

Agriculture

SDS

Agriculture

SDS

Safety Data Sheet (SDS)

Bleach

1. IDENTIFICATION OF SUBSTANCE/PREPARATION AND COMPANY/UNDERTAKING

| Trade Name | Description | Unit | Stock Code |
|------------|-------------|--------|------------|
| e-hygiene | Bleach | 2 x 5L | BLEACD477 |

Company e-hygiene systems ltd

Address Murray Road Orpington BR5 3QY

Tel: 01689 892522

Fax: 01689 877575

E-Mail info@e-hygenesystems.co.uk

2. COMPOSITION/INFORMATION ON HAZARDOUS INGREDIENTS

| Substance(INCI) | CAS | EINECS | Risk | % |
|---------------------|-----------|-----------|----------|----|
| Sodium Hypochlorite | 7681-52-9 | 231-668-3 | C R31-34 | <5 |

3. HAZARD IDENTIFICATION

Large quantities could be hazardous to the aquatic environment.

4. FIRST AID MEASURES

Eyes - Wash splashes from eyes with water. Skin - Wash off skin with water. Ingestion - If small amount wash out mouth with water and drink clean water. If amount is large give plenty of water to drink, do not induce vomiting and seek medical advice.

5. FIRE FIGHTING MEASURES

Extinguishing media: Material non-flammable

Special fire fighting procedures: Material non-flammable

Hazardous decomposition products: If this product is involved in a fire, toxic products of combustion could be chlorine gas. Use self-contained breathing equipment and use fire fighting equipment to suit the source of the fire.

6. ACCIDENTAL RELEASE MEASURES

SPILLAGE: Warn personnel - Cleaning products are frequently oily and present a slip hazard. Contain spillage with sand or earth, avoid contact with skin or eyes, failure to contain a spillage must be reported to the authorities. DO NOT ALLOW PRODUCT TO ENTER SURFACE WATER DRAINS.

7. HANDLING AND STORAGE

Store away from food. Keep containers tightly closed and out of reach of children. Store at temperatures above 5°C and below 30°C. SHELF LIFE: Normal storage conditions - 1 year.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION



OEL:

9. PHYSICAL/CHEMICAL PROPERTIES

Appearance: Pale straw liquid with slight chlorine odour

pH: 11.5-12.5

Flash point: N/A

Freezing Point: 0°C

Density: 1.08

Boiling Point: 100°C

10. STABILITY REACTIVITY:

Stability: Gives off toxic chlorine gas on contact with acids.

Revision Date: 14/04/2009

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Conditions and materials to avoid: Avoid contact with excess heat or acids.

Hazardous products of decomposition: Chlorine gas.

11. TOXICOLOGICAL INFORMATION

Health Hazards: Irritating to organic tissue

Inhalation: Inhalation of aerosol may cause irritation to respiratory system

Ingestion: May cause severe irritation to mouth and digestive tract

Eye contact: May cause severe irritations if not washed out with water immediately

Skin contact: Irritating to skin if not washed off with water.

12. ECOLOGICAL INFORMATION

Product biodegradable. Do not release into surface waters.

The surfactants used in this preparation comply with the biodegradability criteria laid down in Regulation (EC) No. 648/2004 on detergents. Data to support this assertion are held at the disposal of the competent authorities of the Member States and will be made available to them, at their direct request or at the request of a detergent manufacturer.

13. DISPOSAL CONSIDERATIONS

When disposing of surplus or waste product use suitable PPE etc. ensuring empty containers are rinsed out and disposed of safely. Do not allow product to enter land or surface water drains. Dispose of in accordance with local authority regulations. Do not mix with other waste materials.

14. TRANSPORT INFORMATION

None

Packing Group None

15. REGULATORY INFORMATION:

None

NOTE: This data sheet does not constitute a user's assessment of workplace risk as required by HSW act, COSHH, management of health and safety at work regulations, or other health and safety legislation.

Actual label may not be as above if product was supplied some time previously or labelling is in transition period.

Applicable Regulation: Chemicals (Hazard Information and Packaging for Supply) Regulations 2002: CHIP 3

16. OTHER INFORMATION

Product uses:

General Bleaching and disinfecting

Directions:

Laundry: Dilute 1 to 80 in water, soak and then wash as usual. Stains: Dilute 1 to 20 in water. DO NOT USE ON DELICATE FABRICS

For drains use undiluted.

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Bleach

Unless otherwise stated all percentages are w/w

| | | |
|-----------|-----|-------------------------------|
| GLOSSARY: | PPE | Personal protective equipment |
| | N/A | Not applicable |
| | N/K | Not known |
| | OES | Occupational exposure limit |
| | TWA | Time weighted average |
| | w/v | Weight to volume |
| | w/w | Weight to weight |

The data contained in this Safety Data Sheet has been supplied for the purpose of protecting the health and safety of industrial and commercial users who are deemed capable of understanding and acting on the information provided.

PLEASE ENSURE THAT IT IS PASSED TO THE APPROPRIATE PERSON(S) IN YOUR COMPANY, WHO ARE CAPABLE OF ACTING ON THE INFORMATION.

The information contained in this document is based on information believed to be correct on the date of issue. No warranty or representation, expressed or implied, is made as to the accuracy or completeness of this information. The user assumes all liability for any damage or injury resulting from abnormal use, from the failure to adhere to recommended practises, or from hazards inherent in the nature of the product. In accordance with our policy of incorporating technical improvements, we reserve the right to amend any specification without notice.

Material Safety Data Sheet
Ethyl Alcohol, 70%

ACCH 91791

Section 1 - Chemical Product and Company Identification

MSDS Name: Ethyl Alcohol, 70%

Catalog Numbers: S75119, S75120, S556CA4

Synonyms: Ethyl Alcohol; Ethyl Hydrate; Ethyl Hydroxide; Fermentation Alcohol; Grain Alcohol; Methylcarbinol; Molasses Alcohol; Spirits of Wine.

Company Identification:

Fisher Scientific
1 Reagent Lane
Fair Lawn, NJ 07410

For information, call: 201-796-7100

Emergency Number: 201-796-7100

For CHEMTREC assistance, call: 800-424-9300

For International CHEMTREC assistance, call: 703-527-3887

Section 2 - Composition, Information on Ingredients

| CAS# | Chemical Name | Percent | EINECS/ELINCS |
|-----------|---------------|---------|---------------|
| 64-17-5 | Ethyl alcohol | 70 | 200-578-6 |
| 7732-18-5 | Water | 30 | 231-791-2 |

Hazard Symbols: F

Risk Phrases: 11

Section 3 - Hazards Identification

EMERGENCY OVERVIEW

Appearance: colorless clear liquid. **Flash Point:** 16.6 deg C. **Flammable liquid and vapor.** May cause central nervous system depression. Causes severe eye irritation. Causes respiratory tract irritation. Causes moderate skin irritation. This substance has caused adverse reproductive and fetal effects in humans. **Warning!** May cause liver, kidney and heart damage.

Target Organs: Kidneys, heart, central nervous system, liver.

Potential Health Effects

Eye: Causes severe eye irritation. May cause painful sensitization to light. May cause chemical conjunctivitis and corneal damage.

Skin: Causes moderate skin irritation. May cause cyanosis of the extremities.

Ingestion: May cause gastrointestinal irritation with nausea, vomiting and diarrhea. May cause systemic toxicity with acidosis. May cause central nervous system depression, characterized by excitement, followed by headache, dizziness, drowsiness, and nausea. Advanced stages may cause collapse, unconsciousness, coma and possible death due to respiratory failure.

Inhalation: Inhalation of high concentrations may cause central nervous system effects characterized by nausea, headache, dizziness, unconsciousness and coma. Causes respiratory tract irritation. May cause narcotic effects in high concentration. Vapors may cause dizziness or suffocation.

Chronic: May cause reproductive and fetal effects. Laboratory experiments have resulted in mutagenic effects. Animal studies have reported the development of tumors. Prolonged exposure may cause liver, kidney, and heart damage.

Section 4 - First Aid Measures

Eyes: Immediately flush eyes with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Get medical aid. Gently lift eyelids and flush continuously with water.

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

Ingestion: Do NOT induce vomiting. If victim is conscious and alert, give 2-4 cupfuls of milk or water. Never give anything by mouth to an unconscious person. Get medical aid.

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

breathing is difficult, give oxygen. Get medical aid. Do NOT use mouth-to-mouth resuscitation.

Notes to Physician: Treat symptomatically and supportively. Persons with skin or eye disorders or liver, kidney, chronic respiratory diseases, or central and peripheral nervous system diseases may be at increased risk from exposure to this substance.

Antidote: Replace fluid and electrolytes.

Section 5 - Fire Fighting Measures

General Information: Containers can build up pressure if exposed to heat and/or fire. As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. Vapors may form an explosive mixture with air. Vapors can travel to a source of ignition and flash back. Will burn if involved in a fire. Flammable Liquid. Can release vapors that form explosive mixtures at temperatures above the flashpoint. Use water spray to keep fire-exposed containers cool. Containers may explode in the heat of a fire.

Extinguishing Media: For small fires, use dry chemical, carbon dioxide, water spray or alcohol-resistant foam. For large fires, use water spray, fog, or alcohol-resistant foam. Use water spray to cool fire-exposed containers. Water may be ineffective. Do NOT use straight streams of water.

Flash Point: 16.6 deg C (61.88 deg F)

Autoignition Temperature: 363 deg C (685.40 deg F)

Explosion Limits, Lower: 3.3 vol %

Upper: 19.0 vol %

NFPA Rating: (estimated) Health: 2; Flammability: 3; Instability: 0

Section 6 - Accidental Release Measures

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

Spills/Leaks: Absorb spill with inert material (e.g. vermiculite, sand or earth), then place in suitable container. Remove all sources of ignition. Use a spark-proof tool. Provide ventilation. A vapor suppressing foam may be used to reduce vapors.

Section 7 - Handling and Storage

Handling: Wash thoroughly after handling. Use only in a well-ventilated area. Ground and bond containers when transferring material. Use spark-proof tools and explosion proof equipment. Avoid contact with eyes, skin, and clothing. Empty containers retain product residue, (liquid and/or vapor), and can be dangerous. Keep container tightly closed. Avoid contact with heat, sparks and flame. Avoid ingestion and inhalation. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose empty containers to heat, sparks or open flames.

Storage: Keep away from heat, sparks, and flame. Keep away from sources of ignition. Store in a tightly closed container. Keep from contact with oxidizing materials. Store in a cool, dry, well-ventilated area away from incompatible substances. Flammables-area. Do not store near perchlorates, peroxides, chromic acid or nitric acid.

Section 8 - Exposure Controls, Personal Protection

Engineering Controls: Use explosion-proof ventilation equipment. Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use adequate general or local exhaust ventilation to keep airborne concentrations below the permissible exposure limits.

Exposure Limits

| Chemical Name | ACGIH | NIOSH | OSHA - Final PELs |
|---------------|--------------|--|------------------------------|
| Ethyl alcohol | 1000 ppm TWA | 1000 ppm TWA; 1900 mg/m3 TWA 3300 ppm IDLH | 1000 ppm TWA; 1900 mg/m3 TWA |
| Water | none listed | none listed | none listed |

OSHA Vacated PELs: Ethyl alcohol: 1000 ppm TWA; 1900 mg/m3 TWA Water: No OSHA Vacated PELs are listed for this chemical.

Personal Protective Equipment

Eyes: Wear appropriate protective eyeglasses or chemical safety goggles as described by OSHA's eye and face protection regulations in 29 CFR 1910.133 or European Standard EN166.

Skin: Wear appropriate protective gloves to prevent skin exposure.

Clothing: Wear appropriate protective clothing to prevent skin exposure.

Respirators: A respiratory protection program that meets OSHA's 29 CFR 1910.134 and ANSI Z88.2 requirements or European Standard EN 149 must be followed whenever workplace conditions warrant a respirator's use.

Section 9 - Physical and Chemical Properties

Section 9 - Physical and Chemical Properties

Physical State: Clear liquid
Appearance: colorless
Odor: Mild, rather pleasant, like wine or whis
pH: Not available.
Vapor Pressure: 59.3 mm Hg @ 20 deg C
Vapor Density: 1.59
Evaporation Rate: Not available.
Viscosity: 1.200 cP @ 20 deg C
Boiling Point: 78 deg C
Freezing/Melting Point: -114.1 deg C
Decomposition Temperature: Not available.
Solubility: Miscible.
Specific Gravity/Density: 0.790 @ 20°C
Molecular Formula: C₂H₅OH
Molecular Weight: 46.0414

Section 10 - Stability and Reactivity

Chemical Stability: Stable under normal temperatures and pressures.
Conditions to Avoid: Incompatible materials, ignition sources, excess heat, oxidizers.
Incompatibilities with Other Materials: Strong oxidizing agents, acids, alkali metals, ammonia, hydrazine, peroxides, sodium, acid anhydrides, calcium hypochlorite, chromyl chloride, nitrosyl perchlorate, bromine pentafluoride, perchloric acid, silver nitrate, mercuric nitrate, potassium-tert-butoxide, magnesium perchlorate, acid chlorides, platinum, uranium hexafluoride, silver oxide, iodine heptafluoride, acetyl bromide, disulfuryl difluoride, tetrachlorosilane + water, acetyl chloride, permanganic acid, ruthenium (VIII) oxide, uranyl perchlorate, potassium dioxide.
Hazardous Decomposition Products: Carbon monoxide, irritating and toxic fumes and gases, carbon dioxide.
Hazardous Polymerization: Will not occur.

Section 11 - Toxicological Information

RTECS#:

CAS# 64-17-5: KQ6300000

CAS# 7732-18-5: ZC0110000

LD50/LC50:

CAS# 64-17-5:

Draize test, rabbit, eye: 500 mg Severe;
Draize test, rabbit, eye: 500 mg/24H Mild;
Draize test, rabbit, skin: 20 mg/24H Moderate;
Inhalation, mouse: LC50 = 39 gm/m³/4H;
Inhalation, rat: LC50 = 20000 ppm/10H;
Oral, mouse: LD50 = 3450 mg/kg;
Oral, rabbit: LD50 = 6300 mg/kg;
Oral, rat: LD50 = 9000 mg/kg;
Oral, rat: LD50 = 7060 mg/kg;

CAS# 7732-18-5:

Oral, rat: LD50 = >90 mL/kg;

Carcinogenicity:

CAS# 64-17-5:

ACGIH: A4 - Not Classifiable as a Human Carcinogen CAS# 7732-18-5: Not listed by ACGIH, IARC, NIOSH, NTP, or OSHA.

Epidemiology: Ethanol has been shown to produce fetotoxicity in the embryo or fetus of laboratory animals. Prenatal exposure to ethanol is associated with a distinct pattern of congenital malformations that have collectively been termed the "fetal alcohol syndrome".

