680F)

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

No information found.

**Vapor Pressure (mm Hg):**

1.0 @ 714C (1317F)

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

No information found.

## 10. Stability and Reactivity

**Stability:**

Stable under ordinary conditions of use and storage.

**Hazardous Decomposition Products:**Carbon monoxide when reacting with carbohydrates, and hydrogen gas when reacting with aluminum, zinc and tin. Thermal oxidation can produce toxic fumes of potassium oxide (K<sub>2</sub>O).**Hazardous Polymerization:**

Will not occur.

**Incompatibilities:**

Contact with water, acids, flammable liquids and organic halogen compounds, especially trichloroethylene, may cause fire or explosion. Contact with nitromethane and other similar nitro compounds cause formation of shock sensitive salts. Contact with metals such as aluminum, tin and zinc causes formation of flammable hydrogen gas.

**Conditions to Avoid:**

Heat, moisture, 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 Known	Carcinogen--- Anticipated	IARC Category
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:**

### 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:** POTASSIUM HYDROXIDE, SOLID  
**Hazard Class:** 8  
**UN/NA:** UN1813  
**Packing Group:** II  
**Information reported for product/size:** 110LB

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

**Proper Shipping Name:** POTASSIUM HYDROXIDE, SOLID  
**Hazard Class:** 8  
**UN/NA:** UN1813  
**Packing Group:** II  
**Information reported for product/size:** 110LB

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

**Proper Shipping Name:** POTASSIUM HYDROXIDE, SOLID  
**Hazard Class:** 8  
**UN/NA:** UN1813  
**Packing Group:** II  
**Information reported for product/size:** 110LB

### 15. Regulatory Information

-----\Chemical Inventory Status - Part 1\-----

Ingredient	TSCA	EC	Japan	Australia
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.
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.
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-		-TSCA-
		261.33	261.33	8(d)
Potassium Hydroxide (1310-58-3)	1000	No	No	No
Water (7732-18-5)	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: Yes (Mixture / Solid)

**Australian Hazchem Code: 2R**

**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: 1

**Label Hazard Warning:**

POISON! DANGER! CORROSIVE. CAUSES SEVERE BURNS TO SKIN, EYES, RESPIRATORY TRACT, AND GASTROINTESTINAL TRACT. MATERIAL IS EXTREMELY DESTRUCTIVE TO ALL BODY TISSUES. MAY BE FATAL IF SWALLOWED. HARMFUL IF INHALED.

**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:**

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:**

\*\*\*\*\*

**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.)



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.

# POTASSIUM OXALATE

## 1. Product Identification

**Synonyms:** Oxalic acid, dipotassium salt; ethanedioic acid, dipotassium salt  
**CAS No.:** 583-52-8 (Anhydrous) 6487-48-5 (Monohydrate)  
**Molecular Weight:** 184.24  
**Chemical Formula:** K<sub>2</sub>C<sub>2</sub>O<sub>4</sub> . H<sub>2</sub>O  
**Product Codes:** 3212

## 2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
Potassium Oxalate	583-52-8	98 - 100%	Yes

## 3. Hazards Identification

### Emergency Overview

**POISON! DANGER! CORROSIVE. CAUSES SEVERE BURNS TO EVERY AREA OF CONTACT. MAY BE FATAL IF SWALLOWED. HARMFUL IF INHALED.**

**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: 3 - Severe (Corrosive)

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

Storage Color Code: White (Corrosive)

### Potential Health Effects

**Inhalation:**

Inhalation of dust is corrosive to mucous membranes. Oxalates can be absorbed through the lungs. Symptoms of poisoning include nervousness, cramps, central nervous system depression.

**Ingestion:**

Mean lethal dose for oxalates in adults is estimated at 15-30 grams with death within a few hours or even minutes. Corrosive action on the mucosa and severe gastroenteritis can occur with pain, vomiting, etc. Sharp reduction of serum calcium can cause disfunction of the brain. Calcium oxalate may be deposited in the kidneys.

**Skin Contact:**

Corrosive. Symptoms of redness, pain, and severe burn can occur.

**Eye Contact:**

Corrosive. Contact can cause blurred vision, redness, pain and severe tissue burns. Prolonged contact may cause eye damage.

**Chronic Exposure:**

Circulatory failure or nervous system irregularities may follow prolonged calcium metabolism disturbances due to oxalation.

**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 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 soap and 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:**

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. 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 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:**

Transparent, colorless crystals.

### **Odor:**

Odorless.

### **Solubility:**

30 g in 100 g water.

### **Specific Gravity:**

2.13

### **pH:**

No information found.

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

0

### **Boiling Point:**

Not applicable.

### **Melting Point:**

160C (320F)

### **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:**

May produce oxides of carbon and the contained metal.

**Hazardous Polymerization:**

Will not occur.

**Incompatibilities:**

Strong acids and 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---		IARC Category
	Known	Anticipated	
Potassium Oxalate (583-52-8)	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 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:** TOXIC SOLID, CORROSIVE, ORGANIC, N.O.S. (POTASSIUM OXALATE, MONOHYDRATE)

**Hazard Class:** 6.1, 8

**UN/NA:** UN2928

Packing Group: II

**Information reported for product/size:** 300LB

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

**Proper Shipping Name:** TOXIC SOLID, CORROSIVE, ORGANIC, N.O.S. (POTASSIUM OXALATE, MONOHYDRATE)

**Hazard Class:** 6.1, 8

**UN/NA:** UN2928

**Packing Group:** II

**Information reported for product/size:** 300LB

---

## 15. Regulatory Information

```
-----\Chemical Inventory Status - Part 1\-----
Ingredient                                     TSCA  EC   Japan  Australia
-----
Potassium Oxalate (583-52-8)                 Yes  Yes  Yes    Yes
```

```
-----\Chemical Inventory Status - Part 2\-----
Ingredient                                     Korea  DSL   --Canada--  Phil.
-----
Potassium Oxalate (583-52-8)                 Yes   Yes  No       No
```

```
-----\Federal, State & International Regulations - Part 1\-----
Ingredient                                     -SARA 302-  -----SARA 313-----
RQ   TPQ   List  Chemical Catg.
-----
Potassium Oxalate (583-52-8)                 No    No    No       No
```

```
-----\Federal, State & International Regulations - Part 2\-----
Ingredient                                     CERCLA  -RCRA-  -TSCA-
                                           261.33  8(d)
-----
Potassium Oxalate (583-52-8)                 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:** 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: 4 Flammability: 0 Reactivity: 0

**Label Hazard Warning:**

POISON! DANGER! CORROSIVE. CAUSES SEVERE BURNS TO EVERY AREA OF CONTACT. MAY BE FATAL IF SWALLOWED. HARMFUL IF INHALED.

**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:**

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. 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.)

<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
 	<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.

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

# POTASSIUM PERMANGANATE

## 1. Product Identification

**Synonyms:** Permanganic acid, potassium salt; Condys crystals

**CAS No.:** 7722-64-7

**Molecular Weight:** 158.03

**Chemical Formula:** KMnO<sub>4</sub>

**Product Codes:**

J.T. Baker: 3227, 3228, 3232

Mallinckrodt: 7056, 7068

## 2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
Potassium Permanganate	7722-64-7	90 - 100%	Yes

## 3. Hazards Identification

### Emergency Overview

**DANGER! STRONG OXIDIZER. CONTACT WITH OTHER MATERIAL MAY CAUSE FIRE. CORROSIVE. CAUSES BURNS TO ANY AREA OF CONTACT. 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: 3 - Severe (Oxidizer)

Contact Rating: 3 - Severe (Corrosive)

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. High concentrations can cause pulmonary edema.

### **Ingestion:**

Ingestion of solid or high concentrations causes severe distress of gastro-intestinal system with possible burns and edema; slow pulse; shock with fall of blood pressure. May be fatal. Ingestion of concentrations up to 1% causes burning of the throat, nausea, vomiting, and abdominal pain; 2-3% causes anemia and swelling of the throat with possible suffocation; 4-5% may cause kidney damage.

### **Skin Contact:**

Dry crystals and concentrated solutions are caustic causing redness, pain, severe burns, brown stains in the contact area and possible hardening of outer skin layer. Diluted solutions are only mildly irritating to the skin.

### **Eye Contact:**

Eye contact with crystals (dusts) and concentrated solutions causes severe irritation, redness, blurred vision and can cause severe damage, possibly permanent.

### **Chronic Exposure:**

Prolonged skin contact may cause irritation, defatting, and dermatitis. Chronic manganese poisoning can result from excessive inhalation exposure to manganese dust and involves impairment of the central nervous system. Early symptoms include sluggishness, sleepiness, and weakness in the legs. Advanced cases have shown symptoms of fixed facial expression, emotional disturbances, spastic gait, and falling.

### **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:**

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 combustible, but substance is a strong oxidizer and its heat of reaction with reducing agents or combustibles may cause ignition. Contact with oxidizable substances may cause extremely violent combustion.

### **Explosion:**

Strong oxidants may explode when shocked, or if exposed to heat, flame, or friction. Also may act as initiation source for dust or vapor explosions. Contact with oxidizable substances may cause extremely violent combustion. Sealed containers may rupture when heated. Sensitive to mechanical impact.

### **Fire Extinguishing Media:**

Use water spray to blanket fire, cool fire exposed containers, and to flush non-ignited spills or vapors away from fire. Suffocating type extinguishers are not as effective as water. Do not allow water runoff to enter sewers or waterways.

### **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. 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 and moisture. Isolate from any source of heat or ignition. Avoid storage on wood floors. Separate from incompatibles, combustibles, organic or other readily oxidizable materials. 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 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:**

Purple-bronze crystals.

**Odor:**

Odorless.

**Solubility:**

7 g in 100 g of water.

**Density:**

2.7

**pH:**

No information found.

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

0

**Boiling Point:**

Not applicable.

**Melting Point:**

ca. 240C (ca. 464F)

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

5.40

**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 metal fumes may form when heated to decomposition.

**Hazardous Polymerization:**

Will not occur.

**Incompatibilities:**

Powdered metals, alcohol, arsenites, bromides, iodides, phosphorous, sulfuric acid, organic compounds, sulfur, activated carbon, hydrides, strong hydrogen peroxide, ferrous or mercurous salts, hypophosphites, hyposulfites, sulfites, peroxides, and oxalates.

**Conditions to Avoid:**

Heat, flames, ignition sources and incompatibles.

## 11. Toxicological Information

Investigated as a mutagen, reproductive effector. Oral rat LD50: 750 mg/kg.

-----\Cancer Lists\-----			
Ingredient	---NTP Carcinogen---		IARC Category
	Known	Anticipated	
Potassium Permanganate (7722-64-7)	No	No	None

## 12. Ecological Information

**Environmental Fate:**

No information found.

**Environmental Toxicity:**

Dangerous to the environment. Very toxic to aquatic organisms; may cause long term adverse effects in the aquatic environment.



## 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:** POTASSIUM PERMANGANATE

**Hazard Class:** 5.1

**UN/NA:** UN1490

**Packing Group:** II

**Information reported for product/size:** 12KG

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

-----  
**Proper Shipping Name:** POTASSIUM PERMANGANATE

**Hazard Class:** 5.1

**UN/NA:** UN1490

**Packing Group:** II

**Information reported for product/size:** 12KG

## 15. Regulatory Information

```
-----\Chemical Inventory Status - Part 1\-----  
Ingredient                                     TSCA  EC   Japan  Australia  
-----  
Potassium Permanganate (7722-64-7)           Yes  Yes  Yes    Yes
```

```
-----\Chemical Inventory Status - Part 2\-----  
Ingredient                                     Korea  --Canada--  
Korea  DSL  NDSL  Phil.  
-----  
Potassium Permanganate (7722-64-7)           Yes   Yes  No     Yes
```

```
-----\Federal, State & International Regulations - Part 1\-----  
Ingredient                                     -SARA 302-  -SARA 313-  
RQ  TPQ  List  Chemical Catg.  
-----  
Potassium Permanganate (7722-64-7)           No   No   No     Manganese co
```

