

**WATER TEST KIT**

Item Number	Component	Distributor	Regulatory Agency	Language	Quantity
98299	98299	Hach Company	US OSHA	Domestic English	1
98799	98799	Hach Company	US OSHA	Domestic English	1
220999	220999	Hach Company	US OSHA	Domestic English	1
2197846	2197846	Hach Company	US OSHA	Domestic English	1
2198246	2198246	Hach Company	US OSHA	Domestic English	1
2395266	2395266	Hach Company	US OSHA	Domestic English	1
2395466	2395466	Hach Company	US OSHA	Domestic English	1
2408932	2408932	Hach Company	US OSHA	Domestic English	1
98199	98199	Hach Company	US OSHA	Domestic English	1

Total MSDS's Enclosed: 9

**HACH** Company  
 World HeadQuarters  
 PO Box 389 • Loveland Colorado 80539-0389  
 Phone 970-669-3050 • Fax 970-669-2932  
[www.hach.com](http://www.hach.com)

**Systems for Analysis**

5/23/2002 2:45:25 PM

**BRIAN BAGBY**  
**MONTSANTO**  
 700 CHESTERFIELD VILLAGE PKWY  
 AA140  
 CHESTERFIELD, MO 63918

We are pleased to fulfill your request for the Material Safety Data Sheets listed below. If you have any questions or additional needs please call our Customer Service Department at 1-800-227-4224.

You can also find product information and answers to many of your technical questions on the world wide web at [www.hach.com](http://www.hach.com).

Your tracking and reference number for this MSDS request is 4915. If you have any questions about this request, please refer to that number.

TRACY,

I OBTAINED A NEW WATER TEST  
 KIT; HERE ARE ALL OF THE NEW  
MSDS SHEETS FOR THE CHEMICALS

THANKS,

BRIAN

7-7035

**BRIAN BAGBY**  
**MONTSANTO**  
 700 CHESTERFIELD VIL  
 AA140  
 CHESTERFIELD, MO 63918

World Headquarters  
Hach Company  
P.O.Box 389  
Loveland, CO USA 80539  
(970) 669-3050

MSDS No: M00028

## Material Safety Data Sheet

### 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

**Product Name:** Dissolved Oxygen 2 Reagent  
**Catalog Number:** 98299

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:** M00028  
**Chemical Name:** Not applicable  
**CAS No.:** Not applicable  
**Chemical Formula:** Not applicable  
**Chemical Family:** Not applicable  
**Hazard:** Toxic. Causes severe burns.  
**Date of MSDS Preparation:**  
**Day:** 3  
**Month:** 05  
**Year:** 2002

### 2. COMPOSITION / INFORMATION ON INGREDIENTS

#### Potassium Iodide

**CAS No.:** 7681-11-0  
**TSCA CAS Number:** 7681-11-0  
**Percent Range:** 30.0 - 40.0  
**Percent Range Units:** weight / weight  
**LD50:** Oral Mouse LDLo = 1862 mg/kg  
**LC50:** None reported  
**TLV:** Not established  
**PEL:** Not established  
**Hazard:** Causes irritation.

#### Lithium Hydroxide

**CAS No.:** 1310-66-3  
**TSCA CAS Number:** 1310-65-2  
**Percent Range:** 55.0 - 65.0  
**Percent Range Units:** weight / weight  
**LD50:** Oral rat LD50 = 225 mg/kg  
**LC50:** Inhalation rat LC50 = 980 mg/m<sup>3</sup>/4H  
**TLV:** Not established  
**PEL:** Not established  
**Hazard:** Toxic. Causes severe burns.

#### Sodium Azide

**CAS No.:** 26628-22-8  
**TSCA CAS Number:** 26628-22-8  
**Percent Range:** 1.0 - 5.0  
**Percent Range Units:** weight / weight  
**LD50:** Oral rat LD<sub>50</sub> = 27 mg/kg; Oral mouse LD<sub>50</sub> = 27 mg/kg.  
**LC50:** None reported  
**TLV:** C: 0.29 mg/m<sup>3</sup> as Sodium azide; C 0.11 ppm as Hydrazoic acid vapor

**PEL:** Not established

**Hazard:** Highly toxic. May cause irritation. Cumulative poison. Experimental mutagen. Explosive. Contact with acid may generate toxic fumes.

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### 3. HAZARDS IDENTIFICATION

**Emergency Overview:**

**Appearance:** White crystals

**Odor:** None

CAUSES SEVERE BURNS HARMFUL IF SWALLOWED, INHALED OR ABSORBED THROUGH SKIN

**HMIS:**

**Health:** 3

**Flammability:** 1

**Reactivity:** 1

**Protective Equipment:** X - See protective equipment, Section 8.

**NFPA:**

**Health:** 3

**Flammability:** 1

**Reactivity:** 1

**Symbol:** Not applicable

**Potential Health Effects:**

**Eye Contact:** Causes severe burns

**Skin Contact:** Causes severe burns

**Skin Absorption:** Toxic. Effects similar to those of ingestion

**Target Organs:** Central nervous system

**Ingestion:** Toxic Causes: severe burns hypotension May cause iodism, which symptoms include skin rash, conjunctivitis, runny nose, sneezing, bronchitis, headache, fever and irritation of mucous membranes. May cause: abdominal pain dizziness nausea vomiting respiratory stimulation convulsions followed by respiratory depression central nervous system effects kidney damage liver damage spleen damage lung damage coma death

**Target Organs:** Central nervous system Bone marrow Kidneys Liver Spleen Lungs

**Inhalation:** Causes: severe burns May cause: coughing shortness of breath bronchitis headache dizziness weakness respiratory stimulation convulsions followed by respiratory depression death

**Target Organs:** None reported

**Medical Conditions Aggravated:** Sodium azide produces a larger blood pressure drop in persons with high blood pressure than in persons with normal blood pressure. Pre-existing: Eye conditions Skin conditions Respiratory conditions Kidney conditions Liver 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 headache 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:** Contains: an experimental mutagen. an experimental teratogen.

**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 for 15 minutes. Remove contaminated clothing. Call physician immediately.

**Ingestion (First Aid):** Do not induce vomiting. Give 1-2 glasses of water. Never give anything by mouth to an unconscious person. Call physician immediately.

**Inhalation:** Remove to fresh air. Give artificial respiration if necessary. Call physician.

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## 5. FIRE FIGHTING MEASURES

**Flammable Properties:** Does not burn, but may melt in a fire, releasing toxic fumes. 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:** Contact with metals gives off hydrogen gas which is flammable. Closed containers may explode if heated.

**Static Discharge:** None reported.

**Mechanical Impact:** None reported

**Extinguishing Media:** Do NOT use water. Carbon dioxide. Dry chemical.

**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.

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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:** Stop spilled material from being released to the environment.

**Clean-up Technique:** 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 weak acid 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.

**304 EHS RQ (40 CFR 355):** Sodium Azide - RQ 1000 lbs.

**D.O.T. Emergency Response Guide Number:** 154

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## 7. HANDLING / STORAGE

**Handling:** Avoid contact with eyes skin clothing. Do not breathe dust. Wash thoroughly after handling. Use with adequate ventilation. Maintain general industrial hygiene practices when using this product.