Teratogenicity: Oral, Human - woman: TDLo = 41 gm/kg (female 41 week(s) after conception) Effects on Newborn - Apgar score (human only) and Effects on Newborn - other neonatal measures or effects and Effects on Newborn - drug dependence.

Reproductive Effects: Intrauterine, Human - woman: TDLo = 200 mg/kg (female 5 day(s) pre-mating) Fertility - female fertility index (e.g. # females pregnant per # sperm positive females; # females pregnant per # females mated).

Neurotoxicity: No information available.

Mutagenicity: DNA Inhibition: Human, Lymphocyte = 220 mmol/L.; Cytogenetic Analysis: Human, Lymphocyte = 1160

gm/L.; Cytogenetic Analysis: Human, Fibroblast = 12000 ppm.; Cytogenetic Analysis: Human, Leukocyte = 1 pph/72H (Continuous).; Sister Chromatid Exchange: Human, Lymphocyte = 500 ppm/72H (Continuous).

Other Studies: Standard Draize Test(Skin, rabbit) = 20 mg/24H (Moderate) Standard Draize Test: Administration into the eye (rabbit) = 500 mg (Severe).

Section 12 - Ecological Information

Ecotoxicity: Fish: Rainbow trout: LC50 = 12900-15300 mg/L; 96 Hr; Flow-through @ 24-24.3°C Rainbow trout: LC50 = 11200 mg/L; 24 Hr; Fingerling (Unspecified) via: Phytobacterium phosphoreum: EC50 = 34900 mg/L; 5-30 min; Microtox test When spilled on land it is apt to volatilize, biodegrade, and leach into the ground water, but no data on the rates of these processes could be found. Its fate in ground water is unknown. When released into water it will volatilize and probably biodegrade. It would not be expected to adsorb to sediment or bioconcentrate in fish.

Environmental: When released to the atmosphere it will photodegrade in hours (polluted urban atmosphere) to an estimated range of 4 to 6 days in less polluted areas. Rainout should be significant.

Physical: No information available.

Other: No information available.

Section 13 - Disposal Considerations

Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. US EPA guidelines for the classification determination are listed in 40 CFR Parts 261.3. Additionally, waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification.

RCRA P-Series: None listed.

RCRA U-Series: None listed.

Section 14 - Transport Information

| | US DOT | IATA | RID/ADR | IMO | Canada TDG |
|----------------|---------|------|---------|-----|---------------------------|
| Shipping Name: | ETHANOL | | | | No information available. |
| Hazard Class: | 3 | | | | |
| UN Number: | UN1170 | | | | |
| Packing Group: | II | | | | |

Section 15 - Regulatory Information

US FEDERAL

TSCA

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

CAS# 7732-18-5 is listed on the TSCA inventory.

Health & Safety Reporting List

None of the chemicals are on the Health & Safety Reporting List.

Chemical Test Rules

None of the chemicals in this product are under a Chemical Test Rule.

Section 12b

None of the chemicals are listed under TSCA Section 12b.

TSCA Significant New Use Rule

None of the chemicals in this material have a SNUR under TSCA.

SARA

CERCLA Hazardous Substances and corresponding RQs

None of the chemicals in this material have an RQ.

SARA Section 302 Extremely Hazardous Substances

None of the chemicals in this product have a TPQ.

SARA Codes

CAS # 64-17-5: acute, chronic, flammable.

Section 313

No chemicals are reportable under Section 313.

Clean Air Act:

This material does not contain any hazardous air pollutants. This material does not contain any Class 1 Ozone depleters.

This material does not contain any Class 2 Ozone depleters.

Clean Water Act:

Clean Water Act:

None of the chemicals in this product are listed as Hazardous Substances under the CWA. None of the chemicals in this product are listed as Priority Pollutants under the CWA. None of the chemicals in this product are listed as Toxic Pollutants under the CWA.

OSHA:

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

STATE

CAS# 64-17-5 can be found on the following state right to know lists: California, New Jersey, Pennsylvania, Minnesota, Massachusetts.

CAS# 7732-18-5 is not present on state lists from CA, PA, MN, MA, FL, or NJ.

WARNING: This product contains Ethyl alcohol, a chemical known to the state of California to cause birth defects or other reproductive harm. California No Significant Risk Level: None of the chemicals in this product are listed.

European/International Regulations**European Labeling in Accordance with EC Directives****Hazard Symbols:**

F

Risk Phrases:

R 11 Highly flammable.

Safety Phrases:

S 16 Keep away from sources of ignition - No smoking.

S 33 Take precautionary measures against static discharges.

S 7 Keep container tightly closed.

S 9 Keep container in a well-ventilated place.

WGK (Water Danger/Protection)

CAS# 64-17-5: 0

CAS# 7732-18-5: No information available.

Canada - DSL/NDSL

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

CAS# 7732-18-5 is listed on Canada's DSL List.

Canada - WHMIS

This product has a WHMIS classification of B2, D2A, D2B.

Canadian Ingredient Disclosure List

CAS# 64-17-5 is listed on the Canadian Ingredient Disclosure List.

Exposure Limits

CAS# 64-17-5: OEL-AUSTRALIA:TWA 1000 ppm (1900 mg/m3) OEL-BELGIUM:TWA 1000 ppm (1880 mg/m3) OEL-CZECHOSLOVAKIA:TWA 1000 mg/m3;STEL 5000 mg/m3 OEL-DENMARK:TWA 1000 ppm (1900 mg/m3) OEL-FINLAND:TWA 1000 ppm (1900 mg/m3);STEL 1250 ppm (2400 mg/m3) OEL-FRANCE:TWA 1000 ppm (1900 mg/m3);STEL 5000 pp OEL-GERMANY:TWA 1000 ppm (1900 mg/m3) OEL-HUNGARY:TWA 1000 mg/m3;STEL 3000 mg/m3 OEL-THE NETHERLANDS:TWA 1000 ppm (1900 mg/m3) OEL-THE PHILIPPINES:TWA 1000 ppm (1900 mg/m3) OEL-POLAND:TWA 1000 mg/m3 OEL-RUSSIA:STEL 1000 mg/m3 OEL-SWEDEN:TWA 1000 ppm (1900 mg/m3) OEL-SWITZERLAND:TWA 1000 ppm (1900 mg/m3) OEL-THAILAND:TWA 1000 ppm (1900 mg/m3) OEL-TURKEY:TWA 1000 ppm (1900 mg/m3) OEL-UNITED KINGDOM:TWA 1000 ppm (1900 mg/m3) JAN9 OEL IN BULGARIA, COLOMBIA, JORDAN, KOREA check ACGIH TLV OEL IN NEW ZEALAND, SINGAPORE, VIETNAM check ACGI TLV

Section 16 - Additional Information

MSDS Creation Date: 4/17/2001

Revision #1 Date: 4/17/2001

The information above is believed to be accurate and represents the best information currently available to us. However, we make no warranty of merchantability or any other warranty, express or implied, with respect to such information, and we assume no liability resulting from its use. Users should make their own investigations to determine the suitability of the information for their particular purposes. In no event shall Fisher be liable for any claims, losses, or damages of any third party or for lost profits or any special, indirect, incidental, consequential or exemplary damages, howsoever arising, even if Fisher has been advised of the possibility of such damages.



Material Safety Data Sheet

Isopropyl Alcohol 70%

Issue date April 4th, 2014

Section 1: Product and Company Identification

General Names: Isopropyl Alcohol 70%

Product Use: For antiseptic topical use only

Manufacturer: Lernapharm (Loris) Inc.

2323 Halpern, St-Laurent, Québec, Canada H4S 1S3

Telephone: 514-331-4634

For chemical emergency, spill, leak, fire, exposure or accident call CANUTEC (Canada) 1-613-996-6666 (collect calls accepted)

Section 2: Hazards Identification

Clear, colorless liquid (may be tinted), alcohol odor. **HMIS (0 to 4)**

WARNING! Flammable liquid and slightly toxic by ingestion.

Flammable liquid, keep away from all ignition sources.

Target organs: Central nervous system, liver, kidneys.

This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Section 3: Composition / Information on Ingredients

Isopropyl Alcohol (67-63-0), 70% v/v. Water (7732-18-5), 30% v/v.

Section 4: First Aid Measures

Always seek professional medical attention after first aid measures are provided.

Eyes: Immediately flush eyes with excess water for 15 minutes, lifting lower and upper eyelids occasionally.

Ingestion: Call Poison Control immediately.

Aspiration hazard. Rinse mouth with cold water. Give victim 1-2 tbsp of activated charcoal mixed with 8 oz water.

Inhalation: Remove to fresh air. If not breathing, give artificial respiration.

Section 5: Fire Fighting Measures

Class IB Flammable Liquid. When heated to decomposition, emits acid fumes **3**

Protective equipment and precautions for firefighters: Use foam or dry chemical to extinguish fire. **1 0**

Firefighters should wear full fire fighting turn-out gear and respiratory protection (SCBA). Cool container with water spray. Material is not sensitive to mechanical impact. Material is sensitive to static discharge.



Material Safety Data Sheet

Isopropyl Alcohol 70%

Issue date April 4th, 2014

Section 6: Accidental Release Measures

Use personal protection recommended in Section 8. Isolate the hazard area and deny entry to unnecessary and unprotected personnel. Remove all ignition sources and ventilate area. Contain spill with sand or absorbent material and place material in a sealed bag or container for disposal. Wash spill area after pickup is complete. See Section 13 for disposal information.

Section 7: Handling and Storage

Handling: Use with adequate ventilation and do not breathe vapor. Avoid contact with eyes, or clothing.

Storage: Store with other flammable materials and away from any strong oxidizers. Store in a cool, dry, well-ventilated area, away from sources of ignition and incompatible materials.

Section 8: Exposure Controls / Personal Protection

Use ventilation to keep airborne concentrations below exposure limits. Have approved eyewash facility and fire extinguishers readily available. Wear chemical splash goggles. Use NIOSH-approved respirator with an acid/organic cartridge. Exposure guidelines: Isopropyl Alcohol: OSHA PEL: 980 mg/m³, ACGIH TLV: 492 mg/m³, STEL: 984 mg/m³.

Section 9: Physical and Chemical Properties

Molecular formula CH₃CHOHCH₃. **Appearance** Clear, colorless liquid.

Molecular weight 60.10. **Odor** Alcohol odor.

Specific Gravity 0.877 g/mL @ 20°C. **Odor Threshold** N/A

Vapor Density (air=1) 2.1. **Solubility** Completely soluble in water.

Melting Point -88°C. **Evaporation rate** > 1 (Butyl acetate = 1).

Boiling Point/Range 83°C. **Partition Coefficient** N/A. (log POW).

Vapor Pressure (20°C) 33 mm Hg. **pH** N/A.

Flash Point: 12°C (53°F) CC. **LEL** 2%.

Autoignition Temp.: 399°C (750°F). **UEL** 12.7 %.

N/A = Not available or applicable

Section 10: Stability and Reactivity

Stability: Stable under normal conditions of use. Avoid heat and ignition sources.

Incompatibility: Oxidizing materials, caustics, aluminum, metal, oleum, chlorinated compounds.

Storage: Store in a cool, dry environment, away from heat and ignition sources..



Material Safety Data Sheet

Isopropyl Alcohol 70%

Issue date April 4th, 2014

Section 11: Toxicology Information

Acute Symptoms/Signs of exposure: **Eyes:** Stinging pain, watering of eyes, inflammation of eyelids and conjunctivitis. **Ingestion:** Breath has sweet, organic odor, mental confusion, drowsiness, nausea, vomiting and headache. **Inhalation:** Rapid irregular breathing, headache, fatigue, mental confusion, nausea and vomiting, giddiness and poor judgment, convulsions and death.

Chronic Effects: Repeated/prolonged skin contact may cause dryness or rashes.

Sensitization: none expected

Isopropyl Alcohol: LD50 [oral, rat]; 5045 mg/kg; LC50 [rat]; 16,000 mg/l (4hours); LD50 Dermal [rabbit]; 500mg/24H Mild

Material has not been found to be a carcinogen nor produce genetic, reproductive, or developmental effects.

Section 12: Ecological Information

Ecotoxicity (aquatic and terrestrial): Toxic to aquatic and terrestrial plants and animals. Do not release into environment.

Section 13: Disposal Considerations

Check with all applicable local, regional, and national laws and regulations. Local regulations may be more stringent than regional or national regulations. Small amounts of this material may be suitable for sanitary sewer or trash disposal.

Section 14: Transport Information

DOT Shipping Name: Isopropanol

Canada TDG: Isopropanol.

DOT Hazard Class: 3, pg II.

Hazard Class: 3, pg II.

Identification Number: UN1219.

Section 15: Regulatory Information

EINECS: Listed (200-661-7).

WHMIS Canada: B2, D2B: Flammable liquid, Toxic material: eye irritant.

TSCA: All components are listed or are exempt.

California Proposition 65: Not listed.



Material Safety Data Sheet

Isopropyl Alcohol 70%

Issue date April 4th, 2014

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

Section 16: Other Information

Disclaimer: Lernapharm believes that the information herein is factual but is not intended to be all inclusive. The information relates only to the specific material designated and does not relate to its use in combination with other materials or its use as to any particular process. Because safety standards and regulations are subject to change and because Lernapharm has no continuing control over the material, those handling, storing or using the material should satisfy themselves that they have current information regarding the particular way the material is handled, stored or used and that the same is done in accordance with federal, state and local law.

Lernapharm makes no warranty, expressed or implied, including (without limitation) warranties with respect to the completeness or continuing accuracy of the information contained herein or with respect to fitness for any particular use.