```
-----\Federal, State & International Regulations - Part 2\-----  
Ingredient                                     CERCLA  -RCRA-  -TSCA-  
261.33  8(d)  
-----  
Potassium Permanganate (7722-64-7)           100    No     No
```

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

**Australian Hazchem Code:** 2Y

**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: **1** Flammability: **0** Reactivity: **0** Other: **Oxidizer**

**Label Hazard Warning:**

DANGER! STRONG OXIDIZER. CONTACT WITH OTHER MATERIAL MAY CAUSE FIRE. CORROSIVE. CAUSES BURNS TO ANY AREA OF CONTACT. HARMFUL IF SWALLOWED OR INHALED.

**Label Precautions:**

Keep from contact with clothing and other combustible materials.

Store in a tightly closed container.

Do not store near combustible materials.

Remove and wash contaminated clothing promptly.

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, 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:**

\*\*\*\*\*

**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

1. CHEMICAL PRODUCT & COMPANY IDENTIFICATION

24-Hour Emergency Phone Number: 989-636-4400

Product: SARAN\* 540 White Vapor Retarder Film

Product Code: 76648

Effective Date: 09/07/99      Date Printed: 06/16/04      MSD: 006441

The Dow Chemical Company, Midland, MI 48674

Customer Information Center: 800-258-2436

2. COMPOSITION/INFORMATION ON INGREDIENTS

Copolymer of vinylidene chloride and vinyl chloride	CAS# 009011-06-7	>75%
Copolymer of ethylene and vinyl acetate	CAS# 024937-78-8	<10%
Titanium dioxide	CAS# 013463-67-7	<10%
Proprietary additives		<6%

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

\*\*\*\*\*  
\* White plastic film. Odorless. Toxic fumes may be released in \*  
\* situations. \*  
\* \*  
\*\*\*\*\*

POTENTIAL HEALTH EFFECTS (See Section 11 for toxicological data.)

EYE: Solid or dust may cause irritation or corneal injury due to mechanical action.

SKIN: Essentially nonirritating to skin. Skin absorption is unlikely due to physical properties.

INGESTION: Single dose oral toxicity is considered to be extremely low. No hazards anticipated from swallowing small amounts incidental to normal handling operations.

INHALATION: Vapors are unlikely due to physical properties.

(Continued on page 2 , over)

\* OR (R) INDICATES A TRADEMARK OF THE DOW CHEMICAL COMPANY

M A T E R I A L   S A F E T Y   D A T A   S H E E T

Product: SARAN\* 540 White Vapor Retarder Film

Product Code: 76648

Effective Date: 09/07/99

Date Printed: 06/16/04

MSD: 006441

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SYSTEMIC & OTHER EFFECTS: Based on available data, repeated exposures are not anticipated to cause significant adverse effects. Additives and/or pigments are encapsulated in the product and are not expected to be released under normal processing conditions or foreseeable emergency.

4. FIRST AID

EYES: Flush eyes with plenty of water; mechanical effects only.

SKIN: No adverse effects anticipated by this route of exposure.

INGESTION: No adverse effects anticipated by this route of exposure incidental to proper industrial handling.

INHALATION: No adverse effects anticipated by this route of exposure.

NOTE TO PHYSICIAN: No specific antidote. Supportive care. Treatment based on judgment of the physician in response to reactions of the patient.

5. FIRE FIGHTING MEASURES

FLAMMABLE PROPERTIES

FLASH POINT: Not applicable.

METHOD USED: Not applicable.

AUTOIGNITION TEMPERATURE: Not applicable.

FLAMMABILITY LIMITS

LFL: Not applicable.

UFL: Not applicable.

HAZARDOUS COMBUSTION PRODUCTS: Under fire conditions polymers decompose. The smoke may contain polymer fragments of varying compositions in addition to unidentified toxic and/or irritating compounds. Hazardous combustion products may include and are not limited to: hydrogen chloride, carbon monoxide and carbon dioxide.

OTHER FLAMMABILITY INFORMATION: Dense smoke is produced when product burns.

EXTINGUISHING MEDIA: Water, carbon dioxide, dry chemical.

FIRE FIGHTING INSTRUCTIONS: Keep people away. Isolate fire area and deny unnecessary entry. Cool surroundings with water to

(Continued on page 3)

\* OR (R) INDICATES A TRADEMARK OF THE DOW CHEMICAL COMPANY

M A T E R I A L   S A F E T Y   D A T A   S H E E T

Product: SARAN\* 540 White Vapor Retarder Film  
Product Code: 76648

Effective Date: 09/07/99      Date Printed: 06/16/04      MSD: 006441

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localize fire zone. Soak thoroughly with water to cool and prevent reignition.

PROTECTIVE EQUIPMENT FOR FIRE FIGHTERS: Wear positive-pressure self-contained breathing apparatus (SCBA) and protective fire fighting clothing (includes fire fighting helmet, coat, pants, boots, and gloves). If protective equipment is not available or not used, fight fire from a protected location or safe distance.

6. ACCIDENTAL RELEASE MEASURES (See Section 15 for Regulatory Information)

PROTECT PEOPLE: Clear non-emergency personnel from area.

PROTECT THE ENVIRONMENT: Avoid contamination of drinking water, natural water, ground water or any waterway.

CLEANUP: Sweep up.

7. HANDLING AND STORAGE

HANDLING: Mechanical handling equipment can cause formation of dusts. Maintain good housekeeping. Layers of flammable dusts should not be permitted to accumulate.

STORAGE: Recommend storing in a cool, dry place away from high temperatures, hot pipes, and direct sun.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

ENGINEERING CONTROLS: Good general ventilation should be sufficient for most conditions.

PERSONAL PROTECTIVE EQUIPMENT

EYE/FACE PROTECTION: Use safety glasses. If there is a potential for exposure to particles which could cause mechanical injury to the eye, wear chemical goggles.

SKIN: No precautions other than clean body-covering clothing should be needed.

RESPIRATORY PROTECTION: No respiratory protection should be needed.

EXPOSURE GUIDELINE(S): Although some of the additives used

(Continued on page 4 , over)

\* OR (R) INDICATES A TRADEMARK OF THE DOW CHEMICAL COMPANY

M A T E R I A L   S A F E T Y   D A T A   S H E E T

Product: SARAN\* 540 White Vapor Retarder Film  
Product Code: 76648

Effective Date: 09/07/99      Date Printed: 06/16/04      MSD: 006441

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in this product may have exposure guidelines, these additives are encapsulated in the product and no exposure would be expected under normal handling conditions.

9. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE: White plastic film.  
ODOR: Odorless.  
BOILING POINT: Not applicable  
VAPOR PRESSURE: Not applicable  
VAPOR DENSITY: Not applicable  
SOLUBILITY IN WATER: Insoluble  
SPECIFIC GRAVITY: Not applicable

10. STABILITY AND REACTIVITY

STABILITY: Thermally stable at typical use temperatures.

CONDITIONS TO AVOID: Product can decompose at elevated temperatures.

HAZARDOUS DECOMPOSITION PRODUCTS: Hazardous decomposition products depend upon temperature, air supply and the presence of other materials. Hazardous decomposition products may include and are not limited to hydrogen chloride.

INCOMPATIBLE MATERIALS: Avoid contact with nitric acid, sulfuric acid.

HAZARDOUS POLYMERIZATION: Will not occur.

11. TOXICOLOGICAL INFORMATION (See Section 3 for Potential Health Effects. For detailed toxicological data, write or call the address or non-emergency number shown in Section 1)

SKIN: The dermal LD50 has not been determined.

INGESTION: Single dose oral LD50 has not been determined.

MUTAGENICITY: No relevant information found.

12. ECOLOGICAL INFORMATION (For detailed Ecological data, write or call the address or non-emergency number shown in Section 1)

ENVIRONMENTAL FATE

MOVEMENT & PARTITIONING: No bioconcentration is expected

(Continued on page 5)

\* OR (R) INDICATES A TRADEMARK OF THE DOW CHEMICAL COMPANY

M A T E R I A L   S A F E T Y   D A T A   S H E E T

Product: SARAN\* 540 White Vapor Retarder Film  
Product Code: 76648

Effective Date: 09/07/99      Date Printed: 06/16/04      MSD: 006441

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because of the relatively high molecular weight (MW>1000). In the terrestrial environment, material is expected to remain in the soil. In the aquatic environment, material will sink and remain in the sediment.

DEGRADATION AND PERSISTENCE: This water insoluble polymeric solid is expected to be inert in the environment. Surface photodegradation is expected with exposure to sunlight. No appreciable biodegradation is expected.

ECOTOXICITY: Not expected to be acutely toxic.

13. DISPOSAL CONSIDERATIONS (See Section 15 for Regulatory Information)

DISPOSAL: DO NOT DUMP INTO ANY SEWERS, ON THE GROUND OR INTO ANY BODY OF WATER. All disposal methods must be in compliance with all Federal, State/provincial and local laws and regulations. Regulations may vary in different locations. Waste characterizations and compliance with applicable laws are the responsibility solely of the waste generator. THE DOW CHEMICAL COMPANY HAS NO CONTROL OVER THE MANAGEMENT PRACTICES OR MANUFACTURING PROCESSES OF PARTIES HANDLING OR USING THIS MATERIAL. THE INFORMATION PRESENTED HERE PERTAINS ONLY TO THE PRODUCT AS SHIPPED IN ITS INTENDED CONDITION AS DESCRIBED IN MSDS SECTION 2 (Composition/Information On Ingredients).

FOR UNUSED & UNCONTAMINATED PRODUCT, the preferred options include sending to a licensed, permitted: recycler, reclaimer, incinerator or other thermal destruction device, and landfill.

For additional information, refer to Stability & Reactivity Information, MSDS Section 10.

As a service to its customers, Dow can provide names of information resources to help identify waste management companies and other facilities which recycle, reprocess or manage chemicals or plastics, and that manage used drums. Telephone Dow's Customers Information Center at 800-258-2436 or 989-832-1556 for further details.

14. TRANSPORT INFORMATION

DEPARTMENT OF TRANSPORTATION (D.O.T.): This product is not regulated by D.O.T. when shipped domestically by land.

CANADIAN TDG INFORMATION: This product is not regulated by TDG

(Continued on page 6 , over)

\* OR (R) INDICATES A TRADEMARK OF THE DOW CHEMICAL COMPANY

M A T E R I A L   S A F E T Y   D A T A   S H E E T

Product: SARAN\* 540 White Vapor Retarder Film  
Product Code: 76648

Effective Date: 09/07/99      Date Printed: 06/16/04      MSD: 006441

-----

when shipped domestically by land.

15. REGULATORY INFORMATION (Not meant to be all-inclusive--selected regulations represented)

NOTICE: The information herein is presented in good faith and believed to be accurate as of the effective date shown above. However, no warranty, express or implied is given. Regulatory requirements are subject to change and may differ from one location to another; it is the buyer's responsibility to ensure that its activities comply with federal, state or provincial, and local laws. The following specific information is made for the purpose of complying with numerous federal, state or provincial, and local laws and regulations. See other sections for health and safety information.

U.S. REGULATIONS

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SARA 313 INFORMATION: To the best of our knowledge, this product contains no chemical subject to SARA Title III Section 313 supplier notification requirements.

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SARA HAZARD CATEGORY: This product has been reviewed according to the EPA "Hazard Categories" promulgated under Sections 311 and 312 of the Superfund Amendment and Reauthorization Act of 1986 (SARA Title III) and is considered, under applicable definitions, to meet the following categories:

Not to have met any hazard category

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STATE RIGHT-TO-KNOW: The following product components are cited on certain state lists as mentioned. Non-listed components may be shown in the composition section of the MSDS.

CHEMICAL NAME	CAS NUMBER	LIST
TITANIUM DIOXIDE	013463-67-7	NJ3 PA1

NJ3=New Jersey Workplace Hazardous Substance (present at greater than or equal to 1.0%).

(Continued on page 7)

\* OR (R) INDICATES A TRADEMARK OF THE DOW CHEMICAL COMPANY



M A T E R I A L   S A F E T Y   D A T A   S H E E T

Product: SARAN\* 540 White Vapor Retarder Film  
Product Code: 76648

Effective Date: 09/07/99      Date Printed: 06/16/04      MSD: 006441

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REGULATORY INFORMATION (CONTINUED)

PA1=Pennsylvania Hazardous Substance (present at greater than or equal to 1.0%).

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OSHA HAZARD COMMUNICATION STANDARD:

This product is not a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

CANADIAN REGULATIONS

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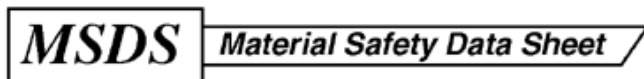
WHMIS INFORMATION: The Canadian Workplace Hazardous Materials Information System (WHMIS) Classification for this product is:

This product is not a "Controlled Product" under WHMIS.

16. OTHER INFORMATION

MSDS STATUS:   New MSDS.

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The Information Herein Is Given In Good Faith, But No Warranty, Express Or Implied, Is Made. Consult The Dow Chemical Company For Further Information.



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 (1-800-582-2537) for assistance.

# SILICA GEL, Indicating

## 1. Product Identification

**Synonyms:** Silica, amorphous; Silica, precipitated and gel (CAS # 112926-00-8 (OSHA))

**CAS No.:** Not applicable.

**Molecular Weight:** Not applicable.

**Chemical Formula:** SiO<sub>2</sub> · xH<sub>2</sub>O + CoCl<sub>2</sub>

**Product Codes:**

J.T. Baker: 3401, 3402

Mallinckrodt: 4471

## 2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
Silica Gel	63231-67-4	> 99%	Yes
Cobalt(II) Chloride	7646-79-9	< 1%	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: 2 - Moderate (Cancer)

Flammability Rating: 1 - Slight

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 product contains synthetic amorphous silica, not to be confused with crystalline silica such as quartz, cristobalite or tridymite or with diatomaceous earth or other naturally occurring forms of amorphous silica that frequently contain crystalline forms.

### **Inhalation:**

May cause dryness and irritation to mucous membranes, nose, and throat. Symptoms may include coughing, sore throat, and wheezing.

### **Ingestion:**

No adverse effects expected.

### **Skin Contact:**

May cause irritation with dryness and abrasion.

### **Eye Contact:**

May cause irritation, redness and pain.

### **Chronic Exposure:**

Repeated exposure may cause symptoms similar to those listed for acute effects. Synthetic amorphous silica does not produce silicosis. Prolonged exposure to cobalt has been shown to cause cancer in laboratory animals.

### **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 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.

### **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. 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. 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:**

Silica (synthetic, amorphous):

- OSHA Permissible Exposure Limit (PEL) -

80/(%SiO<sub>2</sub>) mg/m<sup>3</sup> (TWA) for amorphous silica, including natural diatomaceous earth.

For Inorganic Cobalt Compounds:

- ACGIH Threshold Limit Value (TLV) -

0.02 mg/m<sup>3</sup> (TWA) as Co, A3: Animal 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 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:**

Blue crystals.

### **Odor:**

Odorless.

### **Solubility:**

Silica gel base is insoluble in water; cobalt chloride may leach out.

### **Specific Gravity:**

2.1

### **pH:**

6.5-7.5 (in 5% slurry)

### **% 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:**

Oxides of carbon and silicon may be formed when heated to decomposition.

**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:**

Cobalt chloride: oral rat LD50: 80 mg/kg; investigated as a tumorigen, mutagen, reproductive effector

**Carcinogenicity:**

Cobalt and its compounds have been shown to cause cancer in laboratory animals.

-----\Cancer Lists\-----			
Ingredient	---NTP Carcinogen---		IARC Category
	Known	Anticipated	
Silica Gel (63231-67-4)	No	No	None
Cobalt(II) Chloride (7646-79-9)	No	No	2B

---

## 12. Ecological Information

**Environmental Fate:**

For Silica Gel (synthetic amorphous): 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:**

For Silica Gel (synthetic amorphous): This material is not expected to be toxic to aquatic life.

**Cobalt Chloride Component:**

Dangerous to the environment. Very toxic to aquatic organisms; may cause long term adverse effects in the aquatic environment.

---

## 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
-----
Silica Gel (63231-67-4)                       Yes    No     No     Yes
Cobalt(II) Chloride (7646-79-9)              Yes    Yes    Yes    Yes
```

```
-----\Chemical Inventory Status - Part 2\-----
Ingredient                                     Korea  --Canada--
                                     DSL    NDSL   Phil.
-----
Silica Gel (63231-67-4)                       Yes    Yes    No     Yes
Cobalt(II) Chloride (7646-79-9)              Yes    Yes    No     Yes
```

```
-----\Federal, State & International Regulations - Part 1\-----
Ingredient                                     -SARA 302-  -SARA 313-
                                     RQ    TPQ     List  Chemical Catg.
-----
Silica Gel (63231-67-4)                       No     No     No     No
Cobalt(II) Chloride (7646-79-9)              No     No     No     Cobalt compo
```

```
-----\Federal, State & International Regulations - Part 2\-----
Ingredient                                     CERCLA  -RCRA-  -TSCA-
                                     261.33  8(d)
-----
Silica Gel (63231-67-4)                       No     No     No
Cobalt(II) Chloride (7646-79-9)              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      (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: 1 Flammability: 0 Reactivity: 0

### Label Hazard Warning:

CAUTION! 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. 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: 8.



**Disclaimer:**

\*\*\*\*\*

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\*\*\*\*\*

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

<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
 	<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.

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

# SILVER NITRATE

## 1. Product Identification

**Synonyms:** Lunar caustic; silver nitrate toughened; Nitric Acid, Silver (I) Salt

**CAS No.:** 7761-88-8

**Molecular Weight:** 169.87

**Chemical Formula:** AgNO<sub>3</sub>

**Product Codes:**

J.T. Baker: 3426, 3429

Mallinckrodt: 2160, 2169, 7992

## 2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
Silver Nitrate	7761-88-8	99 - 100%	Yes

## 3. Hazards Identification

### Emergency Overview

**POISON! DANGER! CORROSIVE. CAUSES BURNS TO ANY AREA OF CONTACT. MAY BE FATAL IF SWALLOWED. HARMFUL IF INHALED. STRONG OXIDIZER. CONTACT WITH OTHER MATERIAL MAY CAUSE FIRE.**

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

Health Rating: 3 - Severe (Poison)

Flammability Rating: 0 - None

Reactivity Rating: 3 - Severe (Oxidizer)

Contact Rating: 3 - Severe (Corrosive)

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

Storage Color Code: Yellow (Reactive)



## Potential Health Effects

---

### **Inhalation:**

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. May be absorbed into the body following inhalation with symptoms paralleling those from ingestion exposure. Dust deposits in the lungs may resemble a form of pneumoconiosis.

### **Ingestion:**

Corrosive. Swallowing can cause severe burns of the mouth, throat, and stomach. Can cause sore throat, vomiting, diarrhea. Poison. Symptoms include pain and burning in the mouth, blackening of the skin and mucous membranes, throat, and abdomen, salivation, vomiting of black material, diarrhea, collapse, shock, coma and death.

### **Skin Contact:**

Corrosive. Symptoms of redness, pain, and severe burn can occur.

### **Eye Contact:**

Corrosive. Can cause blurred vision, redness, pain, severe tissue burns and eye damage.

### **Chronic Exposure:**

Repeated application or ingestion causes a permanent bluish discoloration of the skin, conjunctiva, and mucous membranes. Repeated inhalation may cause lung disease.

### **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

### **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:**

This oxidizing material can increase the flammability of adjacent combustible materials.

### **Explosion:**

Many reactions may cause explosion. Reacts with ammonia to form compounds that are sensitive to mechanical shock.

### **Fire Extinguishing Media:**

Use flooding amounts of water. Do not use dry chemical, carbon dioxide or Halon. Do not allow water runoff to enter sewers or waterways.

### **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. 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 and moisture. Isolate from any source of heat or ignition. Avoid storage on wood floors. Separate from incompatibles, combustibles, organic or other readily oxidizable materials. Protect from light. 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):

0.01 mg/m<sup>3</sup> (TWA) for silver metal dust and fume as Ag

-ACGIH Threshold Limit Value (TLV):

0.01 mg /m<sup>3</sup> (TWA) for soluble silver compounds as Ag

### **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:**

Transparent, colorless crystals.

### **Odor:**

Odorless.