**Storage:** Store in a cool, dry place. Keep away from: metals acids / acid fumes.

**Flammability Class:** Not applicable

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## 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:** chemical splash goggles

**Skin Protection:** disposable latex gloves lab coat

**Inhalation Protection:** laboratory fume hood

**Precautionary Measures:** Avoid contact with: eyes skin clothing. Do not breathe: dust. Wash thoroughly after handling. Keep away from: metals acids/acid fumes

**TLV:** Not established

**PEL:** Not established

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## 9. PHYSICAL / CHEMICAL PROPERTIES

**Appearance:** White crystals

**Physical State:** Solid

**Molecular Weight:** Not applicable  
**Odor:** None  
**pH:** 12.6 (5% sol'n)  
**Vapor Pressure:** Not applicable  
**Vapor Density (air = 1):** Not applicable  
**Boiling Point:** Not applicable  
**Melting Point:** 110°C (230°F)  
**Specific Gravity (water = 1):** 1.94  
**Evaporation Rate (water = 1):** Not applicable  
**Volatile Organic Compounds Content:** Not applicable  
**Partition Coefficient (n-octanol / water):** Not applicable  
**Solubility:**  
    **Water:** Soluble  
    **Acid:** Not determined  
    **Other:** Not determined  
**Metal Corrosivity:**  
    **Steel:** Not determined  
    **Aluminum:** 0.248 in/yr (6.30 mm/yr)

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## 10. STABILITY / REACTIVITY

**Chemical Stability:** Stable when stored under proper conditions.  
**Conditions to Avoid:** Excess moisture Extreme temperatures  
**Reactivity / Incompatibility:** May react violently in contact with: acids oxidizers  
**Hazardous Decomposition:** Heating to decomposition releases toxic and/or corrosive fumes of: iodine iodine compounds potassium oxide nitrogen oxides sodium oxides Contact with metals may release flammable hydrogen gas.  
**Hazardous Polymerization:** Will not occur.

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## 11. TOXICOLOGICAL INFORMATION

**Product Toxicological Data:**  
    **LD50:** Oral rat LD<sub>50</sub> = 350 mg/kg  
    **LC50:** None reported  
    **Dermal Toxicity Data:** None reported  
    **Skin and Eye Irritation Data:** None reported  
    **Mutation Data:** Sodium Azide: DNA inhibition in human fibroblasts @ 50 mg/l; other data reported in RTECS.  
    **Reproductive Effects Data:** None reported  
**Ingredient Toxicological Data:** Lithium Hydroxide: Oral rat LD<sub>50</sub> = 225 mg/kg. Sodium Azide: Oral rat LD<sub>50</sub> = 27 mg/kg; Dermal rabbit LD<sub>50</sub> = 20 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):** Never put unreacted azides down the drain! 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.

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## 14. TRANSPORT INFORMATION

**D.O.T.:**

*D.O.T. Proper Shipping Name:* Lithium Hydroxide, Solid Mixture

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*DOT Hazard Class:* 8

*DOT Subsidiary Risk:* NA

*DOT ID Number:* UN2680

*DOT Packing Group:* II

*I.C.A.O.:*

*I.C.A.O. Proper Shipping Name:* Lithium Hydroxide Monohydrate Mixture

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*ICAO Hazard Class:* 8

*ICAO Subsidiary Risk:* NA

*ICAO ID Number:* UN2680

*ICAO Packing Group:* II

*I.M.O.:*

*I.M.O. Proper Shipping Name:* Lithium Hydroxide Monohydrate Mixture

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*I.M.O. Hazard Class:* 8

*I.M.O. Subsidiary Risk:* NA

*I.M.O. ID Number:* UN2680

*I.M.O. Packing Group:* II

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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 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.

Sodium azide

*302 (EHS) TPQ (40 CFR 355):* Sodium Azide 500 lbs.

*304 CERCLA RQ (40 CFR 302.4):* Sodium azide 1000 lbs.

*304 EHS RQ (40 CFR 355):* Sodium Azide - RQ 1000 lbs.

*Clean Water Act (40 CFR 116.4):* Not applicable

*RCRA:* Contains no RCRA regulated substances.

*C.P.S.C.:* The label for this product bears the signal word "POISON" because the concentration of Lithium Hydroxide in the product is greater than/ equal to 10%

*State Regulations:*

*California Prop. 65:* No Prop. 65 listed chemicals are present in this product.

*Identification of Prop. 65 Ingredient(s):* None

*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:* Determination of dissolved oxygen

*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. 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. List of Dangerous Substances Classified in Annex I of the EEC Directive (67/548) - Classification, Packaging and Labeling of Dangerous Substances, Amended July 1992. Outside Testing. Technical Judgment.

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**Legend:**

NA - Not Applicable

w/w - weight/weight

ND - Not Determined  
NV - Not Available

w/v - weight/volume  
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: M00007

## Material Safety Data Sheet

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### 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

**Product Name:** Dissolved Oxygen 3 Powder Pillows  
**Catalog Number:** 98799

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:** M00007  
**Chemical Name:** Sulfamic Acid  
**CAS No.:** 5329-14-6  
**Chemical Formula:** H<sub>3</sub>NO<sub>3</sub>S  
**Chemical Family:** Inorganic Acid  
**Hazard:** Causes eye burns.  
**Date of MSDS Preparation:**  
**Day:** 02  
**Month:** November  
**Year:** 2000

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### 2. COMPOSITION / INFORMATION ON INGREDIENTS

#### Sulfamic Acid

**CAS No.:** 5329-14-6  
**TSCA CAS Number:** 5329-14-6  
**Percent Range:** > 99.0  
**Percent Range Units:** weight / weight  
**LD50:** Oral rat LD50 = 3160 mg/kg.  
**LC50:** None reported  
**TLV:** Not established  
**PEL:** Not established  
**Hazard:** Causes eye burns.

#### 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.

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### 3. HAZARDS IDENTIFICATION

**Emergency Overview:**

**Appearance:** White crystals

**Odor:** None

CAUSES EYE BURNS CAUSES SKIN AND RESPIRATORY TRACT IRRITATION

**HMIS:**

**Health:** 2

**Flammability:** 1

**Reactivity:** 1

**Protective Equipment:** X - See protective equipment, Section 8.

**NFPA:**

**Health:** 2

**Flammability:** 1

**Reactivity:** 1

**Symbol:** Not applicable

**Potential Health Effects:**

**Eye Contact:** Causes eye burns.

**Skin Contact:** Causes severe irritation

**Skin Absorption:** None reported

**Target Organs:** None reported

**Ingestion:** May cause: irritation of the mouth and esophagus gastrointestinal irritation

**Target Organs:** None reported

**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:** None reported

**Cancer / Reproductive Toxicity Information:**

O.S.H.A. Listed: No

IARC Listed: No

NTP Listed: No

**Additional Cancer / Reproductive Toxicity Information:** Not applicable

**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 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.

---

### 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 applicable  
*Hazardous Combustion Products:* Toxic fumes of: ammonia nitrogen oxides. sulfur oxides.  
*Fire / Explosion Hazards:* May react violently with: chlorine / chlorine compounds metal nitrates metal nitrites nitric acid  
*Static Discharge:* None reported.  
*Mechanical Impact:* None reported  
*Extinguishing Media:* Dry chemical. Water.  
*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:*** Stop spilled material from being released to the environment. Cover spilled solid material with sand or other inert material.