MATERIAL SAFETY DATA SHEET

Distributor: Lilly Miller Brands
1340 Treat Blvd., Ste. 650
Walnut Creek, CA 94597

Date: Aug. 18, 2008

Telephone: 925-948-4000

I. PRODUCT INFORMATION

| | |
|------------------|------------------------------------|
| Product: | Concentrate Worry Free brand Vegol |
| Chemical Family: | Year-Round Pesticidal Oil |
| | Emulsifiable vegetable oil |

II. HAZARDOUS INGREDIENTS

| Components | % | Hazard Information |
|------------|---|--------------------|
| none | — | — |

III. PHYSICAL AND CHEMICAL CHARACTERISTICS (FIRE AND EXPLOSION DATA)

| | |
|-------------------------------------|------------------------------------|
| Boiling Point, °C: | ~>100 |
| Vapor Pressure (mm Hg): | NAV |
| Vapor Density (Air = 1): | NAV |
| Solubility in Water: | emulsifiable |
| Appearance and Odor: | clear, yellow, viscous liquid |
| Flash Point (°C): | N/A |
| Specific Gravity, 25°C: | NAV |
| pH: | NAV |
| Extinguishing Media for Fires: | water, foam or CO ₂ |
| Special Fire Fighting Procedures: | self contained breathing apparatus |
| Unusual Fire and Explosion Hazards: | none |

N/A - not applicable, NAV - not available, ca. - approximately

IV. PHYSICAL HAZARDS

| | |
|--------------------------------------|--------------------------------------|
| Stability: | stable |
| Materials to Avoid: | caustic agents |
| Hazardous Decomposition Products: | carbon oxides, may form upon burning |
| Hazardous Polymerization Conditions: | none |

V. HEALTH HAZARD DATA

| | | |
|------------------------------------|---|-----------------------------|
| TLV: NAV | OSHA PEL NAV: | LD ₅₀ (oral) NAV |
| LC ₅₀ (fish): NAV | | |
| Carcinogen or Potential Carcinogen | NTP: no | IARC: no OSHA: no |
| Routes of Entry: | ingestion, eyes | |
| Skin: | May aggravate pre-existing skin conditions | |
| Eyes: | May cause irritation | |
| Ingestion: | May cause gastrointestinal irritation, nausea | |
| Inhalation | NA | |
| Effects of Overexposure: | Eyes-prolonged exposure can cause irritation. Ingestion-may cause nausea | |
| Medical Conditions Aggravated: | skin disorders | |

VI. EMERGENCY FIRST AID PROCEDURES

| | |
|-------------|--|
| Skin: | Rinse well with water |
| Eyes: | Rinse with water for 15 minutes. Seek medical assistance if irritation persists. |
| Ingestion: | Consult physician |
| Inhalation: | Remove to fresh air |

VII. SPECIAL PROTECTION INFORMATION

| | |
|-----------------------------|--|
| Ventilation: | not required |
| Respiratory Protection: | not required |
| Eye Protection: | safety goggles |
| Protective Gloves: | not required |
| Other Protective Equipment: | wear protective clothing to avoid prolonged skin contact |

VIII. SPECIAL PRECAUTIONS AND SPILL/LEAK PROCEDURES

| | |
|---------------------------|--|
| Storage Recommendations: | none |
| Spill or Leak Procedures: | Material is slippery when spilled. Soak up with a solid absorbent and collect for disposal. Small amounts may be flushed with water. |
| Disposal Recommendations: | Dispose in accordance with local regulations. |

Support Resources

[SDS Search](#)[Instructions & Manuals](#)[Certificates](#)[Resources](#)[Test Methods](#)[Technical Tips](#)[Reagents Refills and Shelf Life](#)[Sales Literature](#)[Water Quality Articles](#)[Video Tutorials and Webinars](#)[Meter Registration](#)

Search...

[Go Back](#)

LaMotte Safety Data Sheet (SDS) And Archived Material Safety Data (MSDS) Search

The LaMotte SDS/MSDS Search will allow you to search for a Safety Data Sheet (SDS) for a current reagent or kit, or for archived Material Safety Data Sheets (MSDS) for components of a discontinued test kit. The SDS or MSDS can be displayed, printed, and/or downloaded as a PDF file.

5412-01

Kit Number:

[Go Back](#)

The List of SDS's files you requested

| Product Code | Product Name |
|--------------|-----------------------------|
| 5412-01 | AST-15 SOIL TEST OUTFIT *HF |

| Reagent Code | SDS Description | SDS File |
|--------------|------------------------------|------------|
| 6361 | Acid Extracting Solution | 6361.PDF |
| 5101 | Aluminum Test Solution | 5101.PDF |
| 4797 | Ammonia Nitrogen Reagent #1 | 4797.PDF |
| 4798 | Ammonia Nitrogen Reagent #2 | 4798.PDF |
| T-5250 | Calcium Hardness Indicator | T-5250.PDF |
| 3922 | Calcium-Magnesium Inhibitor | 3922.PDF |
| 5638 | Charcoal Suspension Solution | 5638.PDF |
| 4504 | Chloride Reagent #1 | 4504.PDF |
| 7624 | Chloride Reagent 2S | 7624.PDF |

| | | |
|--------|-------------------------------|------------|
| 6522 | CM Indicator | 6522.PDF |
| V-6281 | Color Developing Reagent | V-6281.PDF |
| 6446 | Copper 1 | 6446.PDF |
| 6613 | Copper 2 | 6613.PDF |
| 4255 | Hardness Buffer Reagent | 4255.PDF |
| 4487 | Hardness Reagent #7 | 4487.PDF |
| 9258 | Inhibitor Solution | 9258.PDF |
| 4451 | Iron Reagent #2 powder | 4451.PDF |
| 4450 | Iron Reagent 1 solution | 4450.PDF |
| 6310 | Manganese Buffer Reagent | 6310.PDF |
| 6311 | Manganese Periodate Reagent | 6311.PDF |
| 5145 | Manganese-Magnesium Test | 5145.PDF |
| V-6278 | Mixed Acid Reagent | V-6278.PDF |
| V-6279 | Nitrate Reducing Powder | V-6279.PDF |
| 3825 | Potassium TPB Solution | 3825.PDF |
| 6405 | Reducing Reagent | 6405.PDF |
| 4259 | Sodium Hydroxide Reagent with | 4259.PDF |
| 5643 | Soil Flocculating Reagent | 5643.PDF |
| 6362 | Special NF Phosphorus | 6362.PDF |
| V-6277 | Sulfate Reagent | V-6277.PDF |
| 5941 | Tricon Flocculating Solution | 5941.PDF |
| 4410 | VM Phosphate | 4410.PDF |
| 2218 | Wide Range Indicator | 2218.PDF |



MSDS

P.O. Box 329 - 802 Washington Avenue Chestertown, MD 21620 - USA

TELEPHONE # FOR INFORMATION 410 778-3100

24 HOUR EMERGENCY NUMBER (CHEM-TEL): USA, Canada, Puerto Rico 800-255-3924;

MATERIAL SAFETY DATA SHEET

Outside North American Continent 813-248-0585 (call Collect)

1. Product Identification

Product Code: 6361

Product Description: Acid Extracting Solution

Manufactured By: LaMotte Company

802 Washington Avenue
Chestertown, MD 21620

2. Composition/Information On Ingredients

| Hazard | CAS#/Name | % | PEL | TLV |
|--------|--------------------------------|---------|-------------------------------------|---------------------------------|
| Yes | 7647-01-0 Hydrochloric Acid | <3 | Ceiling 5 ppm (7mg/m ³) | Ceiling 2 ppm |
| Yes | 7664-93-9 Sulfuric Acid | <2 | 1 mg/m ³ (TWA) | 0.2 mg/m ³ (T) (TWA) |
| No | 7732-18-5 Water | to 100% | None Established | None Established |

3. Hazards Overview

Primary Route Of Entry: Skin Ingestion

Warning! Causes severe eye and skin irritation. Harmful if swallowed.

HMIS Hazard

Scale: 4 = Extreme, 3 = High, 2 = Moderate, 1 = Slight, 0 = Least

Health: 2 Flammability: 0 Reactivity: 1

Carcinogenicity: None:

Other Health Related Comments:

See Section 11, Toxicity.

Product Code: 6361

Product Description: Acid Extracting Solution

4. First Aid Measures

Eye Contact: Flush thoroughly with water for 15 minutes while occasionally lifting upper and lower eyelids. Consult a physician.

Skin Contact: Flush thoroughly with water for 15 minutes while removing affected clothing. If irritation develops contact physician. Wash clothing prior to use.

Ingestion: Do not induce vomiting. Give large quantity of water or milk to drink. Consult physician.

Inhalation: Remove to fresh air.

5. Fire Fighting Measures

Flash Point (Method Used): N/A

LEL: N/A

UEL: N/A

Extinguishing Media: Not a fire hazard

Special Fire Fighting Procedures: N/A

Unusual Fire & Explosion Hazard: Contact with metals may produce flammable hydrogen gas.

6. Accidental Release Measures

Wear PPE (see Section 8) & ventilate area. Neutralize spill with sodium bicarbonate/lime, scoop up slurry, containerize, and hold for disposal. Dispose according federal, state, and local regulations. If permitted, rinse to drain with excess water.

7. Handling & Storage

Keep container tightly closed. Store in cool, dry area away from bases, metals, and other incompatible materials.

Product Code: 6361

Product Description: Acid Extracting Solution

8. Exposure Controls/Personal Protection

Ventilation

Normal

Protection When Handling

Eye Protection Gloves Lab Coat

Work/Hygenic Practices: Avoid contact with eyes, skin, and clothing. Wash after handling.

9. Physical & Chemical Properties

Appearance: Clear Colorless Liquid

Solubility In Water: Soluble

Odor: Slight

pH: <1

Vapor Density: >1 (Air=1)

Vapor Pressure: <17 mm Hg @ 20 deg C

Boiling Point: > 100 deg C

Melting Point: N/A

10. Stability & Reactivity

Stable: Yes

Conditions To Avoid: Heat

Incompatibility (Materials To Avoid): Alkalies, metals

Hazardous Decomposition Products: HCl gas, SOx, hydrogen gas

11. Toxicological Information

Oral rat LD50: 2140 mg/kg for sulfuric acid, concentrated

Target Organs: Corrosive to all body parts Skin

Product Code: 6361

Product Description: Acid Extracting Solution

12. Ecological Information

Information Not Yet Available

13. Disposal Considerations

Dispose according to federal, state, and local regulations.

14. Transportation Information

Proper Shipping Name:

DOT: CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S.
(HYDROCHLORIC/SULFURIC ACID SOLUTION)

IATA: CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S.
(HYDROCHLORIC/SULPHURIC ACID SOLUTION)

Hazard Class/Div:

DOT: 8

IATA: 8

UN: 3264

Packing Group: II

15. Regulatory Information

Chemical Inventory Status

| Hazard | Ingredient | USA | Europe | --- Canada --- | | Australia | Japan |
|--------|--------------------------------|------|--------|----------------|------|-----------|-------|
| | | TSCA | EC | DSL | NDSL | | |
| Yes | 7647-01-0 Hydrochloric Acid | Yes | Yes | Yes | No | Yes | Yes |
| Yes | 7664-93-9 Sulfuric Acid | Yes | Yes | Yes | No | Yes | Yes |
| No | 7732-18-5 Distilled Water | Yes | Yes | Yes | No | Yes | Yes |

Product Code: 6361

Product Description: Acid Extracting Solution

Federal, State, & International Regulations

| Ingredient | --- SARA 302 --- | | ----- SARA 313 ----- | | CERCLA | RCRA 261.33 | TSCA 8(D) |
|--------------------------------|------------------|------|----------------------|-------------------|--------|----------------|--------------|
| | RQ | TPQ | Listed | Chemical Category | | | |
| 7647-01-0 Hydrochloric Acid | 5000 | 500 | Yes | No | 5000 | No | No |
| 7664-93-9 Sulfuric Acid | 1000 | 1000 | Yes | No | 1000 | No | No |
| 7732-18-5 Distilled Water | No | No | No | No | No | No | No |

| Ingredient | Acute | --- SARA 311/312 --- Hazard Categories | | | | Reactivity | ----- Australia ----- | | This MSDS Is WHMIS Compliant |
|--------------------------------|-------|---|------|----------|-----|------------|-----------------------|--------------------|---------------------------------|
| | | Chronic | Fire | Pressure | | | Hazchem Code | Poison Schedule | |
| 7647-01-0 Hydrochloric Acid | Yes | Yes | No | No | No | No | 2R | None Allocated | |
| 7664-93-9 Sulfuric Acid | Yes | Yes | No | No | Yes | Yes | 2P | None Allocated | |
| 7732-18-5 Distilled Water | No | No | No | No | No | No | None Allocated | None Allocated | |
| product 6361 as a whole | Yes | No | No | No | No | No | None Allocated | None Allocated | Yes |

16. Other Information

Keep out of the reach of children.

Prepared By: Regulatory Affairs Department

Revised: 9/18/2009



Issuing Date 1/3/2011

Revision Number 0

1. PRODUCT AND COMPANY IDENTIFICATION

Product Name Aluminum Test Solution

Product Code(s) 5101

Synonyms none

Recommended Use Laboratory chemicals. Industrial (not for food or food contact use).

Company LaMotte Company, Inc.
802 Washington Avenue
P.O. Box 329
Chestertown, MD 21620
USA

Emergency Telephone Number 24 Hour Emergency Number (CHEM-TEL):
USA, Canada, Puerto Rico 1-800-255-3924
Outside North American Continent (Call collect) 813-248-0585

2. HAZARDS IDENTIFICATION**WARNING!****Emergency Overview**

Flammable liquid and vapor

Vapors are heavier than air. Vapor may travel across the ground and reach remote ignition sources causing a flashback fire danger.

Vapors may be irritating to eyes, nose, throat, and lungs

Appearance Red, Transparent**Physical State** Liquid**Odor** Alcohol

OSHA Regulatory Status Safety information is given for exposure to the reagent as sold and considers exposure to the chemical if user has direct eye and skin contact.

Potential Health Effects

Principle Routes of Exposure Skin contact, Ingestion, and, Inhalation

Acute Toxicity**Eyes**

Irritating to eyes.

Skin

Irritating to skin. Prolonged skin contact may defat the skin and produce dermatitis.

Inhalation

May cause irritation of respiratory tract. Symptoms of overexposure include dizziness, headache, drowsiness, cough..

Ingestion

May cause drowsiness and dizziness. Potential for aspiration if swallowed.

Chronic Effects**Aggravated Medical Conditions**

Hypersensitivity may occur in those with preexisting skin disorders. Preexisting eye disorders.