### **Solubility:**

219g/100g water @ 20C (68F).

### **Specific Gravity:**

4.352

**pH:**

ca. 6 (neutral to litmus)

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

0

**Boiling Point:**

444C (831F) Decomposes.

**Melting Point:**

212C (414F)

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

4.4

**Vapor Pressure (mm Hg):**

Very low.

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

No information found.

---

## 10. Stability and Reactivity

**Stability:**

Stable at room temperature in sealed containers. Discolors on exposure to light.

**Hazardous Decomposition Products:**

Oxides of nitrogen.

**Hazardous Polymerization:**

Will not occur.

**Incompatibilities:**

Ammonia, alkalis, antimony salts, arsenites, bromides, carbonates, chlorides, iodides, thiocyanates, ferrous salts, phosphates, tannic acid and tartrates.

**Conditions to Avoid:**

Heat, flame, sources of ignition, light and incompatibles.

---

## 11. Toxicological Information

Oral rat LD50: 1173 mg/kg. Irritation data, rabbit, std Draize: eye= 1 mg, severe. Investigated as a tumorigen, mutagen, reproductive effector.

-----\Cancer Lists\-----			
Ingredient	---NTP Carcinogen---		IARC Category
	Known	Anticipated	
Silver Nitrate (7761-88-8)	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 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:** RQ, SILVER NITRATE  
**Hazard Class:** 5.1  
**UN/NA:** UN1493  
**Packing Group:** II  
**Information reported for product/size:** 500G

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

-----  
**Proper Shipping Name:** SILVER NITRATE  
**Hazard Class:** 5.1  
**UN/NA:** UN1493  
**Packing Group:** II  
**Information reported for product/size:** 500G

## 15. Regulatory Information

-----\Chemical Inventory Status - Part 1\-----  
Ingredient TSCA EC Japan Australia  
-----  
Silver Nitrate (7761-88-8) Yes Yes Yes Yes

-----\Chemical Inventory Status - Part 2\-----  
Ingredient Korea DSL --Canada-- NDSL Phil.  
-----  
Silver Nitrate (7761-88-8) Yes Yes No Yes

-----\Federal, State & International Regulations - Part 1\-----  
Ingredient -SARA 302- -SARA 313-  
RQ TPQ List Chemical Catg.  
-----  
Silver Nitrate (7761-88-8) No No No Sliver compd/

-----\Federal, State & International Regulations - Part 2\-----  
Ingredient CERCLA -RCRA- -TSCA-  
261.33 8(d)  
-----  
Silver Nitrate (7761-88-8) 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: Yes (Pure / Solid)

**Australian Hazchem Code:** 2X

**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: 4 Flammability: 0 Reactivity: 0 Other: Oxidizer

**Label Hazard Warning:**

POISON! DANGER! CORROSIVE. CAUSES BURNS TO ANY AREA OF CONTACT. MAY BE FATAL

IF SWALLOWED. HARMFUL IF INHALED. STRONG OXIDIZER. CONTACT WITH OTHER MATERIAL MAY CAUSE FIRE.

**Label Precautions:**

- Keep from contact with clothing and other combustible materials.
- 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.
- Store in a tightly closed container.
- Do not store near combustible materials.

**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. 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.)

**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: 613-996-6666

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.

# SODIUM BICARBONATE

## 1. Product Identification

**Synonyms:** Sodium hydrogen carbonate; sodium acid carbonate; baking soda; bicarbonate of soda

**CAS No.:** 144-55-8

**Molecular Weight:** 84.01

**Chemical Formula:** NaHCO<sub>3</sub>

**Product Codes:**

J.T. Baker: 3506, 3508, 3509, 3510

Mallinckrodt: 7285, 7396, 7397, 7412, 7749, 7903

## 2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
Sodium Bicarbonate	144-55-8	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

Flammability Rating: 1 - Slight

Reactivity Rating: 1 - Slight

Contact Rating: 1 - Slight

Lab Protective Equip: GOGGLES; LAB COAT

Storage Color Code: Green (General Storage)

## Potential Health Effects

---

### **Inhalation:**

High concentrations of dust may cause coughing and sneezing.

### **Ingestion:**

Extremely large oral doses may cause gastrointestinal disturbances.

### **Skin Contact:**

No adverse effects expected.

### **Eye Contact:**

Contact may cause mild 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:**

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. Small amounts of residue may be flushed to sewer with plenty of water.

---

## 7. Handling and Storage

Keep in a well closed container stored under cold to warm conditions, 2 to 40 C, (36 to 104F). 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:**

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 crystalline powder.

### **Odor:**

Odorless.

### **Solubility:**

7.8g/100g water @ 18C (64F).

### **Density:**

2.2

### **pH:**

8.3 (0.1 molar @ 25C (77F))

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

0

### **Boiling Point:**

Not applicable.

### **Melting Point:**

60C (140F)

### **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:**

Gaseous carbon dioxide.

### **Hazardous Polymerization:**

Will not occur.

### **Incompatibilities:**

Reacts with acids to form carbon dioxide. Dangerous reaction with monoammonium phosphate or a sodium-potassium alloy.

### **Conditions to Avoid:**

Heat, moisture, incompatibles.



---

## 11. Toxicological Information

Investigated as a mutagen, reproductive effector. Oral rat LD50: 4220 mg/kg. Irritation data: human,skin, 30mg/3D-I mild, rabbit,eye, 100 mg/30 S, mild.

-----\Cancer Lists\-----			
Ingredient	---NTP Known	Carcinogen Anticipated	IARC Category
Sodium Bicarbonate (144-55-8)	No	No	None

---

## 12. Ecological Information

### Environmental Fate:

No information found.

### Environmental Toxicity:

For Sodium Bicarbonate:

48 hour EC50 Daphnia magna (water flea) : 2350 mg/L.

96 hour LC50 Lepomis macrochirus (bluegill) : > 5000 mg/L.

120 hour EC50 Nitzschia linearis (diatom) : 650 mg/L.

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
Sodium Bicarbonate (144-55-8)	Yes	Yes	Yes	Yes

-----\Chemical Inventory Status - Part 2\-----				
Ingredient	Korea	---Canada--- DSL	NDSL	Phil.
Sodium Bicarbonate (144-55-8)	Yes	Yes	No	Yes

-----\Federal, State & International Regulations - Part 1\-----				
Ingredient	-SARA 302- RQ	TPQ	List	SARA 313- Chemical Catg.
Sodium Bicarbonate (144-55-8)	No	No	No	No

-----\Federal, State & International Regulations - Part 2\-----			
Ingredient	CERCLA	-RCRA- 261.33	-TSCA- 8(d)
Sodium Bicarbonate (144-55-8)	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:**

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

**Disclaimer:**

\*\*\*\*\*

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# 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) (1330-43-4)	Yes	Yes	Yes	Yes

-----\Chemical Inventory Status - Part 2\-----				
--	--	--	--	--

---

Ingredient	--Canada--			
	Korea	DSL	NDSL	Phil.
Borates, Tetra, Sodium Salts (Anhydrous) (1330-43-4)	Yes	Yes	No	Yes

Ingredient	Federal, State & International Regulations - Part 1\			
	-SARA 302- RQ	TPQ	List	SARA 313 Chemical Catg.
Borates, Tetra, Sodium Salts (Anhydrous) (1330-43-4)	No	No	No	No

Ingredient	Federal, State & International Regulations - Part 2\		
	CERCLA	-RCRA- 261.33	-TSCA- 8(d)
Borates, Tetra, Sodium Salts (Anhydrous) (1330-43-4)	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 / 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.)



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# SODIUM CARBONATE ANHYDROUS

## 1. Product Identification

**Synonyms:** Carbonic acid, disodium salt; disodium carbonate; soda ash

**CAS No.:** 497-19-8

**Molecular Weight:** 105.99

**Chemical Formula:** Na<sub>2</sub>CO<sub>3</sub>

**Product Codes:**

J.T. Baker: 3602, 3604, 3605, 3606, 4502, 4923, 5198

Mallinckrodt: 1338, 3604, 7468, 7472, 7521, 7527, 7528, 7698

## 2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
Sodium Carbonate	497-19-8	99 - 100%	Yes

## 3. Hazards Identification

### Emergency Overview

**DANGER! MAY CAUSE EYE BURNS. HARMFUL IF SWALLOWED OR INHALED. CAUSES IRRITATION TO SKIN 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: 2 - Moderate

Contact Rating: 3 - Severe (Life)

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 cause irritation to the respiratory tract. Symptoms from excessive inhalation of dust may include coughing and difficult breathing. Excessive contact is known to cause damage to the nasal septum.

### **Ingestion:**

Sodium carbonate is only slightly toxic, but large doses may be corrosive to the gastro-intestinal tract where symptoms may include severe abdominal pain, vomiting, diarrhea, collapse and death.

### **Skin Contact:**

Excessive contact may cause irritation with blistering and redness. Solutions may cause severe irritation or burns.

### **Eye Contact:**

Contact may be corrosive to eyes and cause conjunctival edema and corneal destruction. Risk of serious injury increases if eyes are kept tightly closed. Other symptoms may appear from absorption of sodium carbonate into the bloodstream via the eyes.

### **Chronic Exposure:**

Prolonged or repeated skin exposure may cause sensitization.

### **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:**

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.

### **Note to Physician:**

Consider endoscopy in all suspected cases of sodium carbonate poisoning. Perform blood analysis to determine if dehydration, acidosis, or other electrolyte imbalances occurred.

---

## 5. Fire Fighting Measures

### **Fire:**

Not considered to be a fire hazard.

### **Explosion:**

Not considered an explosion hazard, but sodium carbonate may explode when applied to red-hot aluminum.

### **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:**

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 powder or granules.

### **Odor:**

Odorless.

### **Solubility:**

45.5 g/100 ml water @ 100C (212F)

### **Specific Gravity:**

2.53

### **pH:**

11.6 Aqueous solution

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

0

### **Boiling Point:**

Decomposes.

### **Melting Point:**

851C (1564F)

### **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. Readily absorbs moisture from the air. Solutions are strong bases.

### Hazardous Decomposition Products:

Oxides of carbon and sodium oxide.

### Hazardous Polymerization:

Will not occur.

### Incompatibilities:

Fluorine, aluminum, phosphorous pentoxide, sulfuric acid, zinc, lithium, moisture, calcium hydroxide and 2,4,6-trinitrotoluene. Reacts violently with acids to form carbon dioxide.

### Conditions to Avoid:

Moisture, heat, dusting and incompatibles.

---

## 11. Toxicological Information

For Sodium Carbonate:

Oral rat LD50: 4090 mg/kg; inhalation rat LC50: 2300 mg/m<sup>3</sup>/2H; irritation eye rabbit: 50 mg severe; investigated as a mutagen, reproductive effector.

-----\Cancer Lists\-----			
Ingredient	---NTP Carcinogen---		IARC Category
	Known	Anticipated	
Sodium Carbonate (497-19-8)	No	No	None

---

## 12. Ecological Information

### Environmental Fate:

No information found.

### Environmental Toxicity:

96 Hr LC50 *Lepomis macrochirus*: 300 mg/L [static];

48 Hr EC50 *Daphnia magna*: 265 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

-----\Chemical Inventory Status - Part 2\-----				
Ingredient	Korea	DSL	Canada NDSL	Phil.
Sodium Carbonate (497-19-8)	Yes	Yes	Yes	Yes
-----\Federal, State & International Regulations - Part 1\-----				
Ingredient	-SARA 302- RQ	TPQ	List	SARA 313 Chemical Catg.
Sodium Carbonate (497-19-8)	No	No	No	No
-----\Federal, State & International Regulations - Part 2\-----				
Ingredient	CERCLA	-RCRA- 261.33	-TSCA- 8(d)	
Sodium Carbonate (497-19-8)	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:** 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: 2 Flammability: 0 Reactivity: 0

**Label Hazard Warning:**

DANGER! MAY CAUSE EYE BURNS. HARMFUL IF SWALLOWED OR INHALED. CAUSES IRRITATION TO SKIN AND RESPIRATORY TRACT.

**Label Precautions:**

- Do not get in eyes, on skin, or on clothing.
- Avoid breathing dust.
- Keep container closed.
- Use 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. Get medical attention for any breathing difficulty. In all cases, get medical attention.

**Product Use:**

Laboratory Reagent.

**Revision Information:**

No Changes.

**Disclaimer:**

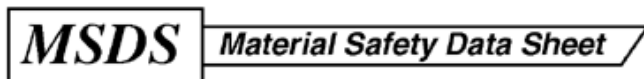
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**Prepared by:** Environmental Health & Safety  
Phone Number: (314) 654-1600 (U.S.A.)



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.

# SODIUM CHLORIDE

## 1. Product Identification

**Synonyms:** Salt; Rock Salt; Saline; Table Salt

**CAS No.:** 7647-14-5

**Molecular Weight:** 58.44

**Chemical Formula:** NaCl

**Product Codes:**

J.T. Baker: 3624, 3625, 3626, 3627, 3628, 3629, 4058, 4924

Mallinckrodt: 4577, 5519, 7361, 7503, 7532, 7534, 7540, 7544, 7576, 7581, 7713, V482

## 2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
Sodium Chloride	7647-14-5	99 - 100%	Yes

## 3. Hazards Identification

### Emergency Overview

**WARNING! CAUSES EYE IRRITATION.**

**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: 1 - Slight

Lab Protective Equip: GOGGLES; LAB COAT; PROPER GLOVES

Storage Color Code: Green (General Storage)

### Potential Health Effects

-----

**Inhalation:**

May cause mild irritation to the respiratory tract.

**Ingestion:**

Very large doses can cause vomiting, diarrhea, and prostration. Dehydration and congestion occur in most internal organs. Hypertonic salt solutions can produce violent inflammatory reactions in the gastrointestinal tract.

**Skin Contact:**

May irritate damaged skin; absorption can occur with effects similar to those via ingestion.

**Eye Contact:**

Causes irritation, redness, and pain. (For salt concentrations greater than the normal saline present.)

**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:**

Wash exposed area with soap and water. Get medical advice 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. Small amounts of residue may be flushed to sewer with plenty of water.

---

## 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:**

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:**

36g/100cc water @ 20C (68F)

### **Specific Gravity:**

2.16

### **pH:**

6.7 - 7.3 (aqueous solution)

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

0

### **Boiling Point:**

1413C (2575F)

### **Melting Point:**

801C (1474F)

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

No information found.

### **Vapor Pressure (mm Hg):**

1.0 @ 865C (1589F)

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

No information found.

---

## 10. Stability and Reactivity

### **Stability:**

Stable under ordinary conditions of use and storage. Hygroscopic.

### **Hazardous Decomposition Products:**

When heated to above 801C (1474F) it emits toxic fumes of chloride and sodium oxide.

### **Hazardous Polymerization:**

Will not occur.

### **Incompatibilities:**

Lithium, bromine trifluoride.

**Conditions to Avoid:**  
Incompatibles.

## 11. Toxicological Information

Oral rat LD50: 3000 mg/kg.  
Inhalation rat LC50: > 42 gm/m3 /1H.  
Skin rabbit LD50: > 10 gm/kg. Investigated as a mutagen, reproductive effector.

Ingredient	---NTP Known	Carcinogen Anticipated	IARC Category
Sodium Chloride (7647-14-5)	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

Ingredient	TSCA	EC	Japan	Australia
Sodium Chloride (7647-14-5)	Yes	Yes	Yes	Yes

Ingredient	Korea	---Canada--- DSL	NDSL	Phil.
Sodium Chloride (7647-14-5)	Yes	Yes	No	Yes

Ingredient	-SARA 302- RQ	TPQ	-SARA 313- List	Chemical Catg.
Sodium Chloride (7647-14-5)	No	No	No	No

Ingredient	-RCRA- CERCLA	261.33	-TSCA- 8(d)
Sodium Chloride (7647-14-5)	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: 0 Reactivity: 0

**Label Hazard Warning:**

WARNING! CAUSES EYE IRRITATION.

**Label Precautions:**

Avoid contact with eyes.

Wash thoroughly after handling.

**Label First Aid:**

In case of eye contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention if irritation develops or persists.

**Product Use:**

Laboratory Reagent.

**Revision Information:**

No Information Found.

**Disclaimer:**

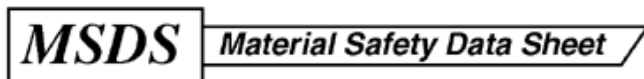
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**Prepared by:** Environmental Health & Safety

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# SODIUM CITRATE

## 1. Product Identification

**Synonyms:** Citrosodine; trisodium citrate; citric acid, trisodium salt; 2-hydroxy-1,2,3-propanetricarboxylic acid, trisodium salt, dihydrate; sodium citrate dihydrate

**CAS No.:** 68-04-2 (Anhydrous); 6132-04-3 (Dihydrate)

**Molecular Weight:** 294.10

**Chemical Formula:** HOC (COONa) (CH<sub>2</sub>COONa)<sub>2</sub>.2H<sub>2</sub>O

**Product Codes:**

J.T. Baker: 3646, 3647, 3648, 3649, 3650, 4093

Mallinckrodt: 0634, 0734, 0754, 7773

## 2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
Sodium Citrate	68-04-2	90 - 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: 0 - None

Contact Rating: 1 - Slight

Lab Protective Equip: GOGGLES; LAB COAT; PROPER GLOVES

Storage Color Code: Green (General Storage)

## Potential Health Effects

---

### **Inhalation:**

Inhalation of large amounts of dust may cause irritation to the respiratory tract.

### **Ingestion:**

Extremely large oral dosages may produce gastrointestinal disturbances.

### **Skin Contact:**

Possible irritation on prolonged contact with moist or sensitive areas of the skin.

### **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:**

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:**

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, 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:**

72 g/100 g of water.

### **Density:**

ca. 1.7

### **pH:**

ca. 8.0

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

0

### **Boiling Point:**

Decomposes at red heat.

### **Melting Point:**

150C (302F)

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

No information found.

### **Vapor Pressure (mm Hg):**

No information found.

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

Not applicable.

---

## 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:**

Heat, flame, ignition sources, dusting and incompatibles.

## 11. Toxicological Information

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

Ingredient	---NTP Carcinogen---		IARC Category
	Known	Anticipated	
Sodium Citrate (68-04-2)	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

Ingredient	TSCA	EC	Japan	Australia
Sodium Citrate (68-04-2)	Yes	Yes	Yes	Yes

Ingredient	Korea	--Canada--		Phil.
		DSL	NDSL	
Sodium Citrate (68-04-2)	Yes	Yes	No	Yes

Ingredient	-SARA 302-		-SARA 313-	
	RQ	TPQ	List	Chemical Catg.
Sodium Citrate (68-04-2)	No	No	No	No

Ingredient	CERCLA	-RCRA-	-TSCA-
		261.33	8(d)
Sodium Citrate (68-04-2)	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:**

CAUTION! MAY CAUSE IRRITATION TO SKIN, EYES, AND RESPIRATORY TRACT.

**Label Precautions:**

Avoid contact with eyes, skin and clothing.

Avoid breathing dust.

Use with adequate ventilation.

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. 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.)



**MSDS** Material Safety Data Sheet

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**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.

# SODIUM HYDROSULFITE

## 1. Product Identification

**Synonyms:** Sodium Dithionite; Dithionous acid, disodium salt; Sodium Sulfoxylate

**CAS No.:** 7775-14-6

**Molecular Weight:** 174.10

**Chemical Formula:** Na<sub>2</sub>S<sub>2</sub>O<sub>4</sub>

**Product Codes:**

J.T. Baker: 3712

Mallinckrodt: 7672

## 2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
Sodium Hydrosulfite	7775-14-6	90 - 100%	Yes

## 3. Hazards Identification

### Emergency Overview

**WARNING! FLAMMABLE SOLID. MAY IGNITE WITH MOISTURE AND AIR. 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 (Life)

Flammability Rating: 4 - Extreme (Flammable)

Reactivity Rating: 3 - Severe (Air Reactive)

Contact Rating: 3 - Severe

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

Storage Color Code: Red Stripe (Store Separately)

## Potential Health Effects

---

### **Inhalation:**

Inhalation can cause severe irritation of mucous membranes and upper respiratory tract. Symptoms may include burning sensation, coughing, wheezing, laryngitis, shortness of breath, headache, nausea and vomiting. High concentrations may cause lung damage. Higher exposures can cause a build-up of fluid in the lungs (pulmonary edema), a medical emergency.

### **Ingestion:**

May cause abdominal pain, nausea, vomiting, colic and diarrhea, circulatory disturbances, central nervous system depression, irritability, restlessness, convulsions, cyanosis, respiratory and cardiovascular collapse, and death. Estimated lethal dose 30 grams.

### **Skin Contact:**

Can irritate the skin causing a rash or burning feeling on contact. High concentrations could cause burns.

### **Eye Contact:**

Causes irritation, redness, and pain. May cause burns and possible damage to vision.

### **Chronic Exposure:**

Exposure may induce allergic reaction.

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

Persons allergic to "sulfiting" agents, used to preserve some foods, 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. 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:**

Flammable Solid. Heats spontaneously in contact with moisture and air. May ignite in the presence of combustible materials.

### **Explosion:**

Not considered to be an explosion hazard. An explosion occurred after mixing sodium hydrosulfite, aluminum powder, potassium carbonate and benzaldehyde.