***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: a pound or more of loose powder 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:*** 154

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## 7. HANDLING / STORAGE

***Handling:*** Avoid contact with eyes skin Do not breathe dust. Maintain general industrial hygiene practices when using this product.

***Storage:*** Store away from: oxidizers alkalies chlorine/chlorinated metals Protect from: heat moisture

***Flammability Class:*** Not applicable

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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:*** 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. Keep away from: alkalies metals Protect from: heat moisture

***TLV:*** Not established

***PEL:*** Not established

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## 9. PHYSICAL / CHEMICAL PROPERTIES

***Appearance:*** White crystals

***Physical State:*** Solid

**Molecular Weight:** 97.10  
**Odor:** None  
**pH:** 1% soln = 1.18  
**Vapor Pressure:** Not applicable  
**Vapor Density (air = 1):** Not applicable  
**Boiling Point:** Not applicable  
**Melting Point:** Product decomposes at 205 °C; 401 °F  
**Specific Gravity (water = 1):** 2.15  
**Evaporation Rate (water = 1):** Not applicable  
**Volatile Organic Compounds Content:** Not applicable  
**Partition Coefficient (n-octanol / water):** None reported  
**Solubility:**  
    **Water:** 1:2 ratio @ 80 ° C (176 °F)  
    **Acid:** Soluble  
    **Other:** Slightly soluble in alcohol, methanol.  
**Metal Corrosivity:**  
    **Steel:** 0.814 in/yr  
    **Aluminum:** 0.212 in/yr

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## 10. STABILITY / REACTIVITY

**Chemical Stability:** Stable when stored under proper conditions.  
**Conditions to Avoid:** Heating to decomposition. Excess moisture  
**Reactivity / Incompatibility:** May react violently in contact with: chlorates metal nitrates metal nitrites nitric acid Incompatible with: alkalis oxidizers  
**Hazardous Decomposition:** Heating to decomposition releases toxic and/or corrosive fumes of: ammonia nitrogen oxides sulfur oxides  
**Hazardous Polymerization:** Will not occur.

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## 11. TOXICOLOGICAL INFORMATION

**Product Toxicological Data:**  
    **LD50:** Oral rat LD50 = 3160 mg/kg.  
    **LC50:** None reported  
    **Dermal Toxicity Data:** None reported  
    **Skin and Eye Irritation Data:** Skin Human 4%/5 days intermittent MILD, Skin rabbit 500 mg/24H SEVERE, Eye rabbit 20mg MODERATE, Eye rabbit 250µg/24H SEVERE.  
    **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

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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 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.

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## 14. TRANSPORT INFORMATION

### **D.O.T.:**

**D.O.T. Proper Shipping Name:** Sulphamic Acid

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**DOT Hazard Class:** 8

**DOT Subsidiary Risk:** NA

**DOT ID Number:** UN2967

**DOT Packing Group:** III

### **I.C.A.O.:**

**I.C.A.O. Proper Shipping Name:** Sulphamic Acid

--

**ICAO Hazard Class:** 8

**ICAO Subsidiary Risk:** NA

**ICAO ID Number:** UN2967

**ICAO Packing Group:** III

### **I.M.O.:**

**I.M.O. Proper Shipping Name:** Sulphamic Acid

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**I.M.O. Hazard Class:** 8

**I.M.O. Subsidiary Risk:** NA

**I.M.O. ID Number:** UN2967

**I.M.O. Packing Group:** III

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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):** 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

**Trade Secret Registry:** Not applicable

### **National Inventories:**

**U.S. Inventory Status:** TSCA Listed: Yes

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## 16. OTHER INFORMATION

*Intended Use:* Laboratory Reagent

*References:* Vendor Information. NIOSH Registry of Toxic Effects of Chemical Substances, 1985-86. Cincinnati: U.S. Department of Health and Human Services, April, 1987. Gosselin, R. E. et al. Clinical Toxicology of Commercial Products, 5th Ed. Baltimore: The Williams and Wilkins Co., 1984. 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. Outside Testing. Technical Judgment. 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. 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.

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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:** 3  
**Month:** 05  
**Year:** 2002

### 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

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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.

**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

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## 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

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## 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

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## 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.

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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:** 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

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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):** 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.

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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

---

## 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

*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:* 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.

---

**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: M00109

## Material Safety Data Sheet

### 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

**Product Name:** DPD Free Chlorine Reagent  
**Catalog Number:** 2197846

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:** M00109  
**Chemical Name:** Not applicable  
**CAS No.:** Not applicable  
**Chemical Formula:** Not applicable  
**Chemical Family:** Not applicable  
**Hazard:** May cause sensitization. May cause irritation.  
**Date of MSDS Preparation:**  
Day: 3  
Month: 05  
Year: 2002

### 2. COMPOSITION / INFORMATION ON INGREDIENTS

#### Salt of N,N-Diethyl-p-Phenylenediamine

**CAS No.:** Confidential  
**TSCA CAS Number:** Confidential  
**Percent Range:** 1.0 - 5.0  
**Percent Range Units:** weight / weight  
**LD50:** Oral rat LD<sub>50</sub> = 970 mg/kg.  
**LC50:** None reported  
**TLV:** Not established  
**PEL:** Not established  
**Hazard:** May cause sensitization. May cause irritation.

#### Carboxylate Salt

**CAS No.:** Confidential  
**TSCA CAS Number:** Confidential  
**Percent Range:** 55.0 - 65.0  
**Percent Range Units:** weight / weight  
**LD50:** None reported  
**LC50:** None reported  
**TLV:** Not established  
**PEL:** Not established  
**Hazard:** May cause irritation. Toxic properties unknown.

#### Sodium Phosphate, Dibasic

**CAS No.:** 7782-85-6  
**TSCA CAS Number:** 7558-79-4  
**Percent Range:** 30.0 - 40.0  
**Percent Range Units:** weight / weight  
**LD50:** Oral rat LD<sub>50</sub> = 12930 mg/kg.  
**LC50:** None reported  
**TLV:** Not established

*PEL:* Not established  
*Hazard:* May cause irritation.

**Ethylenediaminetetraacetic Acid, Disodium Salt**

*CAS No.:* 6381-92-6  
*TSCA CAS Number:* 139-33-3  
*Percent Range:* 1.0 - 10.0  
*Percent Range Units:* weight / weight  
*LD50:* Oral rat LD50 = 2000 mg/kg  
*LC50:* None reported  
*TLV:* Not established  
*PEL:* Not established  
*Hazard:* May cause irritation.