3. COMPOSITION/INFORMATION ON INGREDIENTS

| Chemical Name | CAS-No | Weight % |
|-------------------|----------|----------|
| Hematein | 475-25-2 | 0.13 |
| Isopropyl alcohol | 67-63-0 | to 100% |

4. FIRST AID MEASURES

| | |
|----------------------------|--|
| General Advice | Do not get in eyes, on skin, or on clothing. |
| Eye Contact | Rinse thoroughly with plenty of water for at least 15 minutes, lifting lower and upper eyelids. Consult a physician. |
| Skin Contact | Wash skin with soap and water. If irritation develops or persists, consult physician. |
| Inhalation | Move to fresh air. If breathing is difficult, give oxygen. If not breathing, give artificial respiration and contact emergency personnel. Call a physician immediately. |
| Ingestion | Do not induce vomiting without medical advice. If accidentally swallowed obtain immediate medical attention.. |
| Protection of First-aiders | Use personal protective equipment. Do not use mouth-to-mouth method if victim ingested or inhaled the substance; induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. |

5. FIRE-FIGHTING MEASURES

| | |
|------------------------------|---|
| Flammable Properties | Flammable. |
| Flash Point | 12 °C |
| Method | Closed cup |
| Suitable Extinguishing Media | Water spray, dry chemical, carbon dioxide (CO ₂), or foam. |
| Explosion Data | |
| NFPA | Health Hazard 1 Flammability 3 Stability 0 Physical and Chemical Hazards - |

6. ACCIDENTAL RELEASE MEASURES

| | |
|-------------------------|--|
| Personal Precautions | Refer to Section 8. |
| Methods for Containment | Absorb spill with inert material (e.g. dry sand or earth), then place in a chemical waste container. Dike far ahead of spill; use dry sand to contain the flow of material. A vapor suppressing foam may be used to reduce vapors. |
| Methods for Cleaning Up | Soak up with inert absorbent material. Pick up and transfer to properly labeled containers. Minimize the amount spilled and suppress resultant vapors. |

7. HANDLING AND STORAGE

| | |
|----------|---|
| Handling | Handle in accordance with good industrial hygiene and safety practice. Prevent contact with skin, eyes, and clothing. Do not ingest. Do not eat, drink, or smoke when using this product. |
| Storage | Keep containers tightly closed in a dry, cool, and well-ventilated place. Keep away from heat and sources of ignition. Keep out of the reach of children. |

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

| Chemical Name | ACGIH TLV | OSHA PEL | NIOSH IDLH |
|----------------------|------------|------------|------------|
| Hematein 475-25-2 | None Known | None Known | None Known |

| | | | |
|------------------------------|--------------------------------|--|---|
| Isopropyl alcohol 67-63-0 | = 400 ppm STEL TWA: 200 ppm | TWA: 980 mg/m ³ TWA: 400 ppm | IDLH: 2000 ppm TWA: 400 ppm TWA: 980 mg/m ³ STEL: 1225 mg/m ³ STEL: 500 ppm |
|------------------------------|--------------------------------|--|---|

NIOSH IDLH: Immediately Dangerous to Life or Health

Engineering Measures Ensure adequate ventilation, especially in confined areas.

Personal Protective Equipment

Eye/Face Protection Safety glasses with side-shields.

Skin and Body Protection Wear protective gloves/clothing. Repeated or prolonged contact: Rubber gloves. Incidental contact/splash protection: Neoprene gloves.

Respiratory Protection Use only with adequate ventilation. In case of insufficient ventilation wear suitable respiratory equipment.

Hygiene Measures Do not eat, drink or smoke when using this product.

9. PHYSICAL AND CHEMICAL PROPERTIES

| | | | |
|--------------------------|------------------|----------------------------|--------------------|
| Appearance | Red Transparent | Odor | Alcohol |
| Physical State | Liquid | pH | Not applicable |
| Flash Point | 12 °C | Method | Closed cup |
| Autoignition Temperature | 425 °C | Boiling Point/Range | 82-83 °C |
| | | Flammability Limits in Air | |
| | | Upper | 12% |
| | | Lower | 2% |
| Explosion Limits | | | |
| Upper | 12% | | |
| Lower | 2% | | |
| Specific Gravity | 0.78-0.79 @ 20°C | Water Solubility | Completely soluble |
| Vapor Pressure | 44 mmHg @ 25°C | Vapor Density | 2 @ 20°C (Air=1) |

10. STABILITY AND REACTIVITY

Stability Stable under normal conditions of use and storage.

Incompatible Products Strong inorganic acids and oxidizing agents.

Conditions to Avoid Heat, flames and sparks.

Hazardous Decomposition Products Carbon oxides.

Hazardous Polymerization Hazardous polymerization does not occur.

11. TOXICOLOGICAL INFORMATION

Acute Toxicity

| Chemical Name | LD50 Oral | LD50 Dermal | LC50 Inhalation |
|-------------------|--------------------|---|-----------------------|
| Hematein | None Known | None Known | None Known |
| Isopropyl alcohol | 4396 mg/kg (Rat) | 12800 mg/kg (Rabbit) 12800 mg/kg (Rat) | 72.6 mg/L (Rat) 4 h |

Chronic Toxicity

| Chemical Name | ACGIH | IARC | NTP | OSHA |
|-------------------|------------|------------|------------|------------|
| Hematein | None Known | None Known | None Known | None Known |
| Isopropyl alcohol | None Known | Group 1 | None Known | X |

IARC: (International Agency for Research on Cancer)

Group 1 - Carcinogenic to Humans

OSHA: (Occupational Safety & Health Administration)

X - Present

| Chemical Name | EU - Endocrine Disruptors Candidate List | EU - Endocrine Disruptors - Evaluated Substances | Japan - Endocrine Disruptor Information |
|-------------------|--|--|---|
| Hematein | None Known | None Known | None Known |
| Isopropyl alcohol | None Known | None Known | None Known |

12. ECOLOGICAL INFORMATION

Ecotoxicity

| Chemical Name | Toxicity to Algae | Toxicity to Fish | Microtox | Daphnia Magna (Water Flea) |
|-------------------|--|---|-------------------------|----------------------------|
| Hematein | None Known | None Known | None Known | None Known |
| Isopropyl alcohol | EC50 > 1000 mg/L 72 h EC50 > 1000 mg/L 96 h | LC50= 61200 mg/L Pimephales promelas 96 h LC50= 94900 mg/L Pimephales promelas 96 h LC50= 9640 mg/L Pimephales promelas 96 h | EC50 = 35390 mg/L 5 min | EC50 = 13299 mg/L 48 h |

Persistence and Degradability Readily biodegradable.

Bioaccumulation/Accumulation This material is not expected to significantly bioaccumulate.

Mobility Will likely be mobile in the environment due to its water solubility.

| Chemical Name | Log Pow |
|-------------------|--------------|
| Hematein | None Known |
| Isopropyl alcohol | = 0.05 25 °C |

13. DISPOSAL CONSIDERATIONS

Waste Disposal Method Should not be released into the environment. Dispose of contents/container in accordance with local regulation.

| Chemical Name |
|-----------------------------|
| Hematein - 475-25-2 |
| Isopropyl alcohol - 67-63-0 |

| Chemical Name | RCRA - Halogenated Organic Compounds | RCRA - P Series Wastes | RCRA - F Series Wastes | RCRA - K Series Wastes |
|-----------------------------|--------------------------------------|------------------------|------------------------|------------------------|
| Hematein - 475-25-2 | None Known | None Known | None Known | None Known |
| Isopropyl alcohol - 67-63-0 | None Known | None Known | None Known | None Known |

| Chemical Name | California Hazardous Waste Status |
|-------------------|-----------------------------------|
| Isopropyl alcohol | Toxic, Ignitable |

14. TRANSPORT INFORMATION

DOT

Proper Shipping Name ISOPROPANOL

Hazard Class 3
 UN-No 1219
 Packing Group II

IATA

UN-No 1219
 Proper Shipping Name ISOPROPANOL
 Hazard Class 3
 Packing Group II

IMDG/IMO

Proper Shipping Name ISOPROPANOL
 Hazard Class 3
 UN-No 1219
 Packing Group II

15. REGULATORY INFORMATION**International Inventories**

| Component | TSCA | DSL | EINECS/ELINCS | ENCS | IECSC | KECL | PICCS | AICS |
|--|---------|-----|---------------|--------|-------|----------|-------|------|
| Hematein 475-25-2 (0.13) | Present | X | X | 5-3660 | IECSC | KECL | PICCS | X |
| Isopropyl alcohol 67-63-0 (to 100%) | Present | X | X | 2-207 | X | KE-29363 | X | X |

U.S. Federal Regulations**SARA 313**

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product contains a chemical or chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372:

| Chemical Name | CAS-No | Weight % | SARA 313 - Threshold Values % |
|-------------------|----------|----------|-------------------------------|
| Hematein | 475-25-2 | 0.13 | None Known |
| Isopropyl alcohol | 67-63-0 | to 100% | 1.0 |

SARA 311/312 Hazard Categories

Acute Health Hazard Yes
 Chronic Health Hazard Yes
 Fire Hazard Yes
 Sudden Release of Pressure Hazard No
 Reactive Hazard No

Clean Water Act

This product contains the following substances which are regulated pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42).

| Component | CWA - Reportable Quantities | CWA - Toxic Pollutants | CWA - Priority Pollutants | CWA - Hazardous Substances |
|--|-----------------------------|------------------------|---------------------------|----------------------------|
| Hematein 475-25-2 (0.13) | None Known | None Known | None Known | None Known |
| Isopropyl alcohol 67-63-0 (to 100%) | None Known | None Known | None Known | x |

| Chemical Name | CAS-No | Weight % | HAPS data | VOC Chemicals | Class 1 Ozone Depleters | Class 2 Ozone Depleters |
|-------------------|----------|----------|------------|---------------|-------------------------|-------------------------|
| Hematein | 475-25-2 | 0.13 | None Known | None Known | None Known | None Known |
| Isopropyl alcohol | 67-63-0 | to 100% | None Known | None Known | None Known | None Known |

CERCLA

| Chemical Name | Hazardous Substances RQs | Extremely Hazardous Substances RQs |
|-------------------|--------------------------|------------------------------------|
| Hematein | None Known | None Known |
| Isopropyl alcohol | None Known | None Known |

U.S. State Regulations

| Chemical Name | CAS-No | California Prop. 65 |
|-------------------|----------|---------------------|
| Hematein | 475-25-2 | None Known |
| Isopropyl alcohol | 67-63-0 | None Known |

| Chemical Name | Massachusetts | New Jersey | Pennsylvania | Illinois | Rhode Island |
|-------------------|---------------|------------|--------------|------------|--------------|
| Hematein | None Known | None Known | None Known | None Known | None Known |
| Isopropyl alcohol | X | X | X | None Known | X |

International Regulations

Mexico - Grade

| Chemical Name | Carcinogen Status | Exposure Limits |
|-------------------|-------------------|--|
| Hematein | None Known | None Known |
| Isopropyl alcohol | None Known | Mexico: TWA= 980 mg/m ³ Mexico: TWA= 400 ppm |

Canada

WHMIS Hazard Class

B2 Flammable liquid

D2B - Poisonous and infectious material - Other effects - Toxic



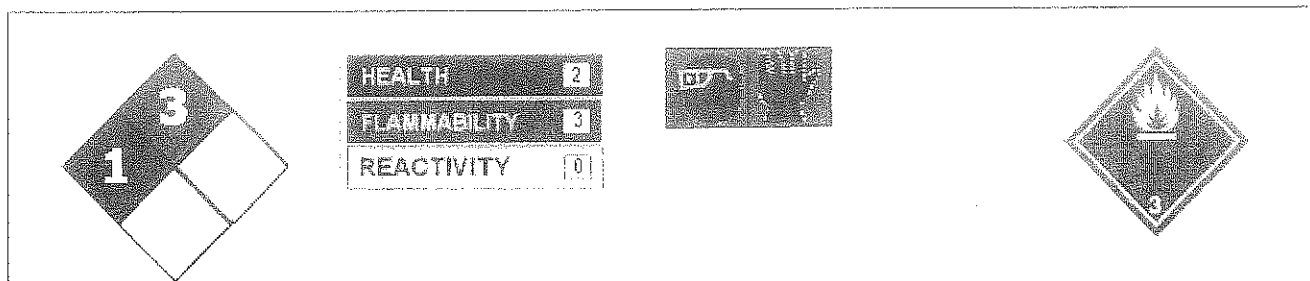
| Chemical Name | NPRI |
|-------------------|------|
| Isopropyl alcohol | X |

Legend

X - Listed

16. OTHER INFORMATION

| NFPA | HMIS | PPE | Transport Symbol |
|------|------|-----|------------------|
|------|------|-----|------------------|



Prepared By Regulatory Affairs Department

Issuing Date 1/3/2011

Revision Date

Revision Note Initial Release.

Disclaimer

The information provided on this MSDS is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guide for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered as a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other material or in any process, unless specified in the text.

End of MSDS



Issuing Date 10/17/2011

Revision Number 0

1. PRODUCT AND COMPANY IDENTIFICATION

Product Name AMMONIA NITROGEN REAGENT #1

Product Code(s) 4797

Recommended Use Test kit reagent. Industrial (not for food or food contact use). Laboratory chemicals.

Company LaMotte Company, Inc.
802 Washington Avenue
P.O. Box 329
Chestertown, MD 21620
USA

Emergency Telephone Number 24 Hour Emergency Number (CHEM-TEL):
USA, Canada, Puerto Rico 1-800-255-3924
Outside North American Continent (Call collect) 813-248-0585

2. HAZARDS IDENTIFICATION**Emergency Overview**

May be harmful if swallowed, inhaled, or absorbed through skin

Appearance Clear, colorless **Physical State** Liquid **Odor** None

OSHA Regulatory Status While this material is not considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200), this MSDS contains valuable information critical to the safe handling and proper use of the product. This MSDS should be retained and available for employees and other users of this product.

Potential Health Effects**Acute Toxicity**

Eyes Contact with eyes may cause irritation.

Skin May cause irritation.

Inhalation Not an expected route of exposure.

Ingestion May be harmful if swallowed. Ingestion of large quantities may cause gastrointestinal irritation and circulatory problems.