### **Fire Extinguishing Media:**

Carbon dioxide, dry chemical or sand.

### **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. Do Not attempt to clean empty containers since residue is difficult to remove. Do not pressurize, cut, weld, braze, solder, drill, grind or expose such containers to heat, sparks, flame, static electricity or other sources of ignition: they may explode and cause injury or death.

---

## 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 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 grayish-white granular powder.

### **Odor:**

Distinct sulfur dioxide odor.

### **Solubility:**

Soluble in water.

### **Density:**

2.19

### **pH:**

No information found.

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

0

### **Boiling Point:**

Not applicable.

### **Melting Point:**

52C (126F) Decomposes.

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

3.6

**Vapor Pressure (mm Hg):**

No information found.

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

No information found.

---

## 10. Stability and Reactivity

### Stability:

Stable when stored in closed containers at room temperature. Heats spontaneously in contact with moisture and air. Loses all of its water of crystallization at 110C. Decomposes in hot water and acid.

### Hazardous Decomposition Products:

Burning may produce sulfur oxides.

### Hazardous Polymerization:

Will not occur.

### Incompatibilities:

Water, combustible materials, strong oxidizing agents, strong acids and sodium chlorite. An explosion occurred after mixing sodium hydrosulfite, aluminum powder, potassium carbonate and benzaldehyde.

### Conditions to Avoid:

Moisture, humidity, heat, flame, ignition sources 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	
Sodium Hydrosulfite (7775-14-6)	No	No	3

---

## 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 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:** SODIUM DITHIONITE  
**Hazard Class:** 4.2  
**UN/NA:** UN1384  
**Packing Group:** II  
**Information reported for product/size:** 2.5KG

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

**Proper Shipping Name:** SODIUM DITHIONITE  
**Hazard Class:** 4.2  
**UN/NA:** UN1384  
**Packing Group:** II  
**Information reported for product/size:** 2.5KG

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

**Proper Shipping Name:** SODIUM DITHIONITE  
**Hazard Class:** 4.2  
**UN/NA:** UN1384  
**Packing Group:** II  
**Information reported for product/size:** 2.5KG

---

## 15. Regulatory Information

-----\Chemical Inventory Status - Part 1\-----  
Ingredient TSCA EC Japan Australia  
-----  
Sodium Hydrosulfite (7775-14-6) Yes Yes Yes Yes

-----\Chemical Inventory Status - Part 2\-----  
Ingredient Korea --Canada--  
DSL NDSL Phil.  
-----  
Sodium Hydrosulfite (7775-14-6) Yes Yes No Yes

-----\Federal, State & International Regulations - Part 1\-----  
Ingredient -SARA 302- -SARA 313-  
RQ TPQ List Chemical Catg.  
-----  
Sodium Hydrosulfite (7775-14-6) No No No No

-----\Federal, State & International Regulations - Part 2\-----  
Ingredient -RCRA- -TSCA-  
CERCLA 261.33 8(d)  
-----  
Sodium Hydrosulfite (7775-14-6) No No No

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

**Australian Hazchem Code:** 1P  
**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: 2 Other: **Water reactive**

**Label Hazard Warning:**

WARNING! FLAMMABLE SOLID. MAY IGNITE WITH MOISTURE AND AIR. HARMFUL IF SWALLOWED OR INHALED. CAUSES IRRITATION TO SKIN, EYES AND RESPIRATORY TRACT.

**Label Precautions:**

Keep away from heat, sparks and flame.  
Avoid contact with eyes, skin and clothing.  
Avoid breathing dust.  
Keep container closed.  
Use only with adequate ventilation.  
Store in a tightly closed container.  
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:**

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\*\*\*\*\*

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

<b>MSDS</b> <i>Material Safety Data Sheet</i>	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
 	<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.

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

# SODIUM FLUORIDE

## 1. Product Identification

**Synonyms:** Floridine; sodium monofluoride; disodium difluoride; natrium fluoride; Florocid

**CAS No.:** 7681-49-4

**Molecular Weight:** 41.99

**Chemical Formula:** NaF

**Product Codes:**

J.T. Baker: 3687, 3688, 3689

Mallinckrodt: 0467, 5309, 5325, 7636

## 2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
Sodium Fluoride	7681-49-4	100%	Yes

## 3. Hazards Identification

### Emergency Overview

**DANGER! MAY BE FATAL IF SWALLOWED OR INHALED. AFFECTS RESPIRATORY SYSTEM, HEART, SKELETON, CIRCULATORY SYSTEM, CENTRAL NERVOUS SYSTEM AND KIDNEYS. CAUSES IRRITATION TO SKIN, EYES AND RESPIRATORY TRACT. IRRITATION EFFECTS MAY BE DELAYED.**

**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: 3 - Severe

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

Storage Color Code: Blue (Health)

---

## Potential Health Effects

---

If inhaled or swallowed, this compound can cause fluoride poisoning. Early symptoms include nausea, vomiting, diarrhea, and weakness. Later effects include central nervous system effects, cardiovascular effects and death.

### **Inhalation:**

Causes severe irritation to the respiratory tract, symptoms may include coughing, sore throat, and labored breathing. May be absorbed through inhalation of dust; symptoms may parallel those from ingestion exposure. Irritation effects may not appear immediately.

### **Ingestion:**

Toxic! May cause salivation, nausea, vomiting, diarrhea, and abdominal pain. Symptoms of weakness, tremors, shallow respiration, cardopedal spasm, convulsions, and coma may follow. May cause brain and kidney damage. Affects heart and circulatory system. Death may occur from respiratory paralysis. Estimated lethal dose = 5-10 grams.

### **Skin Contact:**

Causes irritation, with redness and pain. Solutions are corrosive. Effects may not appear immediately.

### **Eye Contact:**

Eye irritant! May cause irritation and serious eye damage. Effects may not immediately appear.

### **Chronic Exposure:**

Chronic exposure may cause mottling of teeth and bone damage (osteosclerosis) and fluorosis. Symptoms of fluorosis include brittle bones, weight loss, anemia, calcified ligaments, general ill health and joint stiffness.

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

Populations that appear to be at increased risk from the effects of fluoride are individuals that suffer from diabetes insipidus or some forms of renal impairment.

---

## 4. First Aid Measures

First aid procedures should be pre-planned for fluoride compound emergencies.

### **Inhalation:**

If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. CALL A PHYSICIAN IMMEDIATELY.

### **Ingestion:**

Administer milk, chewable calcium carbonate tablets or milk of magnesia. Never give anything by mouth to an unconscious person. CALL A PHYSICIAN IMMEDIATELY.

### **Skin Contact:**

Wipe off any excess material from skin and then immediately flush skin with large amounts of soapy water. Remove contaminated clothing and shoes. Wash clothing before re-use. Apply bandages soaked in magnesium sulfate. CALL A PHYSICIAN IMMEDIATELY.

### **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.

### **Note to Physician:**

For large exposures, systemic effects (hypocalcemia and hypomagnesia) may occur.

---

## 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. Separate from acids and oxidizing materials. 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):

2.5 mg(F)/m<sup>3</sup> (TWA)

-ACGIH Threshold Limit Value (TLV):

2.5 mg(F)/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 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 crystals.

**Odor:**

Odorless.

**Solubility:**

4 g/100 ml water @ 15C (59F)

**Specific Gravity:**

2.78

**pH:**

No information found.

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

0

**Boiling Point:**

1700C (3092F)

**Melting Point:**

993C (1819F)

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

No information found.

**Vapor Pressure (mm Hg):**

1 @ 1077C (1971F)

**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 hydrogen fluoride vapors.

**Hazardous Polymerization:**

Will not occur.

**Incompatibilities:**

Reacts with acids to form hydrogen fluoride.

**Conditions to Avoid:**

No information found.

---

## 11. Toxicological Information

Oral rat LD50: 52 mg/kg; Eye Rabbit (standard Draize) 20mg/24-hr, moderate; Investigated as a tumorigen, mutagen, reproductive effector

-----\Cancer Lists\-----			
Ingredient	---NTP Known	Carcinogen Anticipated	IARC Category
Sodium Fluoride (7681-49-4)	No	No	None

---

## 12. Ecological Information

**Environmental Fate:**

No information found.

**Environmental Toxicity:**

For Sodium Fluoride:

48 hour EC50 Daphnia magna (water flea) : 338 mg/L.

96 hour LC50 Lepomis macrochirus (bluegill) : > 530 mg/L.

96 hour EC50 Selenastrum capricornutum (green alga) : 272 mg/L.

LD50, oral (goat, sheep) 100 mg/kg; LD50, oral (wild bird) 110 mg/kg.

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

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

-----  
**Proper Shipping Name:** SODIUM FLUORIDE

**Hazard Class:** 6.1

**UN/NA:** UN1690

**Packing Group:** III

**Information reported for product/size:** 250LB

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

-----  
**Proper Shipping Name:** SODIUM FLUORIDE, SOLID

**Hazard Class:** 6.1

**UN/NA:** UN1690

**Packing Group:** III

**Information reported for product/size:** 250LB

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

-----  
**Proper Shipping Name:** SODIUM FLUORIDE, SOLID

**Hazard Class:** 6.1

**UN/NA:** UN1690

**Packing Group:** III

**Information reported for product/size:** 250LB

---

## 15. Regulatory Information

-----\Chemical Inventory Status - Part 1\-----  
Ingredient TSCA EC Japan Australia  
-----  
Sodium Fluoride (7681-49-4) Yes Yes Yes Yes

-----\Chemical Inventory Status - Part 2\-----  
Ingredient Korea DSL --Canada-- NDSL Phil.  
-----  
Sodium Fluoride (7681-49-4) Yes Yes No Yes

-----\Federal, State & International Regulations - Part 1\-----  
Ingredient -SARA 302- -SARA 313-  
RQ TPQ List Chemical Catg.  
-----  
Sodium Fluoride (7681-49-4) No No No No

-----\Federal, State & International Regulations - Part 2\-----  
Ingredient -RCRA- -TSCA-  
CERCLA 261.33 8(d)  
-----  
Sodium Fluoride (7681-49-4) 1000 No No

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

**Australian Hazchem Code: 2Z**

**Poison Schedule: S2**

**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! MAY BE FATAL IF SWALLOWED OR INHALED. AFFECTS RESPIRATORY SYSTEM, HEART, SKELETON, CIRCULATORY SYSTEM, CENTRAL NERVOUS SYSTEM AND KIDNEYS. CAUSES IRRITATION TO SKIN, EYES AND RESPIRATORY TRACT. IRRITATION EFFECTS MAY BE DELAYED.

**Label Precautions:**

Do not breathe dust.

Keep container closed.

Use only with adequate ventilation.

Wash thoroughly after handling.

Avoid contact with eyes, skin and clothing.

**Label First Aid:**

In all cases call a physician immediately. First Aid procedures should be pre-planned for fluoride compound emergencies. If swallowed, administer milk, chewable calcium carbonate tablets or milk of magnesia. Never give anything by mouth to an unconscious person. If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing difficult, give artificial respiration. In case of skin contact wipe off any excess material then immediately flush skin with large amounts of soapy water. Remove contaminated clothing and shoes. Wash clothing before re-use. Apply bandages soaked in magnesium sulfate. In case of eye contact, immediately flush eyes with gentle but large stream of water for at least 15 minutes, lifting upper and lower eyelids occasionally.

**Product Use:**

Laboratory Reagent.

**Revision Information:**

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

**Disclaimer:**



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**Prepared by:** Environmental Health & Safety

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

<b>MSDS</b> <i>Material Safety Data Sheet</i>	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
 	<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.

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

# SODIUM HEXAMETAPHOSPHATE

## 1. Product Identification

**Synonyms:** Hexametaphosphate, sodium salt; SHMP; Metaphosphoric acid, hexadosium salt; Sodium polyphosphates, glassy

**CAS No.:** 68915-31-1

**Molecular Weight:** Not applicable to mixtures.

**Chemical Formula:** Na<sub>(x+2)</sub> P<sub>x</sub> O<sub>(3x+1)</sub> x = 6 to 21

**Product Codes:**

J.T. Baker: V030

Mallinckrodt: E024

## 2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
Polyphosphoric Acids, Sodium Salts	68915-31-1	90 - 100%	Yes

## 3. Hazards Identification

### Emergency Overview

**CAUTION! MAY CAUSE IRRITATION TO SKIN, EYES, AND RESPIRATORY TRACT. MAY BE HARMFUL IF SWALLOWED OR INHALED.**

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

Health Rating: 2 - Moderate (Life)

Flammability Rating: 0 - None

Reactivity Rating: 0 - None

Contact Rating: 2 - Moderate

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

Storage Color Code: Green (General Storage)

## Potential Health Effects

---

Many of the systemic effects given below were taken from toxicity information for other phosphates.

### **Inhalation:**

May cause irritation to the respiratory tract. Symptoms may include coughing and shortness of breath.

### **Ingestion:**

Phosphates are slowly and incompletely absorbed when ingested, and seldom result in systemic effects. Such effects, however, have occurred. Symptoms may include vomiting, lethargy, diarrhea, blood chemistry effects, heart disturbances and central nervous system effects. The toxicity of phosphates is because of their ability to sequester calcium. Systemic acidosis may result as this material is believed to hydrolyze into phosphoric acid when ingested.

### **Skin Contact:**

May cause irritation with redness and pain.

### **Eye Contact:**

May cause irritation, redness and pain.

### **Chronic Exposure:**

May sequester calcium and cause calcium phosphate deposits in the kidneys. Chronic ingestion or inhalation may induce systemic phosphorous poisoning. Liver damage, kidney damage, jaw/tooth abnormalities, blood disorders and cardiovascular effects can result.

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

Persons with pre-existing skin disorders or eye problems, jaw/tooth abnormalities, 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. 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. 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. Small amounts of residue may be flushed to sewer with plenty of water.

---

## 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 powder or plates.

### **Odor:**

No information found.

### **Solubility:**

Soluble in water.

### **Density:**

1.25

### **pH:**

No information found.

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

0

### **Boiling Point:**

1500C (2732F)

### **Melting Point:**

550C (1022F)

### **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:**

Sodium and phosphorus oxides may form when heated to decomposition.

**Hazardous Polymerization:**

Will not occur.

**Incompatibilities:**

No information found.

**Conditions to Avoid:**

No information found.

---

## 11. Toxicological Information

Oral rat LD50: 3053 mg/kg

-----\Cancer Lists\-----			
Ingredient	---NTP Known	Carcinogen Anticipated	IARC Category
Polyphosphoric Acids, Sodium Salts (68915-31-1)	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
Polyphosphoric Acids, Sodium Salts (68915-31-1)	Yes	Yes	Yes	Yes

-----\Chemical Inventory Status - Part 2\-----				
Ingredient	Korea	DSL	--Canada-- NDSL	Phil.
Polyphosphoric Acids, Sodium Salts (68915-31-1)	Yes	Yes	No	Yes



-----\Federal, State & International Regulations - Part 1\-----				
Ingredient	-SARA 302-		-----SARA 313-----	
	RQ	TPQ	List	Chemical Catg.
Polyphosphoric Acids, Sodium Salts (68915-31-1)	No	No	No	No

-----\Federal, State & International Regulations - Part 2\-----			
Ingredient	CERCLA	-RCRA-	-TSCA-
		261.33	8(d)
Polyphosphoric Acids, Sodium Salts (68915-31-1)	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 / 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. MAY BE HARMFUL IF SWALLOWED OR INHALED.

**Label Precautions:**

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

**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. 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.)

<b>MSDS</b> <i>Material Safety Data Sheet</i>	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
 	<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.

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

# SODIUM HYDROSULFITE

## 1. Product Identification

**Synonyms:** Sodium Dithionite; Dithionous acid, disodium salt; Sodium Sulfoxylate

**CAS No.:** 7775-14-6

**Molecular Weight:** 174.10

**Chemical Formula:** Na<sub>2</sub>S<sub>2</sub>O<sub>4</sub>

**Product Codes:**

J.T. Baker: 3712

Mallinckrodt: 7672

## 2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
Sodium Hydrosulfite	7775-14-6	90 - 100%	Yes

## 3. Hazards Identification

### Emergency Overview

**WARNING! FLAMMABLE SOLID. MAY IGNITE WITH MOISTURE AND AIR. 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 (Life)

Flammability Rating: 4 - Extreme (Flammable)

Reactivity Rating: 3 - Severe (Air Reactive)

Contact Rating: 3 - Severe

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

Storage Color Code: Red Stripe (Store Separately)

## Potential Health Effects

---

### **Inhalation:**

Inhalation can cause severe irritation of mucous membranes and upper respiratory tract. Symptoms may include burning sensation, coughing, wheezing, laryngitis, shortness of breath, headache, nausea and vomiting. High concentrations may cause lung damage. Higher exposures can cause a build-up of fluid in the lungs (pulmonary edema), a medical emergency.

### **Ingestion:**

May cause abdominal pain, nausea, vomiting, colic and diarrhea, circulatory disturbances, central nervous system depression, irritability, restlessness, convulsions, cyanosis, respiratory and cardiovascular collapse, and death. Estimated lethal dose 30 grams.

### **Skin Contact:**

Can irritate the skin causing a rash or burning feeling on contact. High concentrations could cause burns.

### **Eye Contact:**

Causes irritation, redness, and pain. May cause burns and possible damage to vision.

### **Chronic Exposure:**

Exposure may induce allergic reaction.

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

Persons allergic to "sulfiting" agents, used to preserve some foods, 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. 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:**

Flammable Solid. Heats spontaneously in contact with moisture and air. May ignite in the presence of combustible materials.

### **Explosion:**

Not considered to be an explosion hazard. An explosion occurred after mixing sodium hydrosulfite, aluminum powder, potassium carbonate and benzaldehyde.

### **Fire Extinguishing Media:**

Carbon dioxide, dry chemical or sand.

### **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. Do Not attempt to clean empty containers since residue is difficult to remove. Do not pressurize, cut, weld, braze, solder, drill, grind or expose such containers to heat, sparks, flame, static electricity or other sources of ignition: they may explode and cause injury or death.

---

## 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 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 grayish-white granular powder.

### **Odor:**

Distinct sulfur dioxide odor.

### **Solubility:**

Soluble in water.

### **Density:**

2.19

### **pH:**

No information found.

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

0

### **Boiling Point:**

Not applicable.

### **Melting Point:**

52C (126F) Decomposes.

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

3.6

**Vapor Pressure (mm Hg):**

No information found.

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

No information found.

---

## 10. Stability and Reactivity

### **Stability:**

Stable when stored in closed containers at room temperature. Heats spontaneously in contact with moisture and air. Loses all of its water of crystallization at 110C. Decomposes in hot water and acid.

### **Hazardous Decomposition Products:**

Burning may produce sulfur oxides.

### **Hazardous Polymerization:**

Will not occur.

### **Incompatibilities:**

Water, combustible materials, strong oxidizing agents, strong acids and sodium chlorite. An explosion occurred after mixing sodium hydrosulfite, aluminum powder, potassium carbonate and benzaldehyde.

### **Conditions to Avoid:**

Moisture, humidity, heat, flame, ignition sources and incompatibles.

---

## 11. Toxicological Information

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

Ingredient	---NTP Known	Carcinogen--- Anticipated	IARC Category
Sodium Hydrosulfite (7775-14-6)	No	No	3

---

## 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 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:** SODIUM DITHIONITE  
**Hazard Class:** 4.2  
**UN/NA:** UN1384  
**Packing Group:** II  
**Information reported for product/size:** 2.5KG

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

**Proper Shipping Name:** SODIUM DITHIONITE  
**Hazard Class:** 4.2  
**UN/NA:** UN1384  
**Packing Group:** II  
**Information reported for product/size:** 2.5KG

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