---

### 3. HAZARDS IDENTIFICATION

***Emergency Overview:***

*Appearance:* White or light pink powder  
*Odor:* None  
MAY CAUSE EYE AND RESPIRATORY TRACT IRRITATION  
MAY CAUSE ALLERGIC SKIN REACTION

***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:* May cause irritation  
*Skin Contact:* May cause irritation May cause allergic reaction  
*Skin Absorption:* None reported  
*Target Organs:* None reported  
*Ingestion:* DPD Oral rat LD50 studies revealed decreased locomotor activity, depressed respiration, muscle spasms, loss of righting reflex and death. Autopsies revealed ulcerated stomach, enteritis, gas and congested lungs.  
*Target Organs:* None reported  
*Inhalation:* May cause: respiratory tract irritation Effects similar to those of ingestion.  
*Target Organs:* None reported  
*Medical Conditions Aggravated:* Allergy or sensitivity to salts of N,N-Diethyl-p-phenylenediamine Pre-existing: Eye conditions Skin conditions Respiratory conditions  
*Chronic Effects:* DPD may cause allergic skin reactions in some people causing severe skin rashes and itching.  
***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):** 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:** 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: carbon monoxide, carbon dioxide, phosphorus oxides

**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. 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.

**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 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. Protect from: light moisture heat

**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:** 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: dust Wash thoroughly after handling. Protect from: light moisture heat

**TLV:** Not established

**PEL:** Not established

---

## 9. PHYSICAL / CHEMICAL PROPERTIES

**Appearance:** White or light pink powder

**Physical State:** Solid

**Molecular Weight:** Not applicable  
**Odor:** None  
**pH:** of 1% soln. = 6.35 @ 25°C  
**Vapor Pressure:** Not applicable  
**Vapor Density (air = 1):** Not applicable  
**Boiling Point:** Not applicable  
**Melting Point:** 110 C decomp  
**Specific Gravity (water = 1):** 1.76  
**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 determined  
    **Aluminum:** Not determined

---

## 10. STABILITY / REACTIVITY

**Chemical Stability:** Stable when stored under proper conditions.  
**Conditions to Avoid:** Exposure to light. Excess moisture Heating to decomposition.  
**Reactivity / Incompatibility:** None reported  
**Hazardous Decomposition:** Heating to decomposition releases toxic and/or corrosive fumes of: carbon dioxide carbon monoxide phosphorus 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:** Salt of DPD Oral rat LD50 = 970 mg/kg; Sodium Phosphate Dibasic Oral Rat LD50 = 17 g/kg; EDTA Disodium Salt Oral Rat LD50 = 2000 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.

---

## 13. DISPOSAL CONSIDERATIONS

**EPA Waste ID Number:** Not applicable  
**Special Instructions (Disposal):** Dilute to 3 to 5 times the volume with cold water. Open cold water tap completely, slowly pour the 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

--

*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

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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 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):* 5000 lbs. Sodium phosphate, dibasic

*304 EHS RQ (40 CFR 355):* Not applicable

*Clean Water Act (40 CFR 116.4):* Sodium phosphate, dibasic - 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

*Trade Secret Registry:* New Jersey Trade Secret Registry Number 80100131-5001 (Carboxylate Salt) New Jersey Trade Secret Registry Number 80100131-5002 (DPD Salt) New York Trade Secret Registry Number 478 (DPD Salt) New York Trade Secret Registry Number 479 (Carboxylate Salt) This product complies with Pennsylvania Trade Secret Regulations. This product is registered as a trade secret in the state of Illinois. This product is registered as a trade secret in the state of Massachusetts. This product is registered as a trade secret in the state of New York.

*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 Free Chlorine

*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. Sax, N. Irving. Dangerous Properties of Industrial Materials, 7th Ed. New York: Van Nostrand Reinhold Co., 1989.

---

**Legend:**

NA - Not Applicable  
ND - Not Determined  
NV - Not Available

w/w - weight/weight  
w/v - weight/volume  
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 ©2002**

World Headquarters  
Hach Company  
P.O.Box 389  
Loveland, CO USA 80539  
(970) 669-3050

MSDS No: M00110

## Material Safety Data Sheet

### 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

**Product Name:** DPD Total Chlorine Reagent  
**Catalog Number:** 2198246

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:** M00110  
**Chemical Name:** Not applicable  
**CAS No.:** Not applicable  
**Chemical Formula:** Not applicable  
**Chemical Family:** Not applicable  
**Hazard:** May cause sensitization. May cause irritation.  
**Date of MSDS Preparation:**  
Day: 3  
Month: 05  
Year: 2002

### 2. COMPOSITION / INFORMATION ON INGREDIENTS

#### Potassium Iodide

**CAS No.:** 7681-11-0  
**TSCA CAS Number:** 7681-11-0  
**Percent Range:** 20.0 - 30.0  
**Percent Range Units:** weight / weight  
**LD50:** Oral Mouse LDLo = 1862 mg/kg  
**LC50:** None reported  
**TLV:** Not established  
**PEL:** Not established  
**Hazard:** Causes irritation.

#### Salt of N,N-Diethyl-p-Phenylenediamine

**CAS No.:** Confidential  
**TSCA CAS Number:** Confidential  
**Percent Range:** 1.0 - 5.0  
**Percent Range Units:** weight / weight  
**LD50:** Oral rat LD<sub>50</sub> = 970 mg/kg.  
**LC50:** None reported  
**TLV:** Not established  
**PEL:** Not established  
**Hazard:** May cause sensitization. May cause irritation.

#### Sodium Phosphate, Dibasic

**CAS No.:** 7558-79-4  
**TSCA CAS Number:** 7558-79-4  
**Percent Range:** 20.0 - 30.0  
**Percent Range Units:** weight / weight  
**LD50:** Oral rat LD50 = 17 g/kg.  
**LC50:** None reported  
**TLV:** Not established

*PEL:* Not established  
*Hazard:* May cause irritation.

**Other component**

*CAS No.:* Not applicable  
*TSCA CAS Number:* Not applicable  
*Percent Range:* 0.1 - 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.

**Carboxylate Salt**

*CAS No.:* Confidential  
*TSCA CAS Number:* Confidential  
*Percent Range:* 40.0 - 50.0  
*Percent Range Units:* weight / weight  
*LD50:* None reported  
*LC50:* None reported  
*TLV:* Not established  
*PEL:* Not established  
*Hazard:* May cause irritation.

---

### 3. HAZARDS IDENTIFICATION

***Emergency Overview:***

*Appearance:* White or light pink powder  
*Odor:* None  
MAY CAUSE EYE AND RESPIRATORY TRACT IRRITATION  
MAY CAUSE ALLERGIC SKIN REACTION

***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:* May cause irritation  
*Skin Contact:* May cause irritation May cause allergic reaction  
*Skin Absorption:* No effects anticipated  
*Target Organs:* Not applicable  
*Ingestion:* Causes: lethargy loss of strength loss of coordination difficult breathing diarrhea May cause iodism, which symptoms include skin rash, conjunctivitis, runny nose, sneezing, bronchitis, headache, fever and irritation of mucous membranes. DPD Oral rat LD50 studies revealed decreased locomotor activity, depressed respiration, muscle spasms, loss of righting reflex and death. Autopsies revealed ulcerated stomach, enteritis, gas and congested lungs.  
*Target Organs:* Liver  
*Inhalation:* May cause: respiratory tract irritation Effects similar to those of ingestion.  
*Target Organs:* Liver  
*Medical Conditions Aggravated:* Allergy or sensitivity to salts of N,N-Diethyl-p-phenylenediamine Pre-existing: Eye conditions Skin conditions Respiratory conditions Persons with pre-existing respiratory conditions may be more susceptible to the effects of Potassium Iodide exposure.

**Chronic Effects:** Chronic overexposure may cause allergic skin reactions hypothyroidism liver damage DPD may cause allergic skin reactions in some people causing severe skin rashes and itching. Iodines overdose, 'iodism', may cause skin rash, runny nose, headaches, fever and bronchitis.