Chronic Effects**3. COMPOSITION/INFORMATION ON INGREDIENTS**

| Chemical Name | CAS-No | Weight % |
|----------------------------|-----------|----------|
| Kathon CG/ICP Preservative | KATHON | <0.1 |
| Tartrate, potassium sodium | 6381-59-5 | 45-55 |
| Water | 7732-18-5 | to 100% |

4. FIRST AID MEASURES

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

| | |
|----------------------------|---|
| Eye Contact | Rinse thoroughly with plenty of water for at least 15 minutes, lifting lower and upper eyelids. If irritation persists or develops, contact a physician. |
| Skin Contact | Wash off immediately with soap and plenty of water for at least 15 minutes while removing all contaminated clothing and shoes. If irritation develops or persists, consult physician. |
| Inhalation | Not expected. |
| Ingestion | Drink plenty of water. If gastrointestinal distress occurs contact physician. |
| Protection of First-aiders | Use personal protective equipment. See Section 8 for more detail. Do not use mouth-to-mouth method if victim ingested or inhaled the substance; induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. |

5. FIRE-FIGHTING MEASURES

| | | | | |
|------------------------------|--|----------------|-------------|---------------------------------|
| Flammable Properties | Not a fire hazard. | | | |
| Flash Point | Not applicable | | | |
| Suitable Extinguishing Media | Dry chemical, CO ₂ , alcohol-resistant foam or water spray. | | | |
| Explosion Data | | | | |
| NFPA | Health Hazard 0 | Flammability 0 | Stability 0 | Physical and Chemical Hazards - |
| HMIS | Health Hazard 1 | Flammability 0 | Stability 0 | |

6. ACCIDENTAL RELEASE MEASURES

| | |
|-------------------------|---|
| Personal Precautions | Use personal protective equipment. Refer to Section 8. |
| Methods for Containment | Soak up with inert absorbent material, containerize, and hold for disposal. Dispose according to federal, state, and local regulations. |
| Methods for Cleaning Up | After cleaning, flush away traces with water. |

7. HANDLING AND STORAGE

| | |
|----------|--|
| Handling | Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin and eyes. Do not ingest. Do not eat, drink, or smoke when using this product. |
| Storage | Keep containers tightly closed in a dry, cool, and well-ventilated place. Keep out of the reach of children. |

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

| Chemical Name | ACGIH TLV | OSHA PEL | NIOSH IDLH |
|---|------------|------------|------------|
| Kathon CG/ICP Preservative KATHON | None Known | None Known | None Known |
| Tartrate, potassium sodium 6381-59-5 | None Known | None Known | None Known |
| Water 7732-18-5 | None Known | None Known | None Known |

Personal Protective Equipment

| | |
|--------------------------|-----------------------------------|
| Eye/Face Protection | Safety glasses with side-shields. |
| Skin and Body Protection | Wear protective gloves/clothing. |

| | |
|------------------------|---|
| Respiratory Protection | When workers are facing concentrations above the exposure limit they must use appropriate certified respirators. |
| Hygiene Measures | Handle in accordance with good industrial hygiene and safety practice. Do not eat, drink or smoke when using this product. Wash hands before breaks and immediately after handling the product. |

9. PHYSICAL AND CHEMICAL PROPERTIES

| | | | |
|----------------|------------------|---------------------|---------------|
| Appearance | Clear, colorless | Odor | None |
| Physical State | Liquid | pH | 8 |
| Flash Point | Not applicable | Boiling Point/Range | > 100°C/212°F |

| | | | |
|----------------|--------------------------|---------------|--------------------------|
| Vapor Pressure | No information available | Vapor Density | No information available |
|----------------|--------------------------|---------------|--------------------------|

10. STABILITY AND REACTIVITY

| | |
|----------------------------------|--|
| Stability | Stable under normal conditions of use and storage. |
| Incompatible Products | Strong oxidizing agents. |
| Hazardous Decomposition Products | Hazardous decomposition products formed under fire conditions - . Carbon oxides (COx). |
| Hazardous Polymerization | Hazardous polymerization does not occur. |

11. TOXICOLOGICAL INFORMATION

Acute Toxicity

| Chemical Name | LD50 Oral | LD50 Dermal | LC50 Inhalation |
|----------------------------|------------------|-------------|-----------------|
| Kathon CG/ICP Preservative | None Known | None Known | None Known |
| Tartrate, potassium sodium | None Known | None Known | None Known |
| Water | 90 mL/kg (Rat) | None Known | None Known |

Chronic Toxicity

| Chemical Name | ACGIH | IARC | NTP | OSHA |
|----------------------------|------------|------------|------------|------------|
| Kathon CG/ICP Preservative | None Known | None Known | None Known | None Known |
| Tartrate, potassium sodium | None Known | None Known | None Known | None Known |
| Water | None Known | None Known | None Known | None Known |

| Chemical Name | EU - Endocrine Disruptors Candidate List | EU - Endocrine Disruptors - Evaluated Substances | Japan - Endocrine Disruptor Information |
|----------------------------|--|--|---|
| Kathon CG/ICP Preservative | None Known | None Known | None Known |
| Tartrate, potassium sodium | None Known | None Known | None Known |
| Water | None Known | None Known | None Known |

12. ECOLOGICAL INFORMATION**Ecotoxicity**

| Chemical Name | Toxicity to Algae | Toxicity to Fish | Microtox | Daphnia Magna (Water Flea) |
|----------------------------|-------------------|------------------|------------|----------------------------|
| Kathon CG/ICP Preservative | None Known | None Known | None Known | None Known |
| Tartrate, potassium sodium | None Known | None Known | None Known | None Known |
| Water | None Known | None Known | None Known | None Known |

Persistence and Degradability No information available.

Bioaccumulation/Accumulation No information available.

Mobility No information available.

| Chemical Name | Log Pow |
|----------------------------|------------|
| Kathon CG/ICP Preservative | None Known |
| Tartrate, potassium sodium | None Known |
| Water | None Known |

13. DISPOSAL CONSIDERATIONS

Waste Disposal Method Dispose of in accordance with local regulations.

| Chemical Name | RCRA - Halogenated Organic Compounds | RCRA - P Series Wastes | RCRA - F Series Wastes | RCRA - K Series Wastes |
|--|--------------------------------------|------------------------|------------------------|------------------------|
| Kathon CG/ICP Preservative - KATHON | None Known | None Known | None Known | None Known |
| Tartrate, potassium sodium - 6381-59-5 | None Known | None Known | None Known | None Known |
| Water - 7732-18-5 | None Known | None Known | None Known | None Known |

14. TRANSPORT INFORMATION

DOT Not regulated

IATA Not regulated

IMDG/IMO Not regulated

15. REGULATORY INFORMATION**International Inventories**

| Component | TSCA | DSL | EINECS/ELINCS | ENCS | IECSC | KECL | PICCS | AICS |
|---|---------|-----|---------------|-------|-------|----------|-------|------|
| Kathon CG/ICP Preservative KATHON (<0.1) | TSCA | DSL | EINECS/ELINCS | ENCS | IECSC | KECL | PICCS | AICS |
| Tartrate, potassium sodium 6381-59-5 (45-55) | TSCA | DSL | EINECS/ELINCS | 9-530 | X | KECL | X | X |
| Water 7732-18-5 (to 100%) | Present | X | X | ENCS | X | KE-35400 | X | X |

U.S. Federal Regulations**SARA 313**

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product does not contain any chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372.

| Chemical Name | CAS-No | Weight % | SARA 313 - Threshold Values % |
|----------------------------|-----------|----------|-------------------------------|
| Kathon CG/ICP Preservative | KATHON | <0.1 | None Known |
| Tartrate, potassium sodium | 6381-59-5 | 45-55 | None Known |
| Water | 7732-18-5 | to 100% | None Known |

SARA 311/312 Hazard Categories

| | |
|-----------------------------------|-----|
| Acute Health Hazard | Yes |
| Chronic Health Hazard | No |
| Fire Hazard | No |
| Sudden Release of Pressure Hazard | No |
| Reactive Hazard | No |

Clean Water Act

This product does not contain any substances regulated as pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42).

| Component | CWA - Reportable Quantities | CWA - Toxic Pollutants | CWA - Priority Pollutants | CWA - Hazardous Substances |
|---|-----------------------------|------------------------|---------------------------|----------------------------|
| Kathon CG/ICP Preservative KATHON (<0.1) | None Known | None Known | None Known | None Known |
| Tartrate, potassium sodium 6381-59-5 (45-55) | None Known | None Known | None Known | None Known |
| Water 7732-18-5 (to 100%) | None Known | None Known | None Known | None Known |

| Chemical Name | CAS-No | Weight % | HAPS data | VOC Chemicals | Class 1 Ozone Depletors | Class 2 Ozone Depletors |
|----------------------------|-----------|----------|------------|---------------|-------------------------|-------------------------|
| Kathon CG/ICP Preservative | KATHON | <0.1 | None Known | None Known | None Known | None Known |
| Tartrate, potassium sodium | 6381-59-5 | 45-55 | None Known | None Known | None Known | None Known |
| Water | 7732-18-5 | to 100% | None Known | None Known | None Known | None Known |

CERCLA

| Chemical Name | Hazardous Substances RQs | Extremely Hazardous Substances RQs |
|----------------------------|--------------------------|------------------------------------|
| Kathon CG/ICP Preservative | None Known | None Known |
| Tartrate, potassium sodium | None Known | None Known |

| | | |
|-------|------------|------------|
| Water | None Known | None Known |
|-------|------------|------------|

U.S. State Regulations**California Proposition 65**

This product does not contain any Proposition 65 chemicals

| Chemical Name | CAS-No | California Prop. 65 |
|----------------------------|-----------|---------------------|
| Kathon CG/ICP Preservative | KATHON | None Known |
| Tartrate, potassium sodium | 6381-59-5 | None Known |
| Water | 7732-18-5 | None Known |

| Chemical Name | Massachusetts | New Jersey | Pennsylvania | Illinois | Rhode Island |
|----------------------------|---------------|------------|--------------|------------|--------------|
| Kathon CG/ICP Preservative | None Known | None Known | None Known | None Known | None Known |
| Tartrate, potassium sodium | None Known | None Known | None Known | None Known | None Known |
| Water | None Known | None Known | None Known | None Known | None Known |

International Regulations**Mexico - Grade**

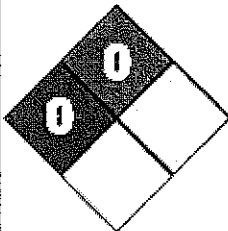

| Chemical Name | Carcinogen Status | Exposure Limits |
|----------------------------|-------------------|-----------------|
| Kathon CG/ICP Preservative | None Known | None Known |
| Tartrate, potassium sodium | None Known | None Known |
| Water | None Known | None Known |

Canada

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

| Component | WHMIS Hazard Class |
|---|---|
| Kathon CG/ICP Preservative KATHON (<0.1) | Not determined |
| Tartrate, potassium sodium 6381-59-5 (45-55) | Uncontrolled product according to WHMIS classification criteria |
| Water 7732-18-5 (to 100%) | Uncontrolled product according to WHMIS classification criteria |

16. OTHER INFORMATION

| NFPA | HMIS | PPE | Transport Symbol | | | | | | |
|---|---|---------------|------------------|-----------------|---|------------|---|---|--|
|  | <table><tr><td>Health Hazard</td><td>1</td></tr><tr><td>Physical Hazard</td><td>0</td></tr><tr><td>Reactivity</td><td>0</td></tr></table> | Health Hazard | 1 | Physical Hazard | 0 | Reactivity | 0 |  | |
| Health Hazard | 1 | | | | | | | | |
| Physical Hazard | 0 | | | | | | | | |
| Reactivity | 0 | | | | | | | | |

Prepared By

Regulatory Affairs Department

Issuing Date 10/17/2011

Revision Date 17-Oct-2011

Revision Note
Update to Format

Disclaimer

The information provided on this MSDS is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guide for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered as a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other material or in any process, unless specified in the text.

End of MSDS



Issuing Date 2/16/2012

Revision Number 0

1. PRODUCT AND COMPANY IDENTIFICATION

Product Name AMMONIA NITROGEN REAGENT #2 (NESSLER REAGENT)

Product Code(s) 4798

Recommended Use Test kit reagent. Laboratory chemicals. Industrial (not for food or food contact use).

Company LaMotte Company, Inc.
802 Washington Avenue
P.O. Box 329
Chestertown, MD 21620
USA

Emergency Telephone Number 24 Hour Emergency Number (CHEM-TEL):
USA, Canada, Puerto Rico 1-800-255-3924
Outside North American Continent (Call collect) 813-248-0585

2. HAZARDS IDENTIFICATION**DANGER! POISON!****Emergency Overview**
MAY BE FATAL IF SWALLOWED

Corrosive
Harmful by inhalation
Harmful in contact with skin
Liquid and mist can cause severe burns to all body tissue
Water reactive

Appearance Clear yellow solution**Physical State** Liquid**Odor** Odorless

OSHA Regulatory Status This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200). Safety information is given for exposure to the reagent as sold and considers exposure to the chemical if user has direct eye and skin contact.

Potential Health Effects**Principle Routes of Exposure**

Eye contact, Inhalation, skin contact, and ingestion.

Acute Toxicity**Eyes**

Corrosive to the eyes and may cause severe damage including blindness.

Skin

Corrosive. Contact with skin causes irritation to severe burns. Can cause redness, pain, and severe skin burns. Harmful if absorbed through skin.

Inhalation

Poison - may be fatal if inhaled. Inhalation of corrosive mist may cause coughing, choking, headache, dizziness, and weakness for several hours. Pulmonary edema may occur with tightness in the chest, shortness of breath, bluish skin, decreased blood pressure, and increased heart rate. Depending on exposure, the effects from inhalation of corrosive mists can vary from mild irritation to serious damage to respiratory tract.

Ingestion

Very toxic if swallowed. Average lethal dose for inorganic mercury salts is about 1 gram. Corrosive. Can cause immediate pain and burning in the mouth, throat, esophagus and GI tract. May cause nausea, vomiting, and diarrhea, and in severe cases death.

Chronic Effects

Prolonged exposure may cause chronic effects

Main Symptoms

Prolonged contact has a destructive effect on tissue.