**Proper Shipping Name:** SODIUM DITHIONITE  
**Hazard Class:** 4.2  
**UN/NA:** UN1384  
**Packing Group:** II  
**Information reported for product/size:** 2.5KG

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## 15. Regulatory Information

-----\Chemical Inventory Status - Part 1\-----  
Ingredient TSCA EC Japan Australia  
-----  
Sodium Hydrosulfite (7775-14-6) Yes Yes Yes Yes

-----\Chemical Inventory Status - Part 2\-----  
Ingredient Korea --Canada-- DSL NDSL Phil.  
-----  
Sodium Hydrosulfite (7775-14-6) Yes Yes No Yes

-----\Federal, State & International Regulations - Part 1\-----  
Ingredient -SARA 302- -----SARA 313-----  
RQ TPQ List Chemical Catg.  
-----  
Sodium Hydrosulfite (7775-14-6) No No No No

-----\Federal, State & International Regulations - Part 2\-----  
Ingredient -RCRA- -TSCA-  
CERCLA 261.33 8(d)  
-----  
Sodium Hydrosulfite (7775-14-6) No No No

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

**Australian Hazchem Code:** 1P  
**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: 2 Other: **Water reactive**

**Label Hazard Warning:**

WARNING! FLAMMABLE SOLID. MAY IGNITE WITH MOISTURE AND AIR. HARMFUL IF SWALLOWED OR INHALED. CAUSES IRRITATION TO SKIN, EYES AND RESPIRATORY TRACT.

**Label Precautions:**

Keep away from heat, sparks and flame.  
Avoid contact with eyes, skin and clothing.  
Avoid breathing dust.  
Keep container closed.  
Use only with adequate ventilation.  
Store in a tightly closed container.  
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:**



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\*\*\*\*\*

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



<b>MSDS</b> <i>Material Safety Data Sheet</i>	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
 	<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.

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

# SODIUM HYDROXIDE

## 1. Product Identification

**Synonyms:** Caustic soda; lye; sodium hydroxide solid; sodium hydrate

**CAS No.:** 1310-73-2

**Molecular Weight:** 40.00

**Chemical Formula:** NaOH

**Product Codes:**

J.T. Baker: 1508, 3717, 3718, 3721, 3722, 3723, 3728, 3734, 3736, 5045, 5565

Mallinckrodt: 7001, 7680, 7708, 7712, 7772, 7798

## 2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
Sodium Hydroxide	1310-73-2	99 - 100%	Yes

## 3. Hazards Identification

### Emergency Overview

**POISON! DANGER! CORROSIVE. MAY BE FATAL IF SWALLOWED. HARMFUL IF INHALED. CAUSES BURNS TO ANY AREA OF CONTACT. REACTS WITH WATER, ACIDS AND OTHER MATERIALS.**

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

Health Rating: 4 - Extreme (Poison)

Flammability Rating: 0 - None

Reactivity Rating: 2 - Moderate

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:**

Severe irritant. Effects from inhalation of dust or mist vary from mild irritation to serious damage of the upper respiratory tract, depending on severity of exposure. Symptoms may include sneezing, sore throat or runny nose. Severe pneumonitis may occur.

### **Ingestion:**

Corrosive! Swallowing may cause severe burns of mouth, throat, and stomach. Severe scarring of tissue and death may result. Symptoms may include bleeding, vomiting, diarrhea, fall in blood pressure. Damage may appear days after exposure.

### **Skin Contact:**

Corrosive! Contact with skin can cause irritation or severe burns and scarring with greater exposures.

### **Eye Contact:**

Corrosive! Causes irritation of eyes, and with greater exposures it can cause burns that may result in permanent impairment of vision, even blindness.

### **Chronic Exposure:**

Prolonged contact with dilute solutions or dust has a destructive effect upon tissue.

### **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

### **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:**

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

### **Note to Physician:**

Perform endoscopy in all cases of suspected sodium hydroxide ingestion. In cases of severe esophageal corrosion, the use of therapeutic doses of steroids should be considered. General supportive measures with continual monitoring of gas exchange, acid-base balance, electrolytes, and fluid intake are also required.

---

## 5. Fire Fighting Measures

### **Fire:**

Not considered to be a fire hazard. Hot or molten material can react violently with water. Can react with certain metals, such as aluminum, to generate flammable hydrogen gas.

### **Explosion:**

Not considered to be an explosion hazard.

### **Fire Extinguishing Media:**

Use any means suitable for extinguishing surrounding fire. Adding water to caustic solution generates large amounts of heat.

### **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. 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.

---

## 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. Always add the caustic to water while stirring; never the reverse. 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. Do not store with aluminum or magnesium. Do not mix with acids or organic materials.

---

## 8. Exposure Controls/Personal Protection

### **Airborne Exposure Limits:**

- OSHA Permissible Exposure Limit (PEL):

2 mg/m<sup>3</sup> Ceiling

- 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:**

White, deliquescent pellets or flakes.

**Odor:**

Odorless.

**Solubility:**

111 g/100 g of water.

**Specific Gravity:**

2.13

**pH:**

13 - 14 (0.5% soln.)

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

0

**Boiling Point:**

1390C (2534F)

**Melting Point:**

318C (604F)

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

> 1.0

**Vapor Pressure (mm Hg):**

Negligible.

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

No information found.

---

## 10. Stability and Reactivity

**Stability:**

Stable under ordinary conditions of use and storage. Very hygroscopic. Can slowly pick up moisture from air and react with carbon dioxide from air to form sodium carbonate.

**Hazardous Decomposition Products:**

Sodium oxide. Decomposition by reaction with certain metals releases flammable and explosive hydrogen gas.

**Hazardous Polymerization:**

Will not occur.

**Incompatibilities:**

Sodium hydroxide in contact with acids and organic halogen compounds, especially trichloroethylene, may cause violent reactions. Contact with nitromethane and other similar nitro compounds causes formation of shock-sensitive salts. Contact with metals such as aluminum, magnesium, tin, and zinc cause formation of flammable hydrogen gas. Sodium hydroxide, even in fairly dilute solution, reacts readily with various sugars to produce carbon monoxide. Precautions should be taken including monitoring the tank atmosphere for carbon monoxide to ensure safety of personnel before vessel entry.

**Conditions to Avoid:**

Moisture, dusting and incompatibles.

---

## 11. Toxicological Information

Irritation data: skin, rabbit: 500 mg/24H severe; eye rabbit: 50 ug/24H severe; investigated as a mutagen.

-----\Cancer Lists\-----			
Ingredient	---NTP Known	Carcinogen--- Anticipated	IARC Category
Sodium Hydroxide (1310-73-2)	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 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:** SODIUM HYDROXIDE, SOLID  
**Hazard Class:** 8  
**UN/NA:** UN1823  
**Packing Group:** II  
**Information reported for product/size:** 300LB

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

-----  
**Proper Shipping Name:** SODIUM HYDROXIDE, SOLID  
**Hazard Class:** 8  
**UN/NA:** UN1823  
**Packing Group:** II  
**Information reported for product/size:** 300LB

### 15. Regulatory Information

-----\Chemical Inventory Status - Part 1\-----  
Ingredient TSCA EC Japan Australia  
-----  
Sodium Hydroxide (1310-73-2) Yes Yes Yes Yes

-----\Chemical Inventory Status - Part 2\-----  
Ingredient Korea DSL --Canada-- NDSL Phil.  
-----  
Sodium Hydroxide (1310-73-2) Yes Yes No Yes

-----\Federal, State & International Regulations - Part 1\-----  
Ingredient -SARA 302- -SARA 313-  
RQ TPQ List Chemical Catg.  
-----  
Sodium Hydroxide (1310-73-2) No No No No

-----\Federal, State & International Regulations - Part 2\-----  
Ingredient CERCLA -RCRA- -TSCA-  
261.33 8(d)  
-----  
Sodium Hydroxide (1310-73-2) 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: Yes (Pure / Solid)

**Australian Hazchem Code:** 2R  
**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: **1**

**Label Hazard Warning:**

POISON! DANGER! CORROSIVE. MAY BE FATAL IF SWALLOWED. HARMFUL IF INHALED. CAUSES BURNS TO ANY AREA OF CONTACT. REACTS WITH WATER, ACIDS AND OTHER MATERIALS.

**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:**

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:**

No Changes.

**Disclaimer:**



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\*\*\*\*\*

**Prepared by:** Environmental Health & Safety

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

<b>MSDS</b> <i>Material Safety Data Sheet</i>	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
 	<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.
All non-emergency questions should be directed to Customer Service (1-800-582-2537) for assistance.	

# SODIUM PYROPHOSPHATE

## 1. Product Identification

**Synonyms:** Tetra sodium pyrophosphate, hydrated; Sodium pyrophosphate, 10-hydrate; Pyrophosphoric acid, tetrasodium salt, 10-hydrate

**CAS No.:** 7722-88-5 (Anhydrous) 13472-36-1 (Decahydrate)

**Molecular Weight:** 446.06

**Chemical Formula:** Na<sub>4</sub>P<sub>2</sub>O<sub>7</sub>·10H<sub>2</sub>O

**Product Codes:**

J.T. Baker: 3850

Mallinckrodt: 7956, 7960, 7968

## 2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
Tetrasodium Pyrophosphate	7722-88-5	99 - 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 (Life)

Flammability Rating: 0 - None

Reactivity Rating: 0 - None

Contact Rating: 2 - Moderate

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

Storage Color Code: Green (General Storage)

## Potential Health Effects

---

Many of the systemic effects given below were taken from toxicity information for other phosphates.

### **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. Phosphates are slowly and incompletely absorbed when ingested, and seldom result in systemic effects. Such effects, however, have occurred. Symptoms may include vomiting, lethargy, diarrhea, blood chemistry effects, heart disturbances and central nervous system effects. The toxicity of phosphates is because of their ability to sequester calcium.

### **Skin Contact:**

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

### **Eye Contact:**

Causes irritation, redness, and pain.

### **Chronic Exposure:**

Chronic ingestion or inhalation may induce systemic phosphorous poisoning. Liver damage, kidney damage, jaw/tooth abnormalities, blood disorders and cardiovascular effects can result.

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

Persons with pre-existing skin disorders or eye problems, jaw/tooth abnormalities, 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:**

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. 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. 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:**

Sodium pyrophosphate:

-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 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:**

Transparent, colorless crystals.

### **Odor:**

Odorless.

### **Solubility:**

Slightly soluble in water.

### **Specific Gravity:**

1.82

### **pH:**

10.2 (1% aqueous solution)

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

0

### **Boiling Point:**

Not applicable.

### **Melting Point:**

80C (176F)

**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:**

Sodium and phosphorus oxides may form when heated to decomposition.

**Hazardous Polymerization:**

Will not occur.

**Incompatibilities:**

Strong oxidizers.

**Conditions to Avoid:**

No information found.

---

## 11. Toxicological Information

Anhydrous: Sodium pyrophosphate: Oral rat LD50: 4000 mg/kg.

-----\Cancer Lists\-----

Ingredient	---NTP Known	Carcinogen Anticipated	IARC Category
Tetrasodium Pyrophosphate (7722-88-5)	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
Tetrasodium Pyrophosphate (7722-88-5)	Yes	Yes	Yes	Yes

-----\Chemical Inventory Status - Part 2\-----				
Ingredient	Korea	DSL	--Canada-- NDSL	Phil.
Tetrasodium Pyrophosphate (7722-88-5)	Yes	Yes	No	Yes

-----\Federal, State & International Regulations - Part 1\-----				
Ingredient	-SARA 302- RQ	TPQ	List	-SARA 313- Chemical Catg.
Tetrasodium Pyrophosphate (7722-88-5)	No	No	No	No

-----\Federal, State & International Regulations - Part 2\-----			
Ingredient	CERCLA	-RCRA- 261.33	-TSCA- 8(d)
Tetrasodium Pyrophosphate (7722-88-5)	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 / 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.
- Avoid contact with eyes, skin and clothing.
- Keep container closed.
- Wash thoroughly after handling.
- Use only with adequate ventilation.

**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. Remove contaminated clothing and shoes. Wash clothing before reuse. In all cases, get medical attention.

**Product Use:**

Laboratory Reagent.

**Revision Information:**

No Changes.

**Disclaimer:**

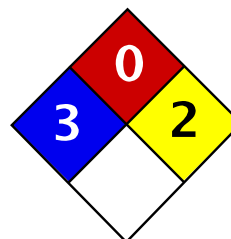
\*\*\*\*\*

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\*\*\*\*\*

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



Health	3
Fire	0
Reactivity	2
Personal Protection	

## Material Safety Data Sheet Sulfuric acid MSDS

### Section 1: Chemical Product and Company Identification

**Product Name:** Sulfuric acid

**Catalog Codes:** SLS2539, SLS1741, SLS3166, SLS2371, SLS3793

**CAS#:** 7664-93-9

**RTECS:** WS5600000

**TSCA:** TSCA 8(b) inventory: Sulfuric acid

**CI#:** Not applicable.

**Synonym:** Oil of Vitriol; Sulfuric Acid

**Chemical Name:** Hydrogen sulfate

**Chemical Formula:** H<sub>2</sub>-SO<sub>4</sub>

**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
Sulfuric acid	7664-93-9	95 - 98

**Toxicological Data on Ingredients:** Sulfuric acid: ORAL (LD50): Acute: 2140 mg/kg [Rat.]. VAPOR (LC50): Acute: 510 mg/m 2 hours [Rat]. 320 mg/m 2 hours [Mouse].

### Section 3: Hazards Identification

**Potential Acute Health Effects:**

Very hazardous in case of skin contact (corrosive, irritant, permeator), of eye contact (irritant, corrosive), of ingestion, of inhalation. Liquid or spray mist may produce tissue damage particularly on mucous membranes of eyes, mouth and respiratory tract. Skin contact may produce burns. Inhalation of the spray mist may produce severe irritation of respiratory tract, characterized by coughing, choking, or shortness of breath. Severe over-exposure can result in death. Inflammation of the eye is characterized by redness, watering, and itching. Skin inflammation is characterized by itching, scaling, reddening, or, occasionally, blistering.

**Potential Chronic Health Effects:**

**CARCINOGENIC EFFECTS:** Classified 1 (Proven for human.) by IARC, + (Proven.) by OSHA. Classified A2 (Suspected for human.) by ACGIH.  
**MUTAGENIC EFFECTS:** Not available.  
**TERATOGENIC EFFECTS:** Not available.

**DEVELOPMENTAL TOXICITY:** Not available.

The substance may be toxic to kidneys, lungs, heart, cardiovascular system, upper respiratory tract, eyes, teeth. Repeated or prolonged exposure to the substance can produce target organs damage. Repeated or prolonged contact with spray mist may produce chronic eye irritation and severe skin irritation. Repeated or prolonged exposure to spray mist may produce respiratory tract irritation leading to frequent attacks of bronchial infection. Repeated exposure to a highly toxic material may produce general deterioration of health by an accumulation in one or many human organs.

#### 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. Cold water may be used. 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. Cover the irritated skin with an emollient. Cold water may be used. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention immediately.

**Serious Skin Contact:**

Wash with a disinfectant soap and cover the contaminated skin with an anti-bacterial cream. Seek immediate medical attention.

**Inhalation:**

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

**Serious Inhalation:**

Evacuate the victim to a safe area as soon as possible. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, administer oxygen. If the victim is not breathing, perform mouth-to-mouth resuscitation. **WARNING:** It may be hazardous to the person providing aid to give mouth-to-mouth resuscitation when the inhaled material is toxic, infectious or corrosive. Seek immediate medical attention.

**Ingestion:**

Do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention if symptoms appear.

**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:**

Products of combustion are not available since material is non-flammable. However, products of decomposition include fumes of oxides of sulfur. Will react with water or steam to produce toxic and corrosive fumes. Reacts with carbonates to generate carbon dioxide gas. Reacts with cyanides and sulfides to form poisonous hydrogen cyanide and hydrogen sulfide respectively.

**Fire Hazards in Presence of Various Substances:** Combustible materials

**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.

Slightly explosive in presence of oxidizing materials.

**Fire Fighting Media and Instructions:** Not applicable.

**Special Remarks on Fire Hazards:**

Metal acetylides (Monocesium and Monorubidium), and carbides ignite with concentrated sulfuric acid.

White Phosphorous + boiling Sulfuric acid or its vapor ignites on contact.

May ignite other combustible materials.

May cause fire when sulfuric acid is mixed with Cyclopentadiene, cyclopentanone oxime, nitroaryl amines, hexalithium disilicide, phosphorous (III) oxide, and oxidizing agents such as chlorates, halogens, permanganates.

**Special Remarks on Explosion Hazards:**

Mixtures of sulfuric acid and any of the following can explode: p-nitrotoluene, pentasilver

trihydroxydiaminophosphate, perchlorates, alcohols with strong hydrogen peroxide, ammonium tetraperoxychromate, mercuric nitrite, potassium chlorate, potassium permanganate with potassium chloride, carbides, nitro compounds, nitrates, carbides, phosphorous, iodides, picrates, fulminats, dienes, alcohols (when heated)

Nitramide decomposes explosively on contact with concentrated sulfuric acid.

1,3,5-Trinitrosohexahydro-1,3,5-triazine + sulfuric acid causes explosive decomposition.

## Section 6: Accidental Release Measures

**Small Spill:**

Dilute with water and mop up, or absorb with an inert dry material and place in an appropriate waste disposal container. If necessary: Neutralize the residue with a dilute solution of sodium carbonate.

**Large Spill:**

Corrosive liquid. Poisonous liquid.

Stop leak if without risk. Absorb with DRY earth, sand or other non-combustible material. Do not get water inside container. Do not touch spilled material. Use water spray curtain to divert vapor drift. Use water spray to reduce vapors. Prevent entry into sewers, basements or confined areas; dike if needed. Call for assistance on disposal. Neutralize the residue with a dilute solution of sodium carbonate. 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 locked up.. Keep container dry. Do not ingest. Do not breathe gas/fumes/ vapor/spray. Never add water to this product. In case of insufficient ventilation, wear suitable respiratory equipment. If ingested, seek medical advice immediately and show the container or the label. Avoid contact with skin and eyes. Keep away from incompatibles such as oxidizing agents, reducing agents, combustible materials, organic materials, metals, acids, alkalis, moisture.

May corrode metallic surfaces. Store in a metallic or coated fiberboard drum using a strong polyethylene inner package.

**Storage:**

Hygroscopic. Reacts. violently with water. 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:**

Face shield. Full suit. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Gloves. Boots.

**Personal Protection in Case of a Large Spill:**

Splash goggles. Full suit. Vapor 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:**

TWA: 1 STEL: 3 (mg/m<sup>3</sup>) [Australia] Inhalation

TWA: 1 (mg/m<sup>3</sup>) from OSHA (PEL) [United States] Inhalation

TWA: 1 STEL: 3 (mg/m<sup>3</sup>) from ACGIH (TLV) [United States] [1999] Inhalation

TWA: 1 (mg/m<sup>3</sup>) from NIOSH [United States] Inhalation

TWA: 1 (mg/m<sup>3</sup>) [United Kingdom (UK)] Consult local authorities for acceptable exposure limits.

## Section 9: Physical and Chemical Properties

**Physical state and appearance:** Liquid. (Thick oily liquid.)

**Odor:** Odorless, but has a choking odor when hot.

**Taste:** Marked acid taste. (Strong.)

**Molecular Weight:** 98.08 g/mole

**Color:** Colorless.

**pH (1% soln/water):** Acidic.

**Boiling Point:**

270°C (518°F) - 340 deg. C

Decomposes at 340 deg. C

**Melting Point:** -35°C (-31°F) to 10.36 deg. C (93% to 100% purity)

**Critical Temperature:** Not available.

**Specific Gravity:** 1.84 (Water = 1)

**Vapor Pressure:** Not available.

**Vapor Density:** 3.4 (Air = 1)

**Volatility:** Not available.

**Odor Threshold:** Not available.

**Water/Oil Dist. Coeff.:** Not available.

**Ionicity (in Water):** Not available.

**Dispersion Properties:** See solubility in water.

**Solubility:**

Easily soluble in cold water.

Sulfuric is soluble in water with liberation of much heat.

Soluble in ethyl alcohol.