**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:** Maternal ingestion of potassium iodide during pregnancy may cause congenital goiter and hyperthyroidism in the newborn infant.

**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):** 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:** During a fire, this product decomposes to form toxic gases.

**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: carbon monoxide, carbon dioxide. iodine compounds phosphorus oxides potassium oxides 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. 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.

**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 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. Protect from: light heat moisture

*Flammability Class:* Not applicable

---

## 8. EXPOSURE CONTROLS / PROTECTIVE EQUIPMENT

*Engineering Controls:* Have an eyewash station nearby. Use general ventilation to minimize exposure to mist, vapor or dust.

*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: dust Wash thoroughly after handling.

Protect from: light heat moisture

*TLV:* Not established

*PEL:* Not established

---

## 9. PHYSICAL / CHEMICAL PROPERTIES

*Appearance:* White or light pink powder

*Physical State:* Solid

*Molecular Weight:* Not applicable

*Odor:* None

*pH:* of 1% soln = 6.35 @ 20°C

*Vapor Pressure:* Not applicable

*Vapor Density (air = 1):* Not applicable

*Boiling Point:* Not applicable

*Melting Point:* 145° C

*Specific Gravity (water = 1):* 1.79

*Evaporation Rate (water = 1):* Not applicable

*Volatile Organic Compounds Content:* Not applicable

*Partition Coefficient (n-octanol / water):* Not determined

*Solubility:*

*Water:* Soluble

*Acid:* Soluble

*Other:* Not determined

*Metal Corrosivity:*

*Steel:* 0.038 in/yr

*Aluminum:* 0.006 in/yr

---

## 10. STABILITY / REACTIVITY

*Chemical Stability:* Stable when stored under proper conditions.

*Conditions to Avoid:* Exposure to light. Excess moisture Extreme temperatures

*Reactivity / Incompatibility:* Incompatible with: oxidizers

*Hazardous Decomposition:* Heating to decomposition releases toxic and/or corrosive fumes of: carbon dioxide carbon monoxide iodine compounds phosphorus oxides potassium oxide

*Hazardous Polymerization:* Will not occur.

---

## 11. TOXICOLOGICAL INFORMATION

*Product Toxicological Data:*

*LD50:* Oral rat (female) LD<sub>50</sub> = 4700 mg/kg; Oral rat (male) LD<sub>50</sub> = 7000 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:* DPD Oral rat LD50 = 970 mg/kg; Potassium Iodide Oral mouse LDLo = 1862 mg/kg;

Sodium Phosphate, Dibasic Oral rat LD50 = 17 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:** Not applicable

**Special Instructions (Disposal):** Dilute to 3 to 5 times the volume with cold water. Open cold water tap completely, slowly pour the 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

---

## 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):** Sodium phosphate, dibasic 5000 lbs.

**304 EHS RQ (40 CFR 355):** Not applicable

**Clean Water Act (40 CFR 116.4):** Sodium phosphate, dibasic - 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

**Trade Secret Registry:** New Jersey Trade Secret Registry Number 80100131-5001 (Carboxylate Salt) New Jersey Trade Secret Registry Number 80100131-5002 (DPD Salt) New York Trade Secret Registry Number 478 (DPD Salt) New York Trade Secret Registry Number 479 (Carboxylate Salt) This product complies with Pennsylvania Trade Secret Regulations. This product is registered as a trade secret in the state of Illinois. This product is registered as a trade secret in the state of Massachusetts. This product is registered as a trade secret in the state of New York.

**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 total chlorine

**References:** CCINFO MSDS/FTSS. 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. Outside Testing. Technical Judgment. In-house information. 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.

---

**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 ©2002

World Headquarters  
Hach Company  
P.O.Box 389  
Loveland, CO USA 80539  
(970) 669-3050

MSDS No: M00127

## Material Safety Data Sheet

### 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

**Product Name:** Ammonia Salicylate Reagent  
**Catalog Number:** 2395266

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:** M00127  
**Chemical Name:** Not applicable  
**CAS No.:** Not applicable  
**Chemical Formula:** Not applicable  
**Chemical Family:** Not applicable  
**Hazard:** May cause irritation. Harmful if swallowed  
**Date of MSDS Preparation:**  
Day: 3  
Month: 05  
Year: 2002

### 2. COMPOSITION / INFORMATION ON INGREDIENTS

#### Sodium Salicylate

**CAS No.:** 54-21-7  
**TSCA CAS Number:** 54-21-7  
**Percent Range:** 40.0 - 50.0  
**Percent Range Units:** weight / weight  
**LD50:** Oral rat LD<sub>50</sub> = 1200 mg/kg; Oral mouse LD<sub>50</sub> = 540 mg/kg; Oral rabbit LD<sub>50</sub> = 1700 mg/kg.  
**LC50:** None reported.  
**TLV:** Not established.  
**PEL:** Not established.  
**Hazard:** May cause irritation. Experimental teratogen. Experimental mutagen. May be embryotoxic.

#### Sodium Nitroferricyanide

**CAS No.:** 14402-89-2  
**TSCA CAS Number:** 14402-89-2  
**Percent Range:** < 1.0  
**Percent Range Units:** weight / weight  
**LD50:** Oral rat LD<sub>50</sub> = 99 mg/kg (anhydrous).  
**LC50:** None reported.  
**TLV:** 5 mg/m<sup>3</sup> as CN<sup>-</sup>  
**PEL:** 5 mg/m<sup>3</sup> as CN<sup>-</sup>  
**Hazard:** Highly toxic. Harmful if inhaled.

#### Other components, each

**CAS No.:** Not applicable  
**TSCA CAS Number:** Not applicable  
**Percent Range:** 0.1 - 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.

#### **Sodium Citrate**

**CAS No.:** 68-04-2

**TSCA CAS Number:** 68-04-2

**Percent Range:** 40.0 - 50.0

**Percent Range Units:** weight / weight

**LD50:** Oral rat LD50 >8 g/Kg

**LC50:** None reported

**TLV:** Not established

**PEL:** Not established

**Hazard:** May cause irritation.

#### **Sodium Tartrate**

**CAS No.:** 6106-24-7

**TSCA CAS Number:** 868-18-8

**Percent Range:** 10.0 - 20.0

**Percent Range Units:** weight / weight

**LD50:** Oral rabbit LD50 = 5290 mg/kg

**LC50:** None reported

**TLV:** Not established

**PEL:** Not established

**Hazard:** May cause irritation.

---

### **3. HAZARDS IDENTIFICATION**

#### ***Emergency Overview:***

**Appearance:** Tan powder

**Odor:** None

**HARMFUL IF SWALLOWED, INHALED OR ABSORBED THROUGH SKIN MAY CAUSE EYE, SKIN AND RESPIRATORY TRACT IRRITATION**

**CONTACT WITH ACIDS FORMS TOXIC FUMES**

#### ***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:** May cause irritation

**Skin Contact:** May cause irritation

**Skin Absorption:** Harmful if absorbed through the skin Effects similar to those of ingestion Sodium nitroferrocyanide produces a delayed cyanide poisoning reaction.