3. COMPOSITION/INFORMATION ON INGREDIENTS

This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

| Chemical Name | CAS-No | Weight % |
|---------------------|-----------|----------|
| Mercuric chloride | 7487-94-7 | 3.4 |
| Potassium iodide | 7681-11-0 | 5-10 |
| Potassium hydroxide | 1310-58-3 | 15 |
| Water | 7732-18-5 | to 100% |

4. FIRST AID MEASURES

| | |
|-----------------------------------|---|
| General Advice | Do not get in eyes, on skin, or on clothing. Do not breathe dust/fume/gas/mist/vapors/spray. Do not delay care and transport of a seriously injured person. Show this safety data sheet to the doctor in attendance. |
| Eye Contact | Immediately flush eyes with gentle stream of water for at least 15 minutes, occasionally lifting upper and lower eyelids. Call a physician immediately. |
| Skin Contact | Wash off immediately with soap and plenty of water for at least 15 minutes while removing all contaminated clothing and shoes. Remove and wash contaminated clothing before re-use. Immediate medical attention is required. |
| Inhalation | Move to fresh air. If breathing is difficult, give oxygen. If not breathing, give artificial respiration and contact emergency personnel. Call a physician immediately. |
| Ingestion | DO NOT INDUCE VOMITING. Drink large quantity of water. Immediate medical attention is required. Never give anything by mouth to an unconscious person. |
| Protection of First-aiders | Use personal protective equipment. See Section 8 for more detail. Do not use mouth-to-mouth method if victim ingested or inhaled the substance; induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. |

5. FIRE-FIGHTING MEASURES

| | | | | |
|---|------------------------|---|--------------------|--|
| Flammable Properties | | Not flammable. | | |
| Flash Point | | Not applicable | | |
| Suitable Extinguishing Media | | Use extinguishing measures that are appropriate to local circumstances and the surrounding environment. | | |
| Explosion Data | | | | |
| Specific Hazards Arising from the Chemical | | | | |
| Contact with most metals causes the formation of explosive and flammable hydrogen gas. React vigorously with water. | | | | |
| NFPA | Health Hazard 3 | Flammability 0 | Stability 1 | Physical and Chemical Hazards W |
| HMIS | Health Hazard 3 | Flammability 0 | Stability 2 | |

6. ACCIDENTAL RELEASE MEASURES

| | |
|-------------------------|---|
| Personal Precautions | Ensure adequate ventilation. Avoid contact with skin, eyes and inhalation of vapors. Use personal protective equipment. Refer to Section 8. |
| Methods for Containment | Dike to collect large liquid spills. Do not flush to sewer. Absorb spill with inert material (e.g. dry sand or earth), then place in a chemical waste container. |
| Methods for Cleaning Up | Neutralize spills with acid such as acetic, hydrochloric or sulfuric, absorb with vermiculite or other inert substance, and package in a suitable container for disposal. Prevent product from entering drains. |

7. HANDLING AND STORAGE

| | |
|----------|---|
| Handling | Handle in accordance with good industrial hygiene and safety practice. Prevent contact with skin, eyes, and clothing. Do not ingest. Do not eat, drink, or smoke when using this product. |
| Storage | Keep containers tightly closed in a dry, cool, and well-ventilated place. Keep away from heat, moisture, and incompatibles. Keep away from metals and organic halogens. Ensure that leaks or spills cannot reach drains, sewers or surface waters. Keep out of the reach of children. |

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

| Chemical Name | ACGIH TLV | OSHA PEL | NIOSH IDLH |
|----------------------------------|------------------------------|------------|---|
| Mercuric chloride 7487-94-7 | TWA: 0.025 mg/m ³ | None Known | IDLH: 10 mg/m ³ Ceiling: 0.1 mg/m ³ TWA: 0.05 mg/m ³ |
| Potassium iodide 7681-11-0 | TWA: 0.01 ppm | None Known | None Known |
| Potassium hydroxide 1310-58-3 | None Known | None Known | Ceiling: 2 mg/m ³ |
| Water 7732-18-5 | None Known | None Known | None Known |

| | |
|-------------------------------|---|
| Engineering Measures | Ensure adequate ventilation, especially in confined areas. Showers Eyewash stations Ventilation systems. |
| Personal Protective Equipment | |
| Eye/Face Protection | Safety glasses with side-shields. If splashes are likely to occur, wear: Face-shield. |
| Skin and Body Protection | Gloves & Lab Coat. Incidental contact/splash protection: Chemical resistant apron. |
| Respiratory Protection | When workers are facing concentrations above the exposure limit they must use appropriate certified respirators. |
| Hygiene Measures | Handle in accordance with good industrial hygiene and safety practice. Do not eat, drink or smoke when using this product. Wash hands before breaks and immediately after handling the product. |

9. PHYSICAL AND CHEMICAL PROPERTIES

| | | | |
|---------------------|--------------------------|--------------------------|--------------------------|
| Appearance | Clear yellow solution | Odor | Odorless |
| Physical State | Liquid | pH | |
| Flash Point | Not applicable | Autoignition Temperature | Not applicable |
| Boiling Point/Range | > 100°C/212°F | | |
| Vapor Pressure | No information available | Vapor Density | No information available |

10. STABILITY AND REACTIVITY

| | |
|----------------------------------|---|
| Stability | Stable under normal conditions of use and storage. |
| Incompatible Products | Strong acids. Metals. Water-reactive, reacts vigorously with water. |
| Conditions to Avoid | Excessive heat. Incompatible products. |
| Hazardous Decomposition Products | Potassium Oxides. Iodine gas. |
| Hazardous Reactions | Reacts violently with water. Contact with metals may evolve flammable hydrogen gas. |
| Hazardous Polymerization | Hazardous polymerization does not occur. |

11. TOXICOLOGICAL INFORMATION**Acute Toxicity**

| Chemical Name | LD50 Oral | LD50 Dermal | LC50 Inhalation |
|---------------------|-------------------|-------------|--------------------------------|
| Mercuric chloride | 1 mg/kg (Rat) | None Known | None Known |
| Potassium iodide | None Known | None Known | None Known |
| Potassium hydroxide | 214 mg/kg (Rat) | None Known | 85 mg/L Gambusia affinis 24 hr |
| Water | 90 mL/kg (Rat) | None Known | None Known |

Chronic Toxicity

Chronic Toxicity Prolonged exposure may cause chronic effects.

Carcinogenicity All forms of mercury can cross the placenta to the fetus. Most of what is known has been learned from experimental animals. .

| Chemical Name | ACGIH | IARC | NTP | OSHA |
|---------------------|------------|------------|------------|------------|
| Mercuric chloride | None Known | None Known | None Known | None Known |
| Potassium iodide | None Known | None Known | None Known | None Known |
| Potassium hydroxide | None Known | None Known | None Known | None Known |
| Water | None Known | None Known | None Known | None Known |

Endocrine Disruptor Information

| Chemical Name | EU - Endocrine Disruptors Candidate List | EU - Endocrine Disruptors - Evaluated Substances | Japan - Endocrine Disruptor Information |
|-------------------|--|--|---|
| Mercuric chloride | None Known | None Known | None Known |

| | | | |
|---------------------|------------|------------|------------|
| Potassium iodide | None Known | None Known | None Known |
| Potassium hydroxide | None Known | None Known | None Known |
| Water | None Known | None Known | None Known |

12. ECOLOGICAL INFORMATION

Ecotoxicity

This material is expected to be toxic to aquatic life. May cause long-term adverse effects in the environment.

| Chemical Name | Toxicity to Algae | Toxicity to Fish | Microtox | Daphnia Magna (Water Flea) |
|---------------------|-------------------|---|------------|----------------------------|
| Mercuric chloride | None Known | LC50= 0.16 mg/L <i>Lepomis macrochirus</i> 96 h | None Known | EC50 = 0.093 mg/L 48 h |
| Potassium iodide | None Known | None Known | None Known | None Known |
| Potassium hydroxide | None Known | None Known | None Known | None Known |
| Water | None Known | None Known | None Known | None Known |

Persistence and Degradability

Based on components product is expected to be poorly eliminated from water and poorly biodegradable.

Bioaccumulation/Accumulation

Some components of this material have some potential to bioaccumulate but not all have been tested. For Mercury: Has an experimentally-determined BCF (bioconcentration factor) of greater than 100. This material is expected to significantly bioaccumulate.

| Chemical Name | Log Pow |
|---------------------|------------------|
| Mercuric chloride | None Known |
| Potassium iodide | None Known |
| Potassium hydroxide | = 0.65 = 0.83 |
| Water | None Known |

13. DISPOSAL CONSIDERATIONS

Waste Disposal Method

Dispose of in accordance with local regulations. Should not be released into the environment.

| Chemical Name | RCRA - Halogenated Organic Compounds | RCRA - P Series Wastes | RCRA - F Series Wastes | RCRA - K Series Wastes |
|---------------------------------|--------------------------------------|------------------------|------------------------|------------------------|
| Mercuric chloride - 7487-94-7 | None Known | None Known | None Known | None Known |
| Potassium iodide - 7681-11-0 | None Known | None Known | None Known | None Known |
| Potassium hydroxide - 1310-58-3 | None Known | None Known | None Known | None Known |
| Water - 7732-18-5 | None Known | None Known | None Known | None Known |

14. TRANSPORT INFORMATION**DOT**

| | |
|--------------------------|---|
| Proper Shipping Name | CORROSIVE LIQUIDS, TOXIC, N.O.S. (Potassium hydroxide/Mercuric chloride solution) |
| Hazard Class | 8 |
| Subsidiary Class | 6.1 |
| UN-No | 2922 |
| Packing Group | II |
| Reportable Quantity (RQ) | 1000 |

IATA

| | |
|----------------------|---|
| UN-No | 2922 |
| Proper Shipping Name | CORROSIVE LIQUIDS, TOXIC, N.O.S. (Potassium hydroxide/Mercuric chloride solution) |
| Hazard Class | 8 |
| Subsidiary Class | 6.1 |
| Packing Group | II |

IMDG/IMO

| | |
|----------------------|---|
| Proper Shipping Name | CORROSIVE LIQUIDS, TOXIC, N.O.S. (Potassium hydroxide/Mercuric chloride solution) |
| Hazard Class | 8 |
| Subsidiary Class | 6.1 |
| UN-No | 2922 |
| Packing Group | II |

15. REGULATORY INFORMATIONInternational Inventories

| Component | TSCA | DSL | EINECS/ELINCS | ENCS | IECSC | KECL | PICCS | AICS |
|---|---------|-----|---------------|---------|-------|----------|-------|------|
| Mercuric chloride 7487-94-7 (3.4) | Present | X | X | 1-226 | X | KE-23121 | X | X |
| Potassium iodide 7681-11-0 (5-10) | Present | X | X | (1)-439 | X | KECL | X | X |
| Potassium hydroxide 1310-58-3 (15) | Present | X | X | 1-369 | X | KE-29139 | X | X |
| Water 7732-18-5 (to 100%) | Present | X | X | ENCS | X | KE-35400 | X | X |

U.S. Federal Regulations**SARA 313**

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product contains a chemical or chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372

| Chemical Name | CAS-No | Weight % | SARA 313 - Threshold Values % |
|---------------------|-----------|----------|-------------------------------|
| Mercuric chloride | 7487-94-7 | 3.4 | 1.0 |
| Potassium iodide | 7681-11-0 | 5-10 | None Known |
| Potassium hydroxide | 1310-58-3 | 15 | None Known |
| Water | 7732-18-5 | to 100% | None Known |

SARA 311/312 Hazard Categories

| | |
|-----------------------------------|-----|
| Acute Health Hazard | Yes |
| Chronic Health Hazard | Yes |
| Fire Hazard | No |
| Sudden Release of Pressure Hazard | No |
| Reactive Hazard | Yes |

Clean Water Act

This product contains the following substances which are regulated pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42).

| Component | CWA - Reportable Quantities | CWA - Toxic Pollutants | CWA - Priority Pollutants | CWA - Hazardous Substances |
|---|-----------------------------|------------------------|---------------------------|----------------------------|
| Mercuric chloride 7487-94-7 (3.4) | None Known | X | None Known | None Known |
| Potassium iodide 7681-11-0 (5-10) | None Known | None Known | None Known | None Known |
| Potassium hydroxide 1310-58-3 (15) | 1000 lb | None Known | None Known | X |
| Water 7732-18-5 (to 100%) | None Known | None Known | None Known | None Known |

Clean Air Act, Section 112 Hazardous Air Pollutants (HAPs) (see 40 CFR 61)

This product contains the following HAPs: .

| Chemical Name | CAS-No | Weight % | HAPS data | VOC Chemicals | Class 1 Ozone Depletors | Class 2 Ozone Depletors |
|-------------------|-----------|----------|--|---------------|-------------------------|-------------------------|
| Mercuric chloride | 7487-94-7 | 3.4 | Present (includes any unique chemical substance that contains Mercury as part of its infrastructure) | None Known | None Known | None Known |

| | | | | | | |
|---------------------|-----------|---------|------------|------------|------------|------------|
| Potassium iodide | 7681-11-0 | 5-10 | None Known | None Known | None Known | None Known |
| Potassium hydroxide | 1310-58-3 | 15 | None Known | None Known | None Known | None Known |
| Water | 7732-18-5 | to 100% | None Known | None Known | None Known | None Known |

CERCLA

| Chemical Name | Hazardous Substances RQs | Extremely Hazardous Substances RQs |
|---------------------|--------------------------|------------------------------------|
| Mercuric chloride | None Known | 500 lb |
| Potassium iodide | None Known | None Known |
| Potassium hydroxide | 1000 lb | None Known |
| Water | None Known | None Known |

U.S. State Regulations**California Proposition 65**

WARNING! This product contains a chemical known to the State of California to cause birth defects or other reproductive harm
Mercury

| Chemical Name | CAS-No | California Prop. 65 |
|---------------------|-----------|---------------------|
| Mercuric chloride | 7487-94-7 | Developmental |
| Potassium iodide | 7681-11-0 | None Known |
| Potassium hydroxide | 1310-58-3 | None Known |
| Water | 7732-18-5 | None Known |

U.S. State Right-to-Know Regulations

| Chemical Name | Massachusetts | New Jersey | Pennsylvania | Illinois | Rhode Island |
|---------------------|---------------|------------|--------------|------------|--------------|
| Mercuric chloride | X | X | X | X | None Known |
| Potassium iodide | None Known | None Known | None Known | None Known | None Known |
| Potassium hydroxide | X | X | X | None Known | X |
| Water | None Known | None Known | None Known | None Known | None Known |

International Regulations**Mexico - Grade**

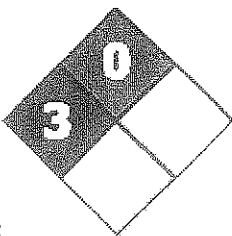

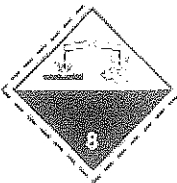

| Chemical Name | Carcinogen Status | Exposure Limits |
|---------------------|-------------------|-------------------------------------|
| Mercuric chloride | None Known | Mexico: TWA= 0.05 mg/m ³ |
| Potassium iodide | None Known | None Known |
| Potassium hydroxide | None Known | None Known |
| Water | None Known | None Known |

Canada

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all the information required by the CPR

| Component | WHMIS Hazard Class |
|---|---|
| Mercuric chloride 7487-94-7 (3.4) | 0.1 % D1A D2B |
| Potassium iodide 7681-11-0 (5-10) | 1 % D2A |
| Potassium hydroxide 1310-58-3 (15) | 1 % D1B E |
| Water 7732-18-5 (to 100%) | Uncontrolled product according to WHMIS classification criteria |

**16. OTHER INFORMATION**

| NFPA | HMIS | PPE | Transport Symbol | | | | | | |
|--|---|---------------|------------------|-------------|---|------------|---|--|---|
|  | <table><tr><td>Health Hazard</td><td>3</td></tr><tr><td>Fire Hazard</td><td>0</td></tr><tr><td>Reactivity</td><td>1</td></tr></table> | Health Hazard | 3 | Fire Hazard | 0 | Reactivity | 1 |  |  |
| Health Hazard | 3 | | | | | | | | |
| Fire Hazard | 0 | | | | | | | | |
| Reactivity | 1 | | | | | | | | |
|  | | | | | | | | | |

Prepared By Regulatory Affairs Department

Issuing Date 2/16/2012

Revision Date 17-Feb-2012

Revision Note
Initial Release**Disclaimer**

The information provided on this MSDS is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guide for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered as a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other material or in any process, unless specified in the text.

End of MSDS



Issuing Date 5/30/2012

Revision Number 0

1. PRODUCT AND COMPANY IDENTIFICATION

Product Name CALCIUM HARDNESS INDICATOR TABLETS

Product Code(s) T-5250

Recommended Use Test kit reagent. Industrial (not for food or food contact use).