## Section 10: Stability and Reactivity Data

**Stability:** The product is stable.

**Instability Temperature:** Not available.

**Conditions of Instability:**

Conditions to Avoid: Incompatible materials, excess heat, combustible material materials, organic materials, exposure to moist air or water, oxidizers, amines, bases.

Always add the acid to water, never the reverse.

**Incompatibility with various substances:**

Reactive with oxidizing agents, reducing agents, combustible materials, organic materials, metals, acids, alkalis, moisture.

**Corrosivity:**

Extremely corrosive in presence of aluminum, of copper, of stainless steel(316).

Highly corrosive in presence of stainless steel(304).

Non-corrosive in presence of glass.

**Special Remarks on Reactivity:**

Hygroscopic. Strong oxidizer. Reacts violently with water and alcohol especially when water is added to the product.

Incompatible (can react explosively or dangerously) with the following: ACETIC ACID, ACRYLIC ACID, AMMONIUM HYDROXIDE, CRESOL, CUMENE, DICHLOROETHYL ETHER, ETHYLENE CYANOHYDRIN, ETHYLENEIMINE, NITRIC ACID, 2-NITROPROPANE, PROPYLENE OXIDE, SULFOLANE, VINYLIDENE CHLORIDE, DIETHYLENE GLYCOL MONOMETHYL ETHER, ETHYL ACETATE, ETHYLENE CYANOHYDRIN, ETHYLENE GLYCOL MONOETHYL ETHER ACETATE, GLYOXAL, METHYL ETHYL KETONE, dehydrating agents, organic materials, moisture (water), Acetic anhydride, Acetone, cyanohydrin, Acetone+nitric acid, Acetone + potassium dichromate, Acetonitrile, Acrolein, Acrylonitrile, Acrylonitrile+water, Alcohols + hydrogen peroxide, ally compounds such as Allyl alcohol, and Allyl Chloride, 2-Aminoethanol, Ammonium hydroxide, Ammonium triperchromate, Aniline, Bromate + metals, Bromine pentafluoride, n-Butyraldehyde, Carbides, Cesium acetylene carbide, Chlorates, Cyclopentanone oxime, chlorinates, Chlorates + metals, Chlorine trifluoride, Chlorosulfonic acid, 2-cyano-4-nitrobenzenediazonium hydrogen sulfate, Cuprous nitride, p-chloronitrobenzene, 1,5-Dinitronaphthlene + sulfur, Diisobutylene, p-dimethylaminobenzaldehyde, 1,3-Diazidobenzene, Dimethylbenzylcarbinol + hydrogen peroxide, Epichlorohydrin, Ethyl alcohol + hydrogen peroxide, Ethylene diamine, Ethylene glycol and other glycols, , Ethylenimine, Fulminates, hydrogen peroxide, Hydrochloric acid, Hydrofluoric acid, Iodine heptafluoride, Indane + nitric acid, Iron, Isoprene, Lithium silicide, Mercuric nitride, Mesityl oxide, Mercury nitride, Metals (powdered), Nitromethane, Nitric acid + glycerides, p-Nitrotoluene, Pentasilver trihydroxydiaminophosphate, Perchlorates, Perchloric acid, Permanganates + benzene, 1-Phenyl-2-methylpropyl alcohol + hydrogen peroxide, Phosphorus, Phosphorus isocyanate, Picrates, Potassium tert-butoxide, Potassium chlorate, Potassium Permanganate and other permanganates, halogens, amines, Potassium Permanganate + Potassium chloride, Potassium Permanganate + water, Propiolactone (beta)-, Pyridine, Rubidium acetylene carbide, Silver permanganate, Sodium, Sodium carbonate, sodium hydroxide, Steel, styrene monomer, toluene + nitric acid, Vinyl acetate, Thallium (I) azidodithiocarbonate, Zinc chlorate, Zinc iodide, azides, carbonates, cyanides, sulfides, sulfites, alkali hydrides, carboxylic acid anhydrides, nitriles, olefinic organics, aqueous acids, cyclopentadiene, cyano-alcohols, metal acetylides, Hydrogen gas is generated by the action of the acid on most metals (i.e. lead, copper, tin, zinc, aluminum, etc.). Concentrated sulfuric acid oxidizes, dehydrates, or sulfonates most organic compounds.

**Special Remarks on Corrosivity:**

Non-corrosive to lead and mild steel, but dilute acid attacks most metals.

Attacks many metals releasing hydrogen.

Minor corrosive effect on bronze.

No corrosion data on brass or zinc.

**Polymerization:** Will not occur.

## Section 11: Toxicological Information

**Routes of Entry:** Absorbed through skin. Dermal contact. Eye contact. Inhalation. Ingestion.

**Toxicity to Animals:**

WARNING: THE LC50 VALUES HEREUNDER ARE ESTIMATED ON THE BASIS OF A 4-HOUR EXPOSURE.

Acute oral toxicity (LD50): 2140 mg/kg [Rat.].

Acute toxicity of the vapor (LC50): 320 mg/m<sup>3</sup> 2 hours [Mouse].

**Chronic Effects on Humans:**

CARCINOGENIC EFFECTS: Classified 1 (Proven for human.) by IARC, + (Proven.) by OSHA. Classified A2 (Suspected for human.) by ACGIH.

May cause damage to the following organs: kidneys, lungs, heart, cardiovascular system, upper respiratory tract, eyes, teeth.

**Other Toxic Effects on Humans:**

Extremely hazardous in case of inhalation (lung corrosive).

Very hazardous in case of skin contact (corrosive, irritant, permeator), of eye contact (corrosive), of ingestion, .

**Special Remarks on Toxicity to Animals:** Not available.

**Special Remarks on Chronic Effects on Humans:**

Mutagenicity: Cytogenetic Analysis: Hamster, ovary = 4mmol/L

Reproductive effects: May cause adverse reproductive effects based on animal data. Developmental abnormalities (musculoskeletal) in rabbits at a dose of 20 mg/m<sup>3</sup> for 7 hrs.(RTECS)

Teratogenicity: neither embryotoxic, fetotoxic, nor teratogenic in mice or rabbits at inhaled doses producing some maternal toxicity

**Special Remarks on other Toxic Effects on Humans:**

Acute Potential Health Effects:

Skin: Causes severe skin irritation and burns. Continued contact can cause tissue necrosis.

Eye: Causes severe eye irritation and burns. May cause irreversible eye injury.

Ingestion: Harmful if swallowed. May cause permanent damage to the digestive tract. Causes gastrointestinal tract burns. May cause perforation of the stomach, GI bleeding, edema of the glottis, necrosis and scarring, and sudden circulatory collapse(similar to acute inhalation). It may also cause systemic toxicity with acidosis.

Inhalation: May cause severe irritation of the respiratory tract and mucous membranes with sore throat, coughing, shortness of breath, and delayed lung edema. Causes chemical burns to the respiratory tract. Inhalation may be fatal as a result of spasm, inflammation, edema of the larynx and bronchi, chemical pneumonitis, and pulmonary edema. Cause corrosive action on mucous membranes. May affect cardiovascular system (hypotension, depressed cardiac output, bradycardia). Circulatory collapse with clammy skin, weak and rapid pulse, shallow respiration, and scanty urine may follow. Circulatory shock is often the immediate cause of death. May also affect teeth(changes in teeth and supporting structures - erosion, discoloration).

Chronic Potential Health Effects:

Inhalation: Prolonged or repeated inhalation may affect behavior (muscle contraction or spasticity), urinary system (kidney damage), and cardiovascular system, heart (ischemic heart leisons), and respiratory system/lungs(pulmonary edema, lung damage), teeth (dental discoloration, erosion).

Skin: Prolonged or repeated skin contact may cause dermatitis, an allergic skin reaction.

**Section 12: Ecological Information**

**Ecotoxicity:** Ecotoxicity in water (LC50): 49 mg/l 48 hours [bluegill/sunfish].

**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 less toxic than the product itself.

**Special Remarks on the Products of Biodegradation:** Not available.

**Section 13: Disposal Considerations**

**Waste Disposal:**

Sulfuric acid may be placed in sealed container or absorbed in vermiculite, dry sand, earth, or a similar material. It may also be diluted and neutralized. Be sure to consult with local or regional authorities (waste regulators) prior to any disposal. Waste must be disposed of in accordance with federal, state and local environmental control regulations.

**Section 14: Transport Information**

**DOT Classification:** Class 8: Corrosive material

**Identification:** : Sulfuric acid UNNA: 1830 PG: II

**Special Provisions for Transport:** Not available.

**Section 15: Other Regulatory Information****Federal and State Regulations:**

Illinois toxic substances disclosure to employee act: Sulfuric acid  
New York release reporting list: Sulfuric acid  
Rhode Island RTK hazardous substances: Sulfuric acid  
Pennsylvania RTK: Sulfuric acid  
Minnesota: Sulfuric acid  
Massachusetts RTK: Sulfuric acid  
New Jersey: Sulfuric acid  
California Director's List of Hazardous Substances (8 CCR 339): Sulfuric acid  
Tennessee RTK: Sulfuric acid  
TSCA 8(b) inventory: Sulfuric acid  
SARA 302/304/311/312 extremely hazardous substances: Sulfuric acid  
SARA 313 toxic chemical notification and release reporting: Sulfuric acid  
CERCLA: Hazardous substances.: Sulfuric acid: 1000 lbs. (453.6 kg)

**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-1A: Material causing immediate and serious toxic effects (VERY TOXIC).  
CLASS E: Corrosive liquid.

**DSCL (EEC):**

R35- Causes severe burns.  
S2- Keep out of the reach of children.  
S26- In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.  
S30- Never add water to this product.  
S45- In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

**HMIS (U.S.A.):**

**Health Hazard:** 3

**Fire Hazard:** 0

**Reactivity:** 2

**Personal Protection:****National Fire Protection Association (U.S.A.):****Health:** 3**Flammability:** 0**Reactivity:** 2**Specific hazard:****Protective Equipment:**

Gloves.

Full suit.

Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate.

Face shield.

**Section 16: Other Information****References:**

- Material safety data sheet emitted by: la Commission de la Santé et de la Sécurité du Travail du Québec.
- The Sigma-Aldrich Library of Chemical Safety Data, Edition II.
- Hawley, G.G.. The Condensed Chemical Dictionary, 11e ed., New York N.Y., Van Nostrand Reinold, 1987.

**Other Special Considerations:** Not available.**Created:** 10/09/2005 11:58 PM**Last Updated:** 11/06/2008 12:00 PM

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**CYTEC****MATERIAL SAFETY DATA**

MSDS No: 0298

Date: 07/01/97

Supersedes: 12/12/96

**1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION**PRODUCT NAME: **SUPERFLOC® 16 Plus Flocculant**

SYNONYMS: None

CHEMICAL FAMILY: Polyacrylamide

MOLECULAR FORMULA: Polymer

MOLECULAR WGT: Polymer

CYTEC INDUSTRIES INC., FIVE GARRET MOUNTAIN PLAZA, WEST PATERSON, NEW JERSEY 07424, USA

For Product Information call 1-800/652-6013. Outside the USA and Canada call 973/357-3193.

EMERGENCY PHONE: For emergency involving spill, leak, fire, exposure or accident call CHEMTREC: 1-800/424-9300. Outside the USA and Canada call 703/527-3887.

**2. COMPOSITION/INFORMATION ON INGREDIENTS**

## OSHA REGULATED COMPONENTS

COMPONENT	CAS. NO.	%	TWA/CEILING	REFERENCE
Ammonium chloride	012125-02-9	~2.0	10 mg/M3 20 mg/M3 STEL	OSHA/ACGIH

**3. HAZARDS IDENTIFICATION****EMERGENCY OVERVIEW**

APPEARANCE AND ODOR: Off-white granular solid; no odor

## STATEMENTS OF HAZARD:

IMPORTANT! SPILLS OF THIS PRODUCT ARE VERY SLIPPERY WHEN WET

**POTENTIAL HEALTH EFFECTS**

## EFFECTS OF OVEREXPOSURE:

The acute oral (rat) and dermal (rabbit) LD50 values are greater than 2500 mg/kg and greater than 10,000 mg/kg, respectively. The 4-hour inhalation LC50 (rat) is greater than 20 mg/l.

Direct contact with this material may cause minimal eye and skin irritation.

Refer to Section 11 for toxicology information on the OSHA regulated components of this product.

**4. FIRST AID MEASURES**

In case of skin contact, wash affected areas of skin with soap and water.

In case of eye contact, immediately irrigate with plenty of water for 15 minutes.

Material is not expected to be harmful if inhaled. If inhaled, remove to fresh air.

**5. FIRE FIGHTING MEASURES****FLAMMABLE PROPERTIES**

FLASH POINT: Not applicable

## FLAMMABLE LIMITS

(% BY VOL): Not applicable

AUTOIGNITION TEMP: Not available

---

DECOMPOSITION TEMP: Not available

---

### EXTINGUISHING MEDIA AND FIRE FIGHTING INSTRUCTIONS

As with many solids, any dust that is generated may be explosive if mixed with air in critical proportions and in the presence of a source of ignition. Use water, carbon dioxide or dry chemical to extinguish fires. Wear self-contained, positive pressure breathing apparatus.

---

## 6. ACCIDENTAL RELEASE MEASURES

### STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

Spilled material becomes very slippery when wet. Sweep up spills and place in a waste disposal container. Flush the area thoroughly with water and scrub to remove residue. If slipperiness remains, apply more dry-sweeping compound. Do not flush large quantities of the material to sewer.

---

## 7. HANDLING AND STORAGE

Spills should be scooped up or wiped up immediately, and the spill area flushed with water. To avoid product degradation and equipment corrosion, do not use iron, copper or aluminum containers or equipment.

---

## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

### ENGINEERING CONTROLS AND PERSONAL PROTECTIVE EQUIPMENT (PPE)

Engineering controls are not usually necessary if good hygiene practices are followed. Before eating, drinking, or smoking, wash face and hands thoroughly with soap and water. Avoid unnecessary skin contact. Impervious gloves are recommended to prevent prolonged skin contact. For operations where eye or face contact can occur, eye protection is recommended. Where exposures are below the Permissible Exposure Limit (PEL), no respiratory protection is required. Where exposures exceed the PEL, use respirator approved by NIOSH for the material and level of exposure. See "GUIDE TO INDUSTRIAL RESPIRATORY PROTECTION"(NIOSH).

---

## 9. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE AND ODOR: Off-white granular solid; no odor

BOILING POINT: Not applicable

MELTING POINT: Not available

VAPOR PRESSURE: Not applicable

SPECIFIC GRAVITY: ~0.75

VAPOR DENSITY: Not applicable

% VOLATILE (BY WT): 10-15; (water)

pH: 5-7; (aqueous solution)

SATURATION IN AIR (% BY VOL): Not applicable

EVAPORATION RATE: Not applicable

SOLUBILITY IN WATER: Limited by viscosity

---

## 10. STABILITY AND REACTIVITY

STABILITY: Stable

CONDITIONS TO AVOID: None known

POLYMERIZATION: Will Not Occur

CONDITIONS TO AVOID: None known

INCOMPATIBLE MATERIALS: Strong oxidizing agents.

---

**HAZARDOUS DECOMPOSITION PRODUCTS:** Thermal decomposition or combustion may produce carbon monoxide, carbon dioxide, ammonia and/or oxides of nitrogen.

## 11. TOXICOLOGICAL INFORMATION

Toxicological information for the product is found under Section 3. HAZARDS IDENTIFICATION. Toxicological information on the OSHA regulated components of this product is as follows:

The acute oral (rat) and dermal (rabbit) LD50 values for ammonium chloride are 1650 mg/kg and >2000 mg/kg, respectively. Direct contact with ammonium chloride may cause mild eye and skin irritation. Inhalation overexposure to ammonium chloride vapors can cause irritation to the eyes, nose, and throat.

This product contains (a) chemical(s) known to the State of California to cause cancer.

## 12. ECOLOGICAL INFORMATION

### LC50

BLUEGILL, 96 HOUR: > 100.0 mg/L

TROUT 96 HOUR: > 100.0 mg/L

OCTANOL/H<sub>2</sub>O PARTITION COEF.: Not available

## 13. DISPOSAL CONSIDERATIONS

The information on RCRA waste classification and disposal methodology provided below applies only to the Cytec product, as supplied. If the material has been altered or contaminated, or it has exceeded its recommended shelf life, the guidance may be inapplicable. Hazardous waste classification under federal regulations (40 CFR Part 261 et seq) is dependent upon whether a material is a RCRA "listed hazardous waste" or has any of the four RCRA "hazardous waste characteristics." Refer to 40 CFR Part 261.33 to determine if a given material to be disposed of is a RCRA "listed hazardous waste"; information contained in Section 15 of this MSDS is not intended to indicate if the product is a "listed hazardous waste." RCRA Hazardous Waste Characteristic. There are four characteristics defined in 40 CFR Section 261.21-61.24: Ignitability, Corrosivity, Reactivity, and Toxicity. To determine Ignitability, see Section 5 of this MSDS (flash point). For Corrosivity, see Sections 9 and 14 (pH and DOT corrosivity). For Reactivity, see Section 10 (incompatible materials). For Toxicity, see Section 2 (composition). Federal regulations are subject to change. State and local requirements, which may differ from or be more stringent than the federal regulations, may also apply to the classification of the material if it is to be disposed. Cytec encourages the recycle, recovery and reuse of materials, where permitted, as an alternate to disposal as a waste. Cytec recommends that organic materials classified as RCRA hazardous wastes be disposed of by thermal treatment or incineration at EPA approved facilities. Cytec has provided the foregoing for information only; the person generating the waste is responsible for determining the waste classification and disposal method.

## 14. TRANSPORT INFORMATION

This section provides basic shipping classification information. Refer to appropriate transportation regulations for specific requirements.

SHIPPING NAME:	D.O.T. SHIPPING INFORMATION NOT APPLICABLE/NOT REGULATED	IMO SHIPPING INFORMATION NOT APPLICABLE/NOT REGULATED
HAZARD CLASS/ PACKING GROUP:	Not Applicable	Not Applicable
UN NUMBER:	Not Applicable	Not Applicable
IMDG PAGE:	Not Applicable	Not Applicable

SUPERFLOC® 16 Plus Flocculant

MSDS No: 0298 Date: 07/01/97

Page 4 of 5

D.O.T. HAZARDOUS SUBSTANCES:	(PRODUCT REPORTABLE QUANTITY) Not Applicable	Not Applicable
TRANSPORT LABEL REQUIRED:	None Required	None Required
SHIPPING NAME:	<b>ICAO/IATA</b> NOT APPLICABLE/NOT REGULATED	<b>TRANSPORT CANADA</b> NOT APPLICABLE/NOT REGULATED
HAZARD CLASS:	Not Applicable	Not Applicable
SUBSIDIARY CLASS:	Not Applicable	Not Applicable
UN / ID NUMBER:	Not Applicable	Not Applicable
PACKING GROUP:	Not Applicable	Not Applicable
TRANSPORT LABEL REQUIRED:	None Required	None Required
PACKING INSTR:	PASSENGER Not Applicable CARGO Not Applicable	Not Applicable
MAX NET QTY:	PASSENGER Not Applicable CARGO Not Applicable	Not Applicable

**ADDITIONAL TRANSPORT INFORMATION**

TECHNICAL  
NAME (N.O.S.): Not Applicable

**15. REGULATORY INFORMATION****INVENTORY INFORMATION**

US TSCA: This product is manufactured in compliance with all provisions of the Toxic Substances Control Act, 15 U.S.C. 2601 et. seq.

CANADA DSL: Components of this product have been reported to Environment Canada in accordance with subsection 25 of the Canadian Environmental Protection Act and are included on the Domestic Substances List.

EEC EINECS: All components of this product are included in the European Inventory of Existing Chemical Substances (EINECS) or are polymers of which the components are in EINECS, in compliance with Council Directive 67/548/EEC and its amendments.

**OTHER  
ENVIRONMENTAL  
INFORMATION**

The following components of this product may be subject to reporting requirements pursuant to Section 313 of CERCLA (40 CFR 372), Section 12(b) of TSCA, or may be subject to release reporting requirements (40 CFR 307, 40 CFR 311, etc.) See Section 13 for information on waste classification and waste disposal of this product.

COMPONENT	CAS. NO.	%	TPQ(lbs)	RQ(lbs)	S313	TSCA 12B
Ammonium chloride	012125-02-9	~2.0	NONE	5000	NO	NO

<b>PRODUCT CLASSIFICATION UNDER SECTION 311 OF SARA</b>
Not Applicable under SARA TITLE III



---

## 16. OTHER INFORMATION

### NFPA HAZARD RATING (National Fire Protection Association)

Fire	1	FIRE: Materials that must be preheated before ignition can occur.
Health 0	0 Reactivity	HEALTH: Materials which on exposure under fire conditions would offer no hazard beyond that of ordinary combustible material.
—		REACTIVITY: Materials which in themselves are normally stable, even under fire exposure conditions, and which are not reactive with water.
Special		

---

### REASON FOR ISSUE:

Area Code Change

---

Larry R. Johnson, DVM, PhD, DABT

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---



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 SODIUM SALT

## 1. Product Identification

**Synonyms:** 4,4'-(3H-2,1-benzoxathiol-3-ylidene)bis[5-methyl-2-(1-methyl ethyl)phenol]S,S-dioxide, sodium salt

**CAS No.:** 62625-21-2

**Molecular Weight:** 489

**Chemical Formula:** C<sub>27</sub>H<sub>29</sub>NaO<sub>5</sub>S

**Product Codes:** V859

## 2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
Thymol Blue Sodium Salt	62625-21-2	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

-----  
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 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:**

Brownish-green powder.

### **Odor:**

Characteristic odor.

### **Solubility:**

Soluble in water.

### **Specific Gravity:**

1.19

### **pH:**

No information found.

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

0

### **Boiling Point:**

Not applicable.

### **Melting Point:**

284C (543F)

### **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:**

This substance does not polymerize.

**Incompatibilities:**

Strong oxidizers.

**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
-----
Thymol Blue Sodium Salt
(62625-21-2)              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
-----
Thymol Blue Sodium Salt (62625-21-2)  Yes   Yes  No     No

-----\Chemical Inventory Status - Part 2\-----
Ingredient                Korea  DSL  --Canada--
                          -----
                          NDSL  Phil.
-----
Thymol Blue Sodium Salt (62625-21-2)  No    Yes  No     No

-----\Federal, State & International Regulations - Part 1\-----
Ingredient                -SARA 302-  -----SARA 313-----
                          RQ   TPQ      List  Chemical Catg.
-----
Thymol Blue Sodium Salt (62625-21-2)  No    No    No     No

-----\Federal, State & International Regulations - Part 2\-----
```