**Target Organs:** Central nervous system Blood

**Ingestion:** Sodium nitroferrocyanide produces a delayed cyanide poisoning reaction. May cause: headache nausea vomiting central nervous system effects

**Target Organs:** Central nervous system Blood

**Inhalation:** Sodium nitroferrocyanide produces a delayed cyanide poisoning reaction. May cause: headache nausea vomiting central nervous system effects

**Target Organs:** Central nervous system Blood

**Medical Conditions Aggravated:** Allergies or sensitivity to aspirin or salicylates.

**Chronic Effects:** Chronic overexposure may cause confusion diarrhea fatigue weakness death Salicylates may cause ringing in the ears (tinnitus), abnormal bleeding, gastric ulceration, mental deterioration, skin eruption, temporary vision loss, and other optical effects.

**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. Remove contaminated clothing. Call physician immediately.

**Ingestion (First Aid):** 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:** During a fire, this product decomposes to form toxic gases.

**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:** This product will not burn or explode.

**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. 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:** Releases of this material may contaminate the environment. Stop spilled material from being released to the environment.

**Clean-up Technique:** Avoid contact with spilled material. Sweep up material. Dilute with a large excess of 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 local area (15 foot radius or as directed by your facility's emergency response plan) when: a pound or more of loose powder 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:** 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.

**Storage:** Store between 10° and 25°C. Keep away from: acids / acid fumes. oxidizers  
**Flammability Class:** Not applicable

---

## 8. EXPOSURE CONTROLS / PROTECTIVE EQUIPMENT

**Engineering Controls:** Have an eyewash station nearby. 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:** lab coat disposable latex gloves

**Inhalation Protection:** laboratory fume hood

**Precautionary Measures:** eyes skin clothing Do not breathe: dust Wash thoroughly after handling. Use with adequate ventilation. Keep away from: acids/acid fumes oxidizers

**TLV:** Not established.

**PEL:** Not established.

---

## 9. PHYSICAL / CHEMICAL PROPERTIES

**Appearance:** Tan powder

**Physical State:** Solid

**Molecular Weight:** Not applicable

**Odor:** None

**pH:** 7.84 (5% solution)

**Vapor Pressure:** Not applicable

**Vapor Density (air = 1):** Not applicable

**Boiling Point:** Not applicable

**Melting Point:** 97°C (206.6°F)

**Specific Gravity (water = 1):** 1.689

**Evaporation Rate (water = 1):** Not applicable

**Volatile Organic Compounds Content:** None.

**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:** Heating to decomposition. Extreme temperatures

**Reactivity / Incompatibility:** Incompatible with: acids iodine iron salts lead acetate organic materials oxidizers silver nitrate sodium phosphate

**Hazardous Decomposition:** Contact with acids/acid fumes releases toxic cyanide gas. Heating to decomposition releases toxic and/or corrosive fumes of: cyanide nitrogen oxides sodium 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:** Sodium Salicylate: Oral rat LD<sub>50</sub> = 1200 mg/kg; Sodium Citrate: Oral rat LD<sub>50</sub> > 8 g/kg; Sodium Tartrate: Oral rabbit LD<sub>50</sub> = 5290 mg/kg; Sodium Nitroferricyanide: Oral rat LD<sub>50</sub> = 99 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):** Dilute to 3 to 5 times the volume with cold water. Flush system with plenty of water.

**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

---

## 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.

Sodium Nitroferricyanide.

**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):** Not applicable

*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:* Reagent for ammonia test

*References:* TLV's Threshold Limit Values and Biological Exposure Indices for 1992-1993. American Conference of Governmental Industrial Hygienists, 1992. Technical Judgment. Sixth Annual Report on Carcinogens, 1991. U.S. Department of Health and Human Services. Rockville, MD: Technical Resources, Inc. 1991. Sax, N. Irving. Dangerous Properties of Industrial Materials, 7th Ed. New York: Van Nostrand Reinhold Co., 1989. List of Dangerous Substances Classified in Annex I of the EEC Directive (67/548) - Classification, Packaging and Labeling of Dangerous Substances, Amended July 1992. In-house information. IARC Monographs on the Evaluation of the Carcinogenic Risks to Humans. World Health Organization (Volumes 1-42) Supplement 7. France: 1987. Gosselin, R. E. et al. Clinical Toxicology of Commercial Products, 5th Ed. Baltimore: The Williams and Wilkins Co., 1984. Cassaret and Doull's Toxicology, 3rd Ed. New York: Macmillan Publishing Co., Inc., 1986. Air Contaminants, Federal Register, Vol. 54, No. 12. Thursday, January 19, 1989. pp. 2332-2983. 29 CFR 1900 - 1910 (Code of Federal Regulations - Labor).

---

### 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: M00128

## Material Safety Data Sheet

### 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

**Product Name:** Ammonia Cyanurate Reagent  
**Catalog Number:** 2395466

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:** M00128  
**Chemical Name:** Not Applicable  
**CAS No.:** Not Applicable  
**Chemical Formula:** Not Applicable  
**Chemical Family:** Not applicable  
**Hazard:** Causes burns.  
**Date of MSDS Preparation:**  
**Day:** 3  
**Month:** 05  
**Year:** 2002

### 2. COMPOSITION / INFORMATION ON INGREDIENTS

#### Sodium Dichloroisocyanurate

**CAS No.:** 2893-78-9  
**TSCA CAS Number:** 2893-78-9  
**Percent Range:** 1.0 - 5.0  
**Percent Range Units:** weight / weight  
**LD50:** Oral rat LD50 = 1400 mg/kg; Oral human LDLo = 3570 mg/kg  
**LC50:** None reported  
**TLV:** Not established  
**PEL:** Not established  
**Hazard:** Oxidizer. Causes eye burns.

#### Lithium Hydroxide, Anhydrous

**CAS No.:** 1310-66-3  
**TSCA CAS Number:** 1310-65-2  
**Percent Range:** 1.0 - 5.0  
**Percent Range Units:** weight / weight  
**LD50:** Oral rat LD50 = 225 mg/kg  
**LC50:** Inhalation rat LC50 = 980 mg/m<sup>3</sup>/4H  
**TLV:** Not established  
**PEL:** Not established  
**Hazard:** Toxic. Causes severe burns.

#### Sodium Citrate

**CAS No.:** 68-04-2  
**TSCA CAS Number:** 68-04-2  
**Percent Range:** 80.0 - 90.0  
**Percent Range Units:** weight / weight  
**LD50:** Oral rat LD50 >8 g/Kg  
**LC50:** None reported  
**TLV:** Not established

*PEL:* Not established  
*Hazard:* May cause irritation.

**Sodium Tartrate**

*CAS No.:* 6106-24-7  
*TSCA CAS Number:* 868-18-8  
*Percent Range:* 5.0 - 15.0  
*Percent Range Units:* weight / weight  
*LD50:* Oral rabbit LD50 = 5290 mg/kg  
*LC50:* None reported  
*TLV:* Not established  
*PEL:* Not established  
*Hazard:* May cause irritation.

---

### 3. HAZARDS IDENTIFICATION

*Emergency Overview:*

*Appearance:* White powder  
*Odor:* Chlorine  
CAUSES BURNS HARMFUL IF SWALLOWED  
MAY CAUSE KIDNEY OR LIVER DAMAGE BASED ON ANIMAL DATA

*HMIS:*

*Health:* 3  
*Flammability:* 1  
*Reactivity:* 1  
*Protective Equipment:* X - See protective equipment, Section 8.