Company LaMotte Company, Inc.
802 Washington Avenue
P.O. Box 329
Chestertown, MD 21620
USA

Emergency Telephone Number 24 Hour Emergency Number (CHEM-TEL):
USA, Canada, Puerto Rico 1-800-255-3924
Outside North American Continent (Call collect) 813-248-0585

2. HAZARDS IDENTIFICATION**Emergency Overview**

Harmful if swallowed

Large oral doses may cause gastrointestinal irritation and circulatory problems

May cause skin, eye, and respiratory tract irritation

Appearance Purple**Physical State** Powder**Odor** Odorless**OSHA Regulatory Status**

While this material is not considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200), this MSDS contains valuable information critical to the safe handling and proper use of the product. This MSDS should be retained and available for employees and other users of this product.

Potential Health Effects**Principle Routes of Exposure**

Skin and eye contact

Acute Toxicity**Eyes**

May cause irritation.

Skin

May cause irritation.

Inhalation

Not an expected route of exposure. May cause irritation of respiratory tract.

Ingestion

May be harmful if swallowed. Ingestion of large quantities may cause gastrointestinal irritation and circulatory problems.

Chronic Effects

None known

Aggravated Medical Conditions

None known.

Interactions with Other Chemicals

None known.

Environmental Hazard

No information available.

3. COMPOSITION/INFORMATION ON INGREDIENTS

| Chemical Name | CAS-No | Weight % |
|---|-----------|----------|
| Excipient | - | <1 |
| 1-Naphthalenesulfonic acid, 3-hydroxy-4-[(2-hydroxy-1-naphthalenyl)azo]-, monosodium salt | 2538-85-4 | 1-5 |
| Resin | - | 1-5 |
| Excipient | - | 20-30 |
| Potassium chloride | 7447-40-7 | 70-80 |

Excipients not listed by name are non-hazardous and proprietary to the manufacturer.

4. FIRST AID MEASURES

| | |
|-----------------------------------|---|
| General Advice | Do not get in eyes, on skin, or on clothing. |
| Eye Contact | Immediately flush eyes with gentle stream of water for at least 15 minutes, occasionally lifting upper and lower eyelids. If irritation persists or develops, contact a physician. |
| Skin Contact | Wash off with warm water and soap. If irritation develops or persists, consult physician. |
| Inhalation | Move to fresh air. If breathing is difficult, give oxygen. If not breathing, give artificial respiration and contact emergency personnel. |
| Ingestion | Drink plenty of water. Clean mouth with water. If gastrointestinal distress occurs contact physician. |
| Protection of First-aiders | Use personal protective equipment. See Section 8 for more detail. Do not use mouth-to-mouth method if victim ingested or inhaled the substance; induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. |

5. FIRE-FIGHTING MEASURES

| | | | | |
|------------------------------|-----------------|--|-------------|-----------------------------------|
| Flammable Properties | | Not a fire hazard. | | |
| Flash Point | | Not applicable | | |
| Suitable Extinguishing Media | | Water spray, dry chemical, carbon dioxide (CO ₂), or foam. | | |
| Explosion Data | | | | |
| NFPA | Health Hazard 1 | Flammability 0 | Stability 0 | Physical and Chemical Hazards N/A |
| HMIS | Health Hazard 1 | Flammability 0 | Stability 0 | |

6. ACCIDENTAL RELEASE MEASURES

| | |
|--------------------------------|--|
| Personal Precautions | Refer to Section 8. Avoid contact with the skin and the eyes. |
| Methods for Containment | Sweep up in a manner that does not disperse dust and shovel into suitable containers for disposal. Dispose according to federal, state, and local regulations. |
| Methods for Cleaning Up | Following product recovery, flush area with water. |

7. HANDLING AND STORAGE

Handling Handle in accordance with good industrial hygiene and safety practice. Prevent contact with skin, eyes, and clothing. Do not ingest. Do not eat, drink, or smoke when using this product.

Storage Keep containers tightly closed in a dry, cool, and well-ventilated place. Protect from moisture. Keep out of the reach of children.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

| Chemical Name | ACGIH TLV | OSHA PEL | NIOSH IDLH |
|---|------------|------------|------------|
| Excipient | None Known | None Known | None Known |
| 1-Naphthalenesulfonic acid, 3-hydroxy-4-[(2-hydroxy-1-naphthyl)azo]-, monosodium salt 2538-85-4 | None Known | None Known | None Known |
| Resin | None Known | None Known | None Known |
| Excipient | None Known | None Known | None Known |
| Potassium chloride 7447-40-7 | None Known | None Known | None Known |

Engineering Measures None under normal use conditions.

Personal Protective Equipment

Eye/Face Protection Safety glasses with side-shields.
Skin and Body Protection Wear latex or nitrile gloves.
Respiratory Protection None required under normal usage.

Hygiene Measures Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin, eyes and clothing. Wear suitable gloves and eye/face protection. Wash hands and face before breaks and immediately after handling the product.

9. PHYSICAL AND CHEMICAL PROPERTIES

| | | | |
|----------------------------|--------------------------|---------------------------------|-------------------------------|
| Appearance | Purple | Odor | Odorless |
| Physical State | Powder | pH | 7 (1 tablet in 10mL of water) |
| Flash Point | Not applicable | Autoignition Temperature | Not applicable |
| Boiling Point/Range | No information available | Freezing Point | No information available |
| Explosion Limits | Not applicable | | |
| Water Solubility | Soluble in water | | |

10. STABILITY AND REACTIVITY

Stability Stable.

Incompatible Products Strong oxidizing agents.

Conditions to Avoid Exposure to air or moisture over prolonged periods. Temperature extremes.

Hazardous Decomposition Products Oxides of Chlorine. Potassium Oxides.

Hazardous Polymerization Hazardous polymerization does not occur.

11. TOXICOLOGICAL INFORMATION

Acute Toxicity

| Chemical Name | LD50 Oral | LD50 Dermal | LC50 Inhalation |
|---|--------------------|-------------|-----------------|
| Excipient | None Known | None Known | None Known |
| 1-Naphthalenesulfonic acid, 3-hydroxy-4-[(2-hydroxy-1-naphthalenyl)azo]-, monosodium salt | None Known | None Known | None Known |
| Resin | None Known | None Known | None Known |
| Excipient | 10 g/kg (Rat) | None Known | None Known |
| Potassium chloride | 2600 mg/kg (Rat) | None Known | None Known |

Chronic Toxicity

Chronic Toxicity None known.

| Chemical Name | ACGIH | IARC | NTP | OSHA |
|---|------------|------------|------------|------------|
| Excipient | None Known | None Known | None Known | None Known |
| 1-Naphthalenesulfonic acid, 3-hydroxy-4-[(2-hydroxy-1-naphthalenyl)azo]-, monosodium salt | None Known | None Known | None Known | None Known |
| Resin | None Known | None Known | None Known | None Known |
| Excipient | None Known | None Known | None Known | None Known |
| Potassium chloride | None Known | None Known | None Known | None Known |

Endocrine Disruptor Information

| Chemical Name | EU - Endocrine Disruptors Candidate List | EU - Endocrine Disruptors - Evaluated Substances | Japan - Endocrine Disruptor Information |
|---|--|--|---|
| Excipient | None Known | None Known | None Known |
| 1-Naphthalenesulfonic acid, 3-hydroxy-4-[(2-hydroxy-1-naphthalenyl)azo]-, monosodium salt | None Known | None Known | None Known |
| Resin | None Known | None Known | None Known |
| Excipient | None Known | None Known | None Known |
| Potassium chloride | None Known | None Known | None Known |

12. ECOLOGICAL INFORMATIONEcotoxicity

Potassium chloride - harmful to aquatic life. Harmful to aquatic organisms.

| Chemical Name | Toxicity to Algae | Toxicity to Fish | Microtox | Daphnia Magna (Water Flea) |
|---|-----------------------|--|------------|----------------------------|
| Excipient | None Known | None Known | None Known | None Known |
| 1-Naphthalenesulfonic acid, 3-hydroxy-4-[(2-hydroxy-1-naphthalenyl)azo]-, monosodium salt | None Known | None Known | None Known | None Known |
| Resin | None Known | None Known | None Known | None Known |
| Excipient | None Known | None Known | None Known | None Known |
| Potassium chloride | EC50 = 2500 mg/L 72 h | LC50= 2010 mg/L Lepomis macrochirus 96 h | None Known | EC50 = 825 mg/L 48 h |

Persistence and Degradability

Based on components, product is expected to be readily biodegradable.

| Chemical Name | Log Pow |
|---|------------|
| Excipient | None Known |
| 1-Naphthalenesulfonic acid, 3-hydroxy-4-[(2-hydroxy-1-naphthalenyl)azo]-, monosodium salt | None Known |
| Resin | None Known |
| Excipient | None Known |
| Potassium chloride | None Known |

13. DISPOSAL CONSIDERATIONSWaste Disposal Method

Dispose of in accordance with local regulations. Dispose according to federal, state, and local regulations. If permitted, dissolve in large volume of water and rinse to drain with excess water.

Contaminated Packaging

Dispose of in accordance with local regulations.

| Chemical Name | RCRA - Halogenated Organic Compounds | RCRA - P Series Wastes | RCRA - F Series Wastes | RCRA - K Series Wastes |
|---|--------------------------------------|------------------------|------------------------|------------------------|
| Excipient - | None Known | None Known | None Known | None Known |
| 1-Naphthalenesulfonic acid, 3-hydroxy-4-[(2-hydroxy-1-naphthalenyl)azo]-, monosodium salt - 2538-85-4 | None Known | None Known | None Known | None Known |
| Resin - | None Known | None Known | None Known | None Known |
| Excipient - | None Known | None Known | None Known | None Known |
| Potassium chloride - 7447-40-7 | None Known | None Known | None Known | None Known |

14. TRANSPORT INFORMATIONDOT

Not regulated

IATA

Not regulated

IMDG/IMO

Not regulated

15. REGULATORY INFORMATION**International Inventories**

| Component | TSCA | DSL | EINECS/ELINCS | ENCS | IECSC | KECL | PICCS | AICS |
|---|---------|-----|---------------|--------|-------|----------|-------|------|
| Excipient (<1) | TSCA | DSL | X | ENCS | IECSC | KECL | PICCS | AICS |
| 1-Naphthalenesulfonic acid, 3-hydroxy-4-[(2-hydroxy-1-naphthalenyl)azo]-, monosodium salt 2538-85-4 (1-5) | Present | X | X | 5-2116 | X | KE-07740 | X | X |
| Resin (1-5) | XU | X | EINECS/ELINCS | 6-902 | X | KE-25266 | X | X |
| Excipient (20-30) | Present | X | X | ENCS | X | KE-17416 | X | X |
| Potassium chloride 7447-40-7 (70-80) | Present | X | X | 1-228 | X | KE-29086 | X | X |

U.S. Federal Regulations**SARA 313**

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product does not contain any chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372.

| Chemical Name | CAS-No | Weight % | SARA 313 - Threshold Values % |
|---|-----------|----------|-------------------------------|
| Excipient | | <1 | None Known |
| 1-Naphthalenesulfonic acid, 3-hydroxy-4-[(2-hydroxy-1-naphthalenyl)azo]-, monosodium salt | 2538-85-4 | 1-5 | None Known |
| Resin | | 1-5 | None Known |
| Excipient | | 20-30 | None Known |
| Potassium chloride | 7447-40-7 | 70-80 | None Known |

SARA 311/312 Hazard Categories

| | |
|-----------------------------------|-----|
| Acute Health Hazard | Yes |
| Chronic Health Hazard | No |
| Fire Hazard | No |
| Sudden Release of Pressure Hazard | No |
| Reactive Hazard | No |

Clean Water Act

This product does not contain any substances regulated as pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42).

| Component | CWA - Reportable Quantities | CWA - Toxic Pollutants | CWA - Priority Pollutants | CWA - Hazardous Substances |
|---|-----------------------------|------------------------|---------------------------|----------------------------|
| Excipient (<1) | None Known | None Known | None Known | None Known |
| 1-Naphthalenesulfonic acid, 3-hydroxy-4-[(2-hydroxy-1-naphthalenyl)azo]-, monosodium salt 2538-85-4 (1-5) | None Known | None Known | None Known | None Known |
| Resin (1-5) | None Known | None Known | None Known | None Known |
| Excipient (20-30) | None Known | None Known | None Known | None Known |
| Potassium chloride 7447-40-7 (70-80) | None Known | None Known | None Known | None Known |

Clean Air Act, Section 112 Hazardous Air Pollutants (HAPs) (see 40 CFR 61)

This product does not contain any substances regulated as hazardous air pollutants (HAPS) under Section 112 of the Clean Air Act Amendments of 1990.

| Chemical Name | CAS-No | Weight % | HAPS data | VOC Chemicals | Class 1 Ozone Depletors | Class 2 Ozone Depletors |
|---|-----------|----------|------------|---------------|-------------------------|-------------------------|
| Excipient | | <1 | None Known | None Known | None Known | None Known |
| 1-Naphthalenesulfonic acid, 3-hydroxy-4-[(2-hydroxy-1-naphthalenyl)azo]-, monosodium salt | 2538-85-4 | 1-5 | None Known | None Known | None Known | None Known |
| Resin | | 1-5 | None Known | None Known | None Known | None Known |
| Excipient | | 20-30 | None Known | None Known | None Known | None Known |
| Potassium chloride | 7447-40-7 | 70-80 | None Known | None Known | None Known | None Known |

CERCLA

| Chemical Name | Hazardous Substances RQs | Extremely Hazardous Substances RQs |
|---|--------------------------|------------------------------------|
| Excipient | None Known | None Known |
| 1-Naphthalenesulfonic acid, 3-hydroxy-4-[(2-hydroxy-1-naphthalenyl)azo]-, monosodium salt | None Known | None Known |
| Resin | None Known | None Known |
| Excipient | None Known | None Known |
| Potassium chloride | None Known | None Known |

U.S. State RegulationsCalifornia Proposition 65

This product does not contain any Proposition 65 chemicals

| Chemical Name | CAS-No | California Prop. 65 |
|---|-----------|---------------------|
| Excipient | | None Known |
| 1-Naphthalenesulfonic acid, 3-hydroxy-4-[(2-hydroxy-1-naphthalenyl)azo]-, monosodium salt | 2538-85-4 | None Known |
| Resin | | None Known |
| Excipient | | None Known |
| Potassium chloride | 7447-40-7 | None Known |