Ingredient	CERCLA	-RCRA- 261.33	-TSCA- 8(d)
Thymol Blue Sodium Salt (62625-21-2)	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: 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: 3.

**Disclaimer:**

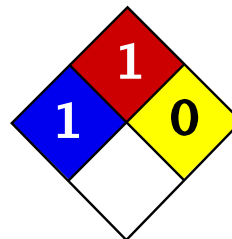
\*\*\*\*\*

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\*\*\*\*\*

**Prepared by:** Environmental Health & Safety

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



Health	1
Fire	1
Reactivity	0
Personal Protection	E

## Material Safety Data Sheet Clayton yellow MSDS

### Section 1: Chemical Product and Company Identification

**Product Name:** Clayton yellow

**Catalog Codes:** SLC2599

**CAS#:** 1829-00-1

**RTECS:** DL6423000

**TSCA:** TSCA 8(b) inventory: Clayton yellow

**CI#:** 19540

**Synonym:** Direct Yellow 9; Thiazol Yellow G Titan Yellow;  
2,2'-(1-triazene-1,3-diyl-di-4,1-phenylene)bis(6-methyl-7-benzothiazosulfonic  
acid disodium salt

**Chemical Name:** Not available.

**Chemical Formula:** C<sub>28</sub>H<sub>19</sub>N<sub>5</sub>O<sub>6</sub>S<sub>4</sub>Na<sub>2</sub>

**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
Clayton yellow	1829-00-1	100

**Toxicological Data on Ingredients:** Not applicable.

### 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:**

Hazardous in case of ingestion.

Slightly hazardous in case of skin contact (irritant), of eye contact (irritant), of inhalation.

CARCINOGENIC EFFECTS: Not available.

MUTAGENIC EFFECTS: Not available.

TERATOGENIC EFFECTS: Not available.

DEVELOPMENTAL TOXICITY: Not available.

## Section 4: First Aid Measures

**Eye Contact:** No known effect on eye contact, rinse with water for a few minutes.

**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. Wash contaminated clothing before reusing.

**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:** May be combustible at high temperature.

**Auto-Ignition Temperature:** Not available.

**Flash Points:** Not available.

**Flammable Limits:** Not available.

**Products of Combustion:**

These products are carbon oxides (CO, CO<sub>2</sub>), nitrogen oxides (NO, NO<sub>2</sub>...), sulfur oxides (SO<sub>2</sub>, SO<sub>3</sub>...). Some metallic oxides.

**Fire Hazards in Presence of Various Substances:** Not available.

**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:**

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:

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 dust.

### Storage:

Keep container dry. Keep in a cool place. Ground all equipment containing material. Keep container tightly closed. Keep in a cool, well-ventilated place. Combustible materials should be stored away from extreme heat and away from strong oxidizing agents.

## 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:** Not available.

## Section 9: Physical and Chemical Properties

**Physical state and appearance:** Solid.

**Odor:** Not available.

**Taste:** Not available.

**Molecular Weight:** 695.73 g/mole

**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:** 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.

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:** 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 more toxic.

**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: Clayton yellow

**Other Regulations:** Not available..

**Other Classifications:**

**WHMIS (Canada):** Not controlled under WHMIS (Canada).

**DSCL (EEC):**

This product is not classified according to the EU regulations.

**HMIS (U.S.A.):**

**Health Hazard:** 1

**Fire Hazard:** 1

**Reactivity:** 0

**Personal Protection:** E

**National Fire Protection Association (U.S.A.):**

**Health:** 1

**Flammability:** 1

**Reactivity:** 0

**Specific hazard:**

**Protective Equipment:**

Gloves.

Lab coat.

Dust respirator. Be sure to use an approved/certified respirator or equivalent.

Safety glasses.

### Section 16: Other Information

**References:** Not available.

**Other Special Considerations:** Not available.

**Created:** 10/09/2005 04:56 PM

**Last Updated:** 11/06/2008 12:00 PM

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**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: 613-996-6666

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 (1-800-582-2537) for assistance.

# TRIETHANOLAMINE

## 1. Product Identification

**Synonyms:** 2,2',2''-Nitrilotriethanol; daltogen; trolamine; TEA; triethylolamine

**CAS No.:** 102-71-6

**Molecular Weight:** 149.19

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

**Product Codes:**

J.T. Baker: 9467, 9468

Mallinckrodt: 1908, 32106, 8433

## 2. Composition/Information on Ingredients

Ingredient	CAS No	Percent	Hazardous
Triethanolamine	102-71-6	99 - 100%	Yes

## 3. Hazards Identification

### Emergency Overview

**WARNING! HARMFUL IF SWALLOWED. CAUSES SKIN IRRITATION AND SEVERE EYE IRRITATION.**

**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: 3 - Severe

Lab Protective Equip: GOGGLES; LAB COAT; PROPER GLOVES

Storage Color Code: Green (General Storage)

## Potential Health Effects

---

### **Inhalation:**

No adverse effects expected since triethanolamine has a low vapor pressure.

### **Ingestion:**

May cause burns in the mouth, pharynx, and esophagus, abdominal pain, nausea, vomiting and diarrhea.

### **Skin Contact:**

May cause irritation, redness, and pain, especially on prolonged or repeated contact.

### **Eye Contact:**

Corrosive. Contact causes severe irritation, burns, redness, and pain. May cause irritation, redness, pain, and corneal damage.

### **Chronic Exposure:**

Repeated ingestion has caused kidney and liver damage in animals.

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

No information found.

---

## 4. First Aid Measures

### **Inhalation:**

Not expected to require first aid measures.

### **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 soap and water. 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:**

Flash point: 179C (354F) OC

Autoignition temperature: 315C (599F)

Flammable limits in air % by volume:

l<sub>el</sub>: 1.3; u<sub>el</sub>: 8.5

( u<sub>el</sub> value estimated ).

### **Explosion:**

Above flash point, vapor-air mixtures are explosive within flammable limits noted above.

### **Fire Extinguishing Media:**

Dry chemical, alcohol foam or carbon dioxide. Water spray may be used to keep fire exposed containers cool. Water can also be used to flush material from fire and to dilute spills to non-combustible mixtures. Water or foam may cause frothing.

### **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 any source of heat or ignition. Avoid contact with copper and copper alloys. Material is suitably handled in stainless steel equipment. Do not use aluminum for storage of aqueous solutions. Outside or detached storage is preferred. Isolate from acidic materials. May separate and freeze below 16C (60F). Thaw and mix before sampling or using. Do not store above 43C (110F)

---

## 8. Exposure Controls/Personal Protection

### **Airborne Exposure Limits:**

- 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, wear a supplied air, full-facepiece respirator, airtight hood, or full-facepiece self-contained breathing apparatus. Breathing air quality must meet the requirements of the OSHA respiratory protection standard (29CFR1910.134). This substance has unknown warning properties. 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 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:**

Colorless to light yellow, viscous liquid.

### **Odor:**

Slight ammonia odor.

### **Solubility:**

Infinitely soluble.

### **Specific Gravity:**

1.13 @ 20C/4C

### **pH:**

10.5

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

0

### **Boiling Point:**

335C (635F)

### **Melting Point:**

21.6C (72F) Super cools easily.

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

5.1

### **Vapor Pressure (mm Hg):**

< 0.01 @ 20C (68F)

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

---

## 10. Stability and Reactivity

**Stability:**

Stable under ordinary conditions of use and storage. Darkens on exposure to air or light.

**Hazardous Decomposition Products:**

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

**Hazardous Polymerization:**

Will not occur.

**Incompatibilities:**

Copper, copper alloys, galvanized iron, acids, and oxidizers

**Conditions to Avoid:**

Heat, ignition sources, moisture, incompatibles.

---

## 11. Toxicological Information

Oral rat LD50: 4920 mg/kg; skin rabbit LD50: > 20 mL/kg;

Irritation data: Skin rabbit: 560 mg/24H mild; eye rabbit: 20 mg severe

Investigated as a tumorigen and a mutagen.

-----\Cancer Lists\-----			
Ingredient	---NTP Carcinogen---		IARC Category
	Known	Anticipated	
Triethanolamine (102-71-6)	No	No	3

---

## 12. Ecological Information

**Environmental Fate:**

When released into the soil, this material is expected to readily biodegrade. When released into the soil, this material may leach into groundwater. When released into the soil, this material is not expected to evaporate significantly. When released into the soil, this material is expected to have a half-life between 1 and 10 days. When released into water, this material is expected to readily biodegrade. When released into the water, this material is expected to have a half-life between 1 and 10 days. 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 is expected to be readily degraded by reaction with photochemically produced hydroxyl radicals. When released into the air, this material is expected to be readily removed from the atmosphere by dry and wet deposition. When released into the air, this material is expected to have a half-life between 1 and 10 days.