*NFPA:*

*Health:* 2  
*Flammability:* 1  
*Reactivity:* 1  
*Symbol:* Not applicable

*Potential Health Effects:*

*Eye Contact:* Causes eye burns.  
*Skin Contact:* Causes burns.  
*Skin Absorption:* None reported  
*Target Organs:* None reported  
*Ingestion:* Causes: burns May cause: dizziness nausea kidney damage liver damage  
*Target Organs:* Liver Kidneys Central nervous system Bone marrow  
*Inhalation:* Causes: burns May cause: shortness of breath coughing  
*Target Organs:* None reported  
*Medical Conditions Aggravated:* Pre-existing: Eye conditions Skin conditions Respiratory 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 soap and 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:** 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 toxic and corrosive fumes.

**Fire / Explosion Hazards:** Not combustible.

**Static Discharge:** None reported.

**Mechanical Impact:** None reported

**Extinguishing Media:** Dry chemical. Carbon dioxide. Water.

**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:** Cover spilled solid material with sand or other inert material. 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 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):** Not applicable

**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 dust. Wash thoroughly after handling. Maintain general industrial hygiene practices when using this product.

**Storage:** Protect from: heat moisture Store away from: acids / acid fumes.

**Flammability Class:** Not applicable

---

## 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:** adequate ventilation

**Precautionary Measures:** Avoid contact with: eyes skin clothing Do not breathe: dust Wash thoroughly after handling. Keep away from: acids/acid fumes metals

**TLV:** Not established

**PEL:** Not established

---

## 9. PHYSICAL / CHEMICAL PROPERTIES

**Appearance:** White powder  
**Physical State:** Solid  
**Molecular Weight:** Not applicable  
**Odor:** Chlorine  
**pH:** of a 5% solution = 12.33  
**Vapor Pressure:** Not applicable  
**Vapor Density (air = 1):** Not applicable  
**Boiling Point:** Not applicable  
**Melting Point:** >240 °C, >464 °F  
**Specific Gravity (water = 1):** 1.783  
**Evaporation Rate (water = 1):** Not applicable  
**Volatile Organic Compounds Content:** None reported  
**Partition Coefficient (n-octanol / water):** Not applicable  
**Solubility:**  
    **Water:** Soluble  
    **Acid:** Soluble  
    **Other:** Not determined  
**Metal Corrosivity:**  
    **Steel:** 0.00 in/yr  
    **Aluminum:** 0.803 in/yr

---

## 10. STABILITY / REACTIVITY

**Chemical Stability:** Stable when stored under proper conditions.  
**Conditions to Avoid:** Heating to decomposition. Extreme temperatures Excess moisture  
**Reactivity / Incompatibility:** Incompatible with: acids  
**Hazardous Decomposition:** Contact with acids releases toxic and/or corrosive fumes of: chlorides nitrogen 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:** Sodium Citrate Oral rat LD50 > 8 g/kg; Sodium Tartrate Oral rabbit LD50 = 5290 mg/kg;  
Lithium Hydroxide Oral rat LD50 = 225 mg/kg; Sodium Dichloroisocyanurate Oral rat LD50 = 1400 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):** 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. Flush system with plenty of water.  
**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, Solid Mixture

--

*DOT Hazard Class:* 8

*DOT Subsidiary Risk:* NA

*DOT ID Number:* UN2680

*DOT Packing Group:* II

### *I.C.A.O.:*

*I.C.A.O. Proper Shipping Name:* Lithium Hydroxide, Solid Mixture

--

*ICAO Hazard Class:* 8

*ICAO Subsidiary Risk:* NA

*ICAO ID Number:* UN2680

*ICAO Packing Group:* II

### *I.M.O.:*

*I.M.O. Proper Shipping Name:* Lithium Hydroxide Monohydrate Mixture

--

*I.M.O. Hazard Class:* 8

*I.M.O. Subsidiary Risk:* NA

*I.M.O. ID Number:* UN2680

*I.M.O. Packing Group:* II

---

## 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 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):* Not applicable

*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:* Reagent for ammonia test

*References:* NIOSH Registry of Toxic Effects of Chemical Substances, 1985-86. Cincinnati: U.S. Department of Health and Human Services, April, 1987. Patty, Frank A. Industrial Hygiene and Toxicology, 3rd Revised Edition. Volume 2. New York: A Wiley-Interscience Publication, 1981. Gosselin, R. E. et al. Clinical Toxicology of Commercial Products, 5th Ed. Baltimore: The Williams and Wilkins Co., 1984. Technical Judgment. In-house information. 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.

---

**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 ©2002**

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Hach Company  
P.O.Box 389  
Loveland, CO USA 80539  
(970) 669-3050

MSDS No: M00371

## Material Safety Data Sheet

### 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

**Product Name:** Sodium Thiosulfate Standard Solution, Stabilized, 0.0109 N  
**Catalog Number:** 2408932

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:** M00371  
**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: 3  
Month: 05  
Year: 2002

### 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.

#### Sodium Thiosulfate

**CAS No.:** 10102-17-7  
**TSCA CAS Number:** 7772-98-7  
**Percent Range:** < 1.0  
**Percent Range Units:** weight / volume  
**LD50:** Oral rat LD50 > 8 gm/kg  
**LC50:** None reported  
**TLV:** Not established

*PEL:* Not established  
*Hazard:* May cause irritation.

**Sodium Sulfate**

*CAS No.:* 7757-82-6  
*TSCA CAS Number:* 7757-82-6  
*Percent Range:* 1.0 - 5.0  
*Percent Range Units:* weight / volume  
*LD50:* Oral mouse LD50 = 5989 mg/kg  
*LC50:* None reported  
*TLV:* Not established  
*PEL:* Not established  
*Hazard:* May cause irritation.

---

### 3. HAZARDS IDENTIFICATION

***Emergency Overview:***

*Appearance:* Clear, colorless liquid  
*Odor:* Sweet  
MAY CAUSE EYE AND SKIN 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:* May cause irritation  
*Skin Contact:* May cause irritation  
*Skin Absorption:* No effects anticipated  
*Target Organs:* Not applicable  
*Ingestion:* Very large doses may cause: central nervous system depression kidney damage rapid pulse and respirations  
*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:*** 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):*** Give large quantities of water. Call physician immediately.

**Inhalation:** Remove to fresh air.

---

## 5. FIRE FIGHTING MEASURES

**Flammable Properties:** During a fire, this product decomposes to form toxic gases.

**Flash Point:** > 100°C (212°F)

**Method:** Open cup

**Flammability Limits:**

**Lower Explosion Limits:** Not determined

**Upper Explosion Limits:** Not determined

**Autoignition Temperature:** Not determined

**Hazardous Combustion Products:** Toxic fumes of: sodium oxides carbon monoxide, carbon dioxide.

**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. Stop spilled material from being released to the environment.

**Clean-up Technique:** Absorb spilled liquid with non-reactive sorbent material. 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:** None

---

## 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: oxidizers

**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 lab coat

**Inhalation Protection:** adequate ventilation

**Precautionary Measures:** Avoid contact with: eyes skin 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:* Sweet  
*pH:* 9.9  
*Vapor Pressure:* Not determined  
*Vapor Density (air = 1):* Not determined  
*Boiling Point:* 99°C (210°F)  
*Melting Point:* -5°C (23°F)  
*Specific Gravity (water = 1):* 1.05  
*Evaporation Rate (water = 1):* 0.91  
*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:* 0.003 in/yr

---

## 10. STABILITY / REACTIVITY

*Chemical Stability:* Stable when stored under proper conditions.  
*Conditions to Avoid:* Heat Evaporation  
*Reactivity / Incompatibility:* Incompatible with: oxidizers  
*Hazardous Decomposition:* Toxic fumes of: sodium oxides 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:* None reported  
    *Reproductive Effects Data:* None reported  
*Ingredient Toxicological Data:* Propylene Glycol: Oral rat LD50 = 20 g/kg, Sodium Sulfate: Oral mouse LD50 = 5989 mg/kg, Sodium Thiosulfate: Oral rat LD50 > 8 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):* 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

---

## 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

*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:* 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.

---

**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 ©2002**

World Headquarters  
Hach Company  
P.O.Box 389  
Loveland, CO USA 80539  
(970) 669-3050

MSDS No: M00029

## Material Safety Data Sheet

### 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

**Product Name:** Dissolved Oxygen I Reagent  
**Catalog Number:** 98199

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:** M00029

**Chemical Name:** Sulfuric acid, manganese(2+) salt (1:1)

**CAS No.:** 7785-87-7

**Chemical Formula:** MnSO<sub>4</sub>

**Chemical Family:** Inorganic Salt

**Hazard:** May cause irritation. Cumulative poison. Experimental mutagen. Experimental teratogen.

**Date of MSDS Preparation:**

**Day:** 3

**Month:** 05

**Year:** 2002

### 2. COMPOSITION / INFORMATION ON INGREDIENTS

#### Manganous Sulfate

**CAS No.:** 7785-87-7

**TSCA CAS Number:** 7785-87-7

**Percent Range:** 100.0

**Percent Range Units:** weight / weight

**LD50:** None reported

**LC50:** None reported

**TLV:** 0.2 mg/m<sup>3</sup> (Mn)

**PEL:** Ceiling: 5 mg/m<sup>3</sup> (Mn)

**Hazard:** May cause irritation. Cumulative poison. Experimental mutagen. Experimental teratogen.

### 3. HAZARDS IDENTIFICATION

#### **Emergency Overview:**

**Appearance:** Pink powder

**Odor:** Not determined

HARMFUL IF INHALED MAY CAUSE EYE, SKIN AND RESPIRATORY TRACT IRRITATION

#### **HMIS:**

**Health:** 2

**Flammability:** 0

**Reactivity:** 1

**Protective Equipment:** X - See protective equipment, Section 8.

#### **NFPA:**

**Health:** 2

**Flammability:** 0

**Reactivity:** 1

*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:* Very large doses may cause: gastrointestinal irritation nausea

*Target Organs:* None reported

*Inhalation:* May cause: respiratory tract irritation pneumonitis

*Target Organs:* Lungs

*Medical Conditions Aggravated:* Pre-existing: Respiratory conditions Central nervous system diseases Liver conditions

*Chronic Effects:* Chronic inhalation of manganese (or Mn compounds) may cause psychiatric disorders characterized by irritability, difficulty walking, speech disturbances, and compulsive behavior. If the conditions persist, manganese poisoning may cause a mask-like facial expression, symptoms similar to Parkinson's disease, and cirrhosis of the liver.

**Cancer / Reproductive Toxicity Information:**

O.S.H.A. Listed: No

IARC Listed: No

NTP Listed: No

*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 plenty of water. Call physician if irritation develops.

*Ingestion (First Aid):* Give 1-2 glasses of water. 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:* 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:* 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:** 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: a pound or more of loose powder is spilled. If conditions warrant, increase the size of the evacuation.

**Special Instructions (for accidental release):** Product is regulated as a hazardous air pollutant.

**304 EHS RQ (40 CFR 355):** Not applicable

**D.O.T. Emergency Response Guide Number:** Not applicable

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## 7. HANDLING / STORAGE

**Handling:** Avoid contact with eyes skin Do not breathe dust. Wash thoroughly after handling. Use with adequate ventilation. Maintain general industrial hygiene practices when using this product.

**Storage:** Store at 10 - 30°C. Keep away from: oxidizers powdered metals

**Flammability Class:** Not applicable

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## 8. EXPOSURE CONTROLS / PROTECTIVE EQUIPMENT

**Engineering Controls:** Have an eyewash station nearby. Have a safety shower nearby. Maintain adequate ventilation to keep vapor level below TWA for chemicals in this product. 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 Do not breathe: dust Wash thoroughly after handling. Use with adequate ventilation. Keep away from: oxidizers powdered metals

**TLV:** 0.2 mg/m<sup>3</sup> (Mn)

**PEL:** Ceiling: 5 mg/m<sup>3</sup> (Mn)

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## 9. PHYSICAL / CHEMICAL PROPERTIES

**Appearance:** Pink powder

**Physical State:** Solid

**Molecular Weight:** 151.01

**Odor:** Not determined

**pH:** 3.7 (5% sol'n)

**Vapor Pressure:** Not applicable

**Vapor Density (air = 1):** Not applicable

**Boiling Point:** Not determined

**Melting Point:** > 400°C (> 752°F)

**Specific Gravity (water = 1):** 3.25

**Evaporation Rate (water = 1):** Not applicable

**Volatile Organic Compounds Content:** Not applicable

**Partition Coefficient (n-octanol / water):** Not applicable

**Solubility:**

**Water:** Soluble

**Acid:** Not determined

**Other:** Insoluble in alcohol

**Metal Corrosivity:**

**Steel:** Not determined

**Aluminum:** 0.002 in/yr (0.051 mm/yr)

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## 10. STABILITY / REACTIVITY

**Chemical Stability:** Stable when stored under proper conditions.

**Conditions to Avoid:** Extreme temperatures Heating to decomposition.

**Reactivity / Incompatibility:** Incompatible with: oxidizers powdered metals

**Hazardous Decomposition:** Heating to decomposition releases toxic and/or corrosive fumes of: sulfur oxides manganese oxides

**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:* None reported

*Mutation Data:* Oral mouse sperm morphology @ 513 mg/kg/5D (Continuous); Hamster ovary cytogenetic analysis @ 180 mg/l; Hamster ovary sister chromatid exchange @ 5 mg/l; more data reported in RTECS.

*Reproductive Effects Data:* Oral mouse TDLo = 513 mg/kg (Paternal effects - spermatogenesis).

**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

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## 13. DISPOSAL CONSIDERATIONS

*EPA Waste ID Number:* Not applicable

*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 material to the drain. Flush system with plenty of water.

*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

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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 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.

Manganese compounds

**302 (EHS) TPQ (40 CFR 355):** Not applicable

**304 CERCLA RQ (40 CFR 302.4):** Manganese Compounds 1 lb.

**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

**Trade Secret Registry:** Not applicable

**National Inventories:**

**U.S. Inventory Status:** TSCA Listed: Yes

**TSCA CAS Number:** 7785-87-7

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## 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. 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. Cassaret and Doull's Toxicology, 3rd Ed. New York: Macmillan Publishing Co., Inc., 1986. 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. Vendor Information.

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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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