**Environmental Toxicity:**

Freshwater Fish Species Data: 96 Hr LC50 Pimephales promelas: 11800 mg/L [flow-through]; 96 Hr LC50

Lepomis macrochirus: 450-1000 mg/L [static]

Water Flea Data: 24 Hr EC50 Daphnia magna: 1386 mg/L

Microtox data: 30 min EC50 Pseudomonas putida: >10000 mg/L

Freshwater Algae Data: 72 Hr EC50 Scenedesmus subspicatus: 216 mg/L; 96 Hr EC50 Scenedesmus subspicatus: 169 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
-----
Triethanolamine (102-71-6)                   Yes  Yes  Yes    Yes
```

```
-----\Chemical Inventory Status - Part 2\-----
Ingredient                                     Korea  DSL   --Canada--  Phil.
-----
Triethanolamine (102-71-6)                   Yes   Yes  No        Yes
```

```
-----\Federal, State & International Regulations - Part 1\-----
Ingredient                                     -SARA 302-  -SARA 313-
RQ  TPQ      List  Chemical Catg.
-----
Triethanolamine (102-71-6)                   No   No    No        No
```

```
-----\Federal, State & International Regulations - Part 2\-----
Ingredient                                     CERCLA  -RCRA-  -TSCA-
261.33  8(d)
-----
Triethanolamine (102-71-6)                   No      No      No
```

Chemical Weapons Convention: Yes 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: **2** Flammability: **1** Reactivity: **0**

### Label Hazard Warning:

WARNING! HARMFUL IF SWALLOWED. CAUSES SKIN IRRITATION AND SEVERE EYE IRRITATION.

### Label Precautions:

Avoid contact with eyes, skin and clothing.

Wash thoroughly after handling.

Avoid breathing vapor.

Keep container closed.

Use with adequate ventilation.

### 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. 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:**

No Changes.

**Disclaimer:**

\*\*\*\*\*

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\*\*\*\*\*

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

## Material Safety Data Sheet

**Product No. 19481 Uranyl Acetate, Dihydrate**

**Issue Date (09-04-02)**

**Review Date (09-20-06)**

### Section 1: Product and Company Identification

**Product Name: Uranyl Acetate, Dihydrate**

Synonym: Bis (acetato) dioxouranium, Diacetatodioxouranium, Uranium acetate, Uranium oxyacetate, Uranyl acetate, Uranyl (2+) acetate

#### Company Name

**Ted Pella, Inc. and PELCO International, P.O. Box 492477, Redding, CA 96049-2477**

**Domestic Phone (800) 237-3526 (Mon-Thu. 6:00AM to 4:30PM PST; Fri 6:00AM to 4:00PM PST)**

**International Phone (01) (530) 243-2200 (Mon-Thu. 6:00AM to 4:30PM PST; Fri 6:00AM to 4:00PM PST)**

**Chemtrec Emergency Number 1-800-424-9300 24 hrs a day.**

### Section 2: Composition / Information on Ingredients

Principle Hazardous Component(s) (chemical and common name(s)) (Cas. No)	%	OSHA PEL mg/m <sup>3</sup>	ACGIH TLV mg/m <sup>3</sup>	NTP	IARC	OSHA regulated
*Uranyl Acetate, Dihydrate (6159-44-0)	99.9-100	0.05 (U)	NIF	NIF	NIF	NIF

**\*Made from Depleted Uranium**

### Section 3: Hazard Identification

## **Emergency overview**

Appearance: Solid, yellow crystals

Immediate effects: Highly Toxic, Conjunctivitis, Blood effects. Symptoms may be delayed. To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

## **Potential health effects**

Primary Routes of entry: Inhalation, skin absorption, ingestion.

Signs and Symptoms of Overexposure: Conjunctivitis. Blood effects. Symptoms may be delayed. To the best of our knowledge, the chemical physicals, and toxicological properties have not been thoroughly investigated.

Eyes: May cause eye irritation.

Skin: May cause skin irritation. May be harmful if absorbed through the skin.

Ingestion: May be harmful if swallowed. Target organs: Kidneys, Liver, Lungs.

Inhalation: May be harmful if inhaled. Material may be irritating to mucous membranes and upper respiratory tract.

Chronic Exposure: Carcinogen. Contains a radioactive isotope which may produce cancer or genetic mutation.

Chemical Listed As Carcinogen Or Potential Carcinogen: Yes (Radionuclides)

See Toxicological Information (Section 11)

## **Potential environmental effects**

See Ecological Information (Section 12)

---

## **Section 4: First Aid Measures**

### **If accidental overexposure is suspected**

Eye(s) Contact: In case of contact with eyes, flush with copious amounts of water for at least 15 minutes. Assure adequate flushing by separating the eyelids with fingers. Call a physician.

Skin Contact: In case of contact, immediately wash skin with soap and copious amounts of water.

Inhalation: If inhaled, remove to fresh air. If breathing becomes difficult, call a physician.

Ingestion: If swallowed, wash out mouth with water provided person is conscious. Call a physician.

### **Note to physician**

Treatment: NIF

Medical Conditions generally Aggravated by Exposure: NIF

---

### **Section 5: Fire Fighting Measures**

Flash Point: NA

Flammable Limits: NA

Auto-ignition point: NA

Fire Extinguishing Media: Water spray. Carbon dioxide, dry chemical powder, or appropriate foam.

Special Fire Fighting Procedures: Wear self-contained breathing apparatus and protective clothing to prevent contact with skin and eyes.

Unusual Fire and Explosion Hazards: Emits toxic fumes under fire conditions.

Hazardous combustion products: NIF

DOT Class: 7, Radioactive material, excepted package-limited quantity of material.  
**(Made from depleted Uranium)**

---

### **Section 6: Accidental Release Measures**

Steps to be Taken in Case Material is Released or Spilled: Handle as a radioactive spill. Wear self-contained breathing apparatus, rubber boots, and heavy rubber gloves. Methods for cleaning up: Sweep-up, place in container and hold for waste disposal. Avoid raising dust. Ventilate area and wash spill site after material pickup is complete.

Waste Disposal Methods: Dispose of waste according to Federal, State and Local Regulations.

---

### **Section 7: Handling and Storage**

Precautions to be Taken in Handling and Storage: User exposure: Avoid inhalation. Avoid contact with eyes, skin and clothing. Avoid prolonged or repeated exposure.

Storage temperature: Keep tightly closed. Store in a cool dry place.

Storage Pressure: NA

---

### **Section 8: Exposure Controls / Personal Protection Engineering Controls**

Ventilation required: Use only in a chemical fume hood. Use with adequate ventilation.

#### **Personal Protection Equipment**

Respiratory protection: Government approved respirator.

Protective gloves: Compatible chemical-resistant gloves

Skin protection: Suitable clothing.

Eye protection: Chemical safety goggles.  
Additional clothing and/or equipment: Safety shower and eye bath.

## **Exposure Guidelines**

See Composition/Information on Ingredients (Section2)

---

## **Section 9 Physical and Chemical Properties**

Appearance and Physical State: Yellow crystals. Solid

Odor (threshold): NA

Specific Gravity (H<sub>2</sub>O=1): 2.89 g/cm<sup>3</sup>

Vapor Pressure (mm Hg): NA

Vapor Density (air=1): NA

Percent Volatile by volume: NA

Evaporation Rate (butyl acetate=1): NA

Boiling Point: NA

Freezing point / melting point: 110 ° C

Decomposition temperature: 275 ° C

pH: NA

Solubility in Water: 10% in H<sub>2</sub>O, 20 ° C soluble incomplete.

Molecular Weight: 424.15 AMU

---

## **Section 10: Stability and Reactivity**

Stability: Stable

Conditions to Avoid: Protect from moisture

Materials to Avoid (Incompatibility): Strong oxidizing agents.

Hazardous Decomposition Products: Carbon monoxide, carbon dioxides, Uranium oxides.

Hazardous Polymerization: Will not occur.

---

## **Section 11: Toxicological Information**

Results of component toxicity test performed: Intraperitoneal, Mouse LD50: 24 mg/Kg. Oral, Mouse LD50: 242 mg/Kg. Oral, Rat LD50: 204 mg/Kg

USA MSHA Standard-air TWA: 0.2 mg (U)/m<sup>3</sup>

Chronic Exposure: Contains a radioactive isotope which may produce cancer and genetic mutation.

Human experience: ND

This product **does** contain compounds listed by NTP or IARC or regulated by OSHA as a carcinogen. (Radionuclides)

---

## **Section 12: Ecological Information**

Ecological Information: ND

Chemical Fate Information: ND

---

## **Section 13 Disposal Considerations**

RCRA 40 CFR 261 Classification: Contact a licensed professional waste disposal service to dispose of this material. Dispose of spilled material as radioactive waste. Consult local, state and federal regulations on disposal of radioactive waste. Observe all federal, state and local environmental regulations.

Federal, State and local laws governing disposal of materials can differ. Ensure proper disposal compliance with proper authorities before disposal.

---

## **Section 14: Transportation Information**

US DOT Information: Proper shipping name: Radioactive material, excepted package-limited quantity of material.

Hazard Class: 7

Packaging group: None

UN Number: UN2910

Limitations: Hazard Label: None

PIH (Poison inhalation hazard): **Not** PIH

IATA: Proper shipping name: Radioactive material, excepted package-limited quantity of material

Hazard Class: 7

Packing group: None

UN Number: UN2910

Marine Pollutant: No

Canadian TDG: NIF

---

## **Section 15: Regulatory Information**

### **United States Federal Regulations**

MSDS complies with OSHA's Hazard Communication Rule 29, CFR 1910.1200.

SARA: 302,304, 313: No

SARA Title III: No

RCRA: NIF

TSCA: Listed

CERCLA: RQ as Uranyl acetate (anhydride form, CAS # 541-09-3): 100 lbs (45.4 Kg)

RTECS Number: Uranyl acetate (anhydride form, CAS # 541-09-3): YR3675000

RTECS Number: Uranyl acetate, dihydrate: YR3600000

### **State Regulations**

California Proposition 65: This product is or contains chemical(s) known to the state of California to cause cancer. (Radionuclides)

### **International Regulations**

Canada WHMIS: This product has been classified in accordance with the hazard criteria of the CPR, and the MSDS contains all the information required by the CPR.

DSL: Yes

NDSL: No

Europe EINECS Numbers:

---

## **Section 16: Other Information**

Label Information: Highly Toxic (USA), Very Toxic (EU), Dangerous for the environment.

European Risk and Safety Phrases: R: 26/28 33 51/53. Risk Statements: Very toxic by inhalation and if swallowed. Danger of cumulative effects. Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment. S: 20/21 45 61. Safety Statements: When using do not eat, drink, or smoke. In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible). Avoid release to the environment. Refer to special instructions/safety data sheets.



European symbols needed: T+, N

US Statements: Radioactive material. Target organ(s): Liver. Kidneys.

Canadian WHMIS Symbols: NIF

HMIS(® Hazard Rating: Health: **3\***; Fire: **0**; Reactivity: **0**  
(0=least, 1=Slight, 2=Moderate, 3=High, 4=Extreme)

\*additional chronic hazards present.

NFPA Hazard Rating: Health: **3**; Fire: **0**; Reactivity: **0**  
(0=least, 1=Slight, 2=Moderate, 3=High, 4=Extreme)

### **Abbreviations used in this document**

NE= Not established

NA= Not applicable

NIF= No Information Found

ND= No Data

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### **Disclaimer**

Ted Pella, Inc. makes no warranty of any kind regarding the information furnished herein. Users should independently determine the suitability and completeness of information from all sources. While this data is presented in good faith and believed to be accurate, it should be considered only as a supplement to other information gathered by the user. It is the User's responsibility to assure the proper use and disposal of these materials as well as the safety and health of all personnel who may work with or otherwise come in contact with these materials.

## SECTION 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

### MSDS Identification:

**Key:** 25250  
**Name:** Zinc acetate dihydrate

### Catalog Numbers:

AC207640010, AC317215000, S80246, S93399, Z20-500, Z20500LC

### Synonyms:

Acetic acid, zinc salt, dihydrate.

### Company Identification:

Fisher Scientific  
1 Reagent Lane  
Fairlawn, NJ 07410

### For information, call:

201-796-7100

### Emergency Number:

201-796-7100

### For CHEMTREC assistance, call:

800-424-9300

### For International CHEMTREC assistance, call:

703-527-3887

## SECTION 2 - COMPOSITION, INFORMATION ON INGREDIENTS

CAS#	Chemical Name	%	EINECS#	Haz Symbols	Risk Phrases
5970-45-6	Zinc acetate dihydrate	> 98	unlisted		

**Text for R-phrases:** see Section 16

**Hazard Symbols:** XN

**Risk Phrases:** 22 36

### SECTION 3 - HAZARDS IDENTIFICATION

#### EMERGENCY OVERVIEW

**Appearance:** white solid. Warning! Causes eye irritation. May be harmful if swallowed. May cause skin and respiratory tract irritation.

**Target Organs:** Eyes.

#### POTENTIAL HEALTH EFFECTS

**Eye:** Causes eye irritation.

**Skin:** May cause skin irritation. May be harmful if absorbed through the skin.

**Ingestion:** May cause irritation of the digestive tract. May be harmful if swallowed.

**Inhalation:** May cause respiratory tract irritation. May be harmful if inhaled.

**Chronic:** Chronic exposure may cause kidney damage.

### SECTION 4 - FIRST AID MEASURES

**Eyes:** Flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid.

**Skin:** Get medical aid. Flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes.

**Ingestion:** Get medical aid. Wash mouth out with water.

**Inhalation:** Remove from exposure and move to fresh air immediately.

**Notes to Physician:** Treat symptomatically and supportively.

### SECTION 5 - FIRE FIGHTING MEASURES

**General Information:** As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear.

**Extinguishing Media:** Use water spray, dry chemical, carbon dioxide, or chemical foam.

**Autoignition Temperature:** Not applicable.

**Flash Point:** Not applicable.

**Explosion Limits, lower:** Not available.

**Explosion Limits, upper:** Not available.

**NFPA Rating:** (estimated) Health: 2; Flammability: 1; Instability:

## SECTION 6 - ACCIDENTAL RELEASE MEASURES

**General Information:** Use proper personal protective equipment as indicated in Section 8.

**Spills/Leaks:** Vacuum or sweep up material and place into a suitable disposal container. Avoid generating dusty conditions. Provide ventilation.

## SECTION 7 - HANDLING AND STORAGE

**Handling:** Wash thoroughly after handling. Remove contaminated clothing and wash before reuse. Use with adequate ventilation. Minimize dust generation and accumulation. Avoid contact with eyes, skin, and clothing. Avoid breathing dust and fume.

**Storage:** Store in a cool, dry place. Store in a tightly closed container.

## SECTION 8 - EXPOSURE CONTROLS, PERSONAL PROTECTION

**Engineering Controls:** Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use adequate ventilation to keep airborne concentrations low.

### EXPOSURE LIMITS

Chemical Name	ACGIH	NIOSH	OSHA - Final PELs
Zinc acetate anhydrous	none listed	none listed	none listed
Zinc acetate dihydrate	none listed	none listed	none listed

### **OSHA Vacated PELs:**

**Zinc acetate anhydrous:** No OSHA Vacated PELs are listed for this chemical.

**Zinc acetate dihydrate:** 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. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

## SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES

**Physical State:** Solid

**Color:** white

**Odor:** faint vinegar like odor

**pH:** 6-7 (5% soln)

**Vapor Pressure:** Not available.

**Vapor Density:** Not available.

**Evaporation Rate:** Not available.

**Viscosity:** Not available.

**Boiling Point:** Not available.

**Freezing/Melting Point:** 200 deg C (dec)

**Decomposition Temperature:** 200 deg C

**Solubility in water:** Very soluble in water.

**Specific Gravity/Density:** 1.735

**Molecular Formula:**  $\text{Zn}(\text{CH}_3\text{COO})_2 \cdot 2\text{H}_2\text{O}$

**Molecular Weight:** 219.50

## SECTION 10 - STABILITY AND REACTIVITY

**Chemical Stability:** Stable under normal temperatures and pressures. Loses 2H<sub>2</sub>O at 100°C.

**Conditions to Avoid:** Dust generation, excess heat.

**Incompatibilities with Other Materials:** Strong oxidizing agents.

**Hazardous Decomposition Products:** Carbon monoxide, carbon dioxide, toxic fumes of zinc oxide.

**Hazardous Polymerization:** Will not occur.

## SECTION 11 - TOXICOLOGICAL INFORMATION

**RTECS#:**

**CAS#** 557-34-6: AK1500000

**CAS#** 5970-45-6: ZG8750000

**LD50/LC50:**

**CAS#** 557-34-6: Oral, rat: LD50 = 2510 mg/kg.

**CAS#** 5970-45-6: Draize test, rabbit, eye: 20 mg/24H Moderate; Draize test, rabbit, skin: 500 mg/24H Mild; Oral, mouse: LD50 = 287 mg/kg; Oral, rat: LD50 = 794 mg/kg.

**Carcinogenicity:**

Zinc acetate anhydrous -

Not listed by ACGIH, IARC, or NTP.

Zinc acetate dihydrate -

Not listed by ACGIH, IARC, or NTP.

**Epidemiology:**

No data available.

**Teratogenicity:**

No data available.

**Reproductive Effects:**

See actual entry in RTECS for complete information.

**Neurotoxicity:**

No data available.

**Mutagenicity:**

No data available.

**Other Studies:**

The toxicological properties have not been fully investigated.

SECTION 12 - ECOLOGICAL INFORMATION

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:** None listed.

## SECTION 14 - TRANSPORT INFORMATION

### US DOT

Shipping Name: Not regulated Hazard Class: UN Number: Packing Group:

### Canadian TDG

Shipping Name: Not Regulated Hazard Class: 0 UN Number: UN Packing Group:

**USA RQ: CAS# 557-34-6: 1000 lb final RQ; 454 kg final RQ**

## SECTION 15 - REGULATORY INFORMATION

### US FEDERAL

#### TSCA

**CAS# 557-34-6** is listed on the TSCA inventory.

**CAS# 5970-45-6** is not on the TSCA Inventory because it is a hydrate. It is considered to be listed if the CAS number for the anhydrous form is on the inventory (40CFR720.3(u)(2)).

#### 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# 557-34-6: 1000 lb final RQ; 454 kg final RQ**

#### SARA Section 302 Extremely Hazardous Substances

None of the chemicals in this product have a TPQ.

#### SARA Codes

**CAS# 5970-45-6:** acute.

### Section 313

This chemical is not at a high enough concentration to be reportable under Section 313. This material contains Zinc acetate dihydrate (listed as Zinc compounds), 98%, (**CAS# 5970-45-6**) which is subject to the reporting requirements of Section 313 of SARA Title III and 40 CFR Part 372.

#### **Clean Air Act:**

This material does not contain any hazardous air pollutants. This material does not contain any Class 1 Ozone depleters. This material does not contain any Class 2 Ozone depleters.

#### **Clean Water Act:**

**CAS# 557-34-6** is listed as a Hazardous Substance under the CWA. None of the chemicals in this product are listed as Priority Pollutants under the CWA.  
**CAS# 557-34-6** is listed as a Toxic Pollutant under the Clean Water Act.  
**CAS# 5970-45-6** is listed as a Toxic Pollutant under the Clean Water Act.

#### **OSHA:**

None of the chemicals in this product are considered highly hazardous by OSHA.

### **STATE**

Zinc acetate anhydrous can be found on the following state right to know lists: California, New Jersey, Pennsylvania, Massachusetts.  
Zinc acetate dihydrate can be found on the following state right to know lists: California, (listed as Zinc compounds), Pennsylvania, (listed as Zinc compounds).  
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: XN Risk Phrases:

R 22 Harmful if swallowed.  
R 36 Irritating to eyes.

Safety Phrases:

S 26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.  
S 39 Wear eye/face protection.

#### **WGK (Water Danger/Protection)**

**CAS# 557-34-6:** 1  
**CAS# 5970-45-6:** No information available.

#### **Canada**



**CAS#** 557-34-6 is listed on Canada's DSL List.

**CAS#** 5970-45-6 is listed on Canada's DSL List. This product has a WHMIS classification of D2B.

**CAS#** 557-34-6 is not listed on Canada's Ingredient Disclosure List.

**CAS#** 5970-45-6 is not listed on Canada's Ingredient Disclosure List.

## SECTION 16 - ADDITIONAL INFORMATION

**MSDS Creation Date:** 12/12/1997 **Revision #4 Date:** 11/19/2004

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 way shall the company 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 the company has been advised of the possibility of such damages.