U.S. State Right-to-Know Regulations

| Chemical Name | Massachusetts | New Jersey | Pennsylvania | Illinois | Rhode Island |
|---|---------------|------------|--------------|------------|--------------|
| Excipient | None Known | None Known | None Known | None Known | None Known |
| 1-Naphthalenesulfonic acid, 3-hydroxy-4-[(2-hydroxy-1-naphthalenyl)azo]-, monosodium salt | None Known | None Known | None Known | None Known | None Known |
| Resin | None Known | None Known | None Known | None Known | None Known |
| Excipient | None Known | None Known | None Known | None Known | None Known |
| Potassium chloride | None Known | None Known | None Known | None Known | None Known |

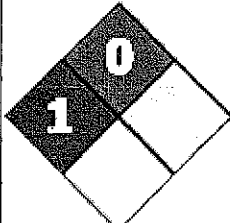

International RegulationsMexico - Grade

| Chemical Name | Carcinogen Status | Exposure Limits |
|---|-------------------|-----------------|
| Excipient | None Known | None Known |
| 1-Naphthalenesulfonic acid, 3-hydroxy-4-[(2-hydroxy-1-naphthalenyl)azo]-, monosodium salt | None Known | None Known |
| Resin | None Known | None Known |
| Excipient | None Known | None Known |
| Potassium chloride | None Known | None Known |

Canada

| Component | WHMIS Hazard Class |
|---|---|
| Excipient (<1) | Not determined |
| 1-Naphthalenesulfonic acid, 3-hydroxy-4-[(2-hydroxy-1-naphthalenyl)azo]-, monosodium salt 2538-85-4 (1-5) | Uncontrolled product according to WHMIS classification criteria |
| Resin (1-5) | Not determined |
| Excipient (20-30) | Uncontrolled product according to WHMIS classification criteria |
| Potassium chloride 7447-40-7 (70-80) | Uncontrolled product according to WHMIS classification criteria |

16. OTHER INFORMATION

| NFPA | HMIS | PPE | Transport Symbol | | | | | | |
|---|---|---------------|------------------|-----------------|---|------------|---|---|--|
|  | <table><tr><td>Health Hazard</td><td>1</td></tr><tr><td>Physical Hazard</td><td>0</td></tr><tr><td>Reactivity</td><td>0</td></tr></table> | Health Hazard | 1 | Physical Hazard | 0 | Reactivity | 0 |  | |
| Health Hazard | 1 | | | | | | | | |
| Physical Hazard | 0 | | | | | | | | |
| Reactivity | 0 | | | | | | | | |

Prepared By
 Issuing Date
 Revision Date
 Revision Note
 Update to Format
 Disclaimer

Regulatory Affairs Department
 5/30/2012
 31-May-2012

The information provided on this MSDS is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guide for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered as a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other material or in any process, unless specified in the text.

End of MSDS



MSDS

P.O. Box 329 - 802 Washington Avenue Chestertown, MD 21620 - USA

TELEPHONE # FOR INFORMATION 410 778-3100

24 HOUR EMERGENCY NUMBER (CHEM-TEL): USA, Canada, Puerto Rico 800-255-3924;

Outside North American Continent 813-248-0585 (call Collect)

MATERIAL SAFETY DATA SHEET

1. Product Identification

Product Code: 3922

Product Description: Calcium-Magnesium Inhibitor
Solution

Manufactured By: LaMotte Company

802 Washington Avenue
Chestertown, MD 21620

2. Composition/Information On Ingredients

| Hazard | CAS#/Name | % | PEL | TLV |
|--------|--|---------|------------------|------------------|
| Yes | 63451-33-2 CDTA disodium magnesium salt | 8 | None Established | None Established |
| No | 7732-18-5 Water | to 100% | None Established | None Established |

3. Hazards Overview

Primary Route Of Entry:

Large oral doses may cause nausea and diarrhea.

HMIS Hazard

Scale: 4 = Extreme, 3 = High, 2 = Moderate, 1 = Slight, 0 = Least

Health: 0 Flammability: 0 Reactivity: 0

Carcinogenicity: None:

Other Health Related Comments:

Product Code: 3922

Product Description: Calcium-Magnesium Inhibitor
Solution

4. First Aid Measures

Eye Contact: Flush with water for 15 minutes. If irritation develops, contact physician

Skin Contact: Flush with water for 15 minutes. Wash with soap and water. If irritation develops, contact physician.

Ingestion: Drink large quantity of water to drink. If gastric distress develops, consult physician.

Inhalation: Not applicable.

5. Fire Fighting Measures

Flash Point (Method Used): N/A

LEL: N/A

UEL: N/A

Extinguishing Media: Not a fire hazard

Special Fire Fighting Procedures: N/A

Unusual Fire & Explosion Hazard: N/A

6. Accidental Release Measures

Dispose according to federal, state, and local regulations. If permitted, mop up spill area and rinse to drain with excess water. Clean spill area with water.

7. Handling & Storage

Store in cool, dry place.

Product Code: 3922

Product Description: Calcium-Magnesium Inhibitor
Solution

8. Exposure Controls/Personal Protection

Ventilation

Normal

Protection When Handling

Eye Protection

Work/Hygenic Practices:

9. Physical & Chemical Properties

Appearance: Clear Colorless Liquid
Solubility In Water: Soluble
Odor: None
pH: 6

Vapor Density: <1 (Air=1)
Vapor Pressure: <17mm Hg @ 20° C
Boiling Point: >100° C
Melting Point: Unknown

10. Stability & Reactivity

Stable: Yes
Conditions To Avoid: N/A
Incompatibility (Materials To Avoid): N/A
Hazardous Decomposition Products: N/A

11. Toxicological Information

Target Organs: N/A

Product Code: 3922

Product Description: Calcium-Magnesium Inhibitor
Solution

12. Ecological Information

Information Not Yet Available

13. Disposal Considerations

Flush to drain with excess water. Dispose according to federal, state, and local regulations.

14. Transportation Information

Not Regulated For Transport

15. Regulatory Information

Chemical Inventory Status

| Hazard | Ingredient | USA TSCA | Europe EC | --- Canada --- DSL | NDSL | Australia | Japan |
|--------|--|-------------|--------------|-----------------------|------|-----------|-------|
| Yes | 63451-33-2 N,N'-1, 2-Cyclohexanediylbis (N-carboxymethyl)glycine, Magnesium Disodium salt | Yes | No | No | No | No | No |
| No | 7732-18-5 Distilled Water | Yes | Yes | Yes | No | Yes | Yes |

Federal, State, & International Regulations

| Ingredient | --- SARA 302 --- | | ----- SARA 313 ----- | | CERCLA | RCRA 261.33 | TSCA 8(D) |
|--|------------------|-----|----------------------|-------------------|--------|----------------|--------------|
| | RQ | TPQ | Listed | Chemical Category | | | |
| 63451-33-2 N,N'-1, 2-Cyclohexanediylbis (N-carboxymethyl)glycine, Magnesium Disodium salt | No | No | No | No | No | No | No |
| 7732-18-5 Distilled Water | No | No | No | No | No | No | No |

Product Code: 3922

Product Description: Calcium-Magnesium Inhibitor
Solution

| Ingredient | --- SARA 311/312 --- | | | | | ----- Australia ----- | | This MSDS Is WHMIS Compliant |
|--|----------------------|---------|------|----------|------------|-----------------------|--------------------|---------------------------------|
| | Acute | Chronic | Fire | Pressure | Reactivity | Hazchem Code | Poison Schedule | |
| 63451-33-2 N,N'-1, 2-Cyclohexanedimethylbis (N-carboxymethyl)glycine, Magnesium Disodium salt | Yes | No | No | No | No | None Allocated | None Allocated | |
| 7732-18-5 Distilled Water | No | No | No | No | No | None Allocated | None Allocated | |
| product 3922 as a whole | No | No | No | No | No | None Allocated | None Allocated | Yes |

16. Other Information

Prepared By: Regulatory Affairs Department

Revised: 9/8/2009



Issuing Date 6/24/2011

Revision Number 0

1. PRODUCT AND COMPANY IDENTIFICATION

Product Name Charcoal Suspension

Product Code(s) 5638

Recommended Use Test kit reagent. Laboratory chemicals. Industrial (not for food or food contact use).

Company LaMotte Company, Inc.
802 Washington Avenue
P.O. Box 329
Chestertown, MD 21620
USA

Emergency Telephone Number 24 Hour Emergency Number (CHEM-TEL):
USA, Canada, Puerto Rico 1-800-255-3924
Outside North American Continent (Call collect) 813-248-0585

2. HAZARDS IDENTIFICATION**Emergency Overview**

The product contains no substances which at their given concentration are considered to be hazardous to health

Appearance Black particles in suspension **Physical State** Liquid **Odor** None

OSHA Regulatory Status While this material is not considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200), this MSDS contains valuable information critical to the safe handling and proper use of the product. This MSDS should be retained and available for employees and other users of this product.

Potential Health Effects
Principle Routes of Exposure Skin and eye contact

Acute Toxicity

| | |
|-------------------|---|
| Eyes | Contact with eyes may cause irritation. |
| Skin | No hazard from product as supplied. |
| Inhalation | Not an expected route of exposure. |
| Ingestion | May cause gastrointestinal discomfort if consumed in large amounts. |

Chronic Effects

3. COMPOSITION/INFORMATION ON INGREDIENTS

| Chemical Name | CAS-No | Weight % |
|---------------|-----------|----------|
| Carbon | 7440-44-0 | 20 |
| Water | 7732-18-5 | to 100% |

4. FIRST AID MEASURES

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

| | |
|----------------------------|---|
| Eye Contact | Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. If irritation persists or develops, contact a physician. |
| Skin Contact | Wash off with warm water and soap. |
| Inhalation | Not expected. |
| Ingestion | Drink plenty of water. If symptoms persist or develop contact physician. |
| Protection of First-aiders | Use personal protective equipment. See Section 8 for more detail. Do not use mouth-to-mouth method if victim ingested or inhaled the substance; induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. |

5. FIRE-FIGHTING MEASURES

| | | | | |
|------------------------------|--|----------------|-------------|---------------------------------|
| Flammable Properties | Not a fire hazard. | | | |
| Flash Point | Not applicable | | | |
| Suitable Extinguishing Media | Dry chemical, CO ₂ , alcohol-resistant foam or water spray. | | | |
| Explosion Data | | | | |
| NFPA | Health Hazard 0 | Flammability 0 | Stability 0 | Physical and Chemical Hazards - |
| HMIS | Health Hazard 0 | Flammability 0 | Stability 0 | |

6. ACCIDENTAL RELEASE MEASURES

| | |
|-------------------------|---|
| Personal Precautions | Use personal protective equipment. Refer to Section 8. Avoid contact with skin, eyes, and clothing. |
| Methods for Cleaning Up | If local regulations permit, rinse liquid portion to drain and solid portion to landfill. After cleaning, flush away traces with water. |

7. HANDLING AND STORAGE

| | |
|----------|---|
| Handling | Handle in accordance with good industrial hygiene and safety practice. Prevent contact with skin, eyes, and clothing. Do not ingest. Do not eat, drink, or smoke when using this product. |
| Storage | Keep containers tightly closed in a dry, cool, and well-ventilated place. Keep out of the reach of children. |

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

| Chemical Name | ACGIH TLV | OSHA PEL | NIOSH IDLH |
|---------------------|------------|---|------------|
| Carbon 7440-44-0 | None Known | TWA: 15 mg/m ³ TWA: 5 mg/m ³ | None Known |
| Water 7732-18-5 | None Known | None Known | None Known |

Personal Protective Equipment

| | |
|--------------------------|-----------------------------------|
| Eye/Face Protection | Safety glasses with side-shields. |
| Skin and Body Protection | Wear protective gloves/clothing. |
| Respiratory Protection | None required under normal usage. |

Hygiene Measures

Handle in accordance with good industrial hygiene and safety practice. Do not eat, drink or smoke when using this product. Wash hands before breaks and immediately after handling the product.

9. PHYSICAL AND CHEMICAL PROPERTIES

| | | | |
|----------------|-------------------------------|---------------------|------|
| Appearance | Black particles in suspension | Odor | None |
| Physical State | Liquid | pH | 7 |
| Flash Point | Not applicable | Boiling Point/Range | |
| ca. 100 | | °C | |
| / | | 212 | |
| °F | | | |

| | | | |
|----------------|-----------------|---------------|-------------|
| Vapor Pressure | <17 mmHg @ 20°C | Vapor Density | <1(Air = 1) |
|----------------|-----------------|---------------|-------------|

10. STABILITY AND REACTIVITY

Stability Stable under normal conditions of use and storage.

Incompatible Products Strong oxidizing agents.

Conditions to Avoid Incompatible products.

Hazardous Decomposition Products Carbon oxides (COx).

Hazardous Polymerization Hazardous polymerization does not occur.

11. TOXICOLOGICAL INFORMATIONAcute Toxicity

| Chemical Name | LD50 Oral | LD50 Dermal | LC50 Inhalation |
|---------------|---------------------|-------------|-----------------|
| Carbon | 10000 mg/kg (Rat) | None Known | None Known |
| Water | 90 mL/kg (Rat) | None Known | None Known |

Chronic Toxicity

| Chemical Name | ACGIH | IARC | NTP | OSHA |
|---------------|------------|------------|------------|------------|
| Carbon | None Known | None Known | None Known | None Known |
| Water | None Known | None Known | None Known | None Known |

| Chemical Name | EU - Endocrine Disruptors Candidate List | EU - Endocrine Disruptors - Evaluated Substances | Japan - Endocrine Disruptor Information |
|---------------|---|---|--|
| Carbon | None Known | None Known | None Known |
| Water | None Known | None Known | None Known |

12. ECOLOGICAL INFORMATION**Ecotoxicity**

| Chemical Name | Toxicity to Algae | Toxicity to Fish | Microtox | Daphnia Magna (Water Flea) |
|---------------|-------------------|------------------|------------|----------------------------|
| Carbon | None Known | None Known | None Known | None Known |
| Water | None Known | None Known | None Known | None Known |

| Chemical Name | Log Pow |
|---------------|------------|
| Carbon | None Known |
| Water | None Known |

13. DISPOSAL CONSIDERATIONS**Waste Disposal Method**

This material, as supplied, is not a hazardous waste according to Federal regulations (40 CFR 261). Can be disposed as waste water, when in compliance with local regulations.

| Chemical Name | RCRA - Halogenated Organic Compounds | RCRA - P Series Wastes | RCRA - F Series Wastes | RCRA - K Series Wastes |
|--------------------|--------------------------------------|------------------------|------------------------|------------------------|
| Carbon - 7440-44-0 | None Known | None Known | None Known | None Known |
| Water - 7732-18-5 | None Known | None Known | None Known | None Known |

14. TRANSPORT INFORMATION

DOT Not regulated

IATA Not regulated

IMDG/IMO Not regulated

15. REGULATORY INFORMATIONInternational Inventories

| Component | TSCA | DSL | EINECS/ELINCS | ENCS | IECSC | KECL | PICCS | AICS |
|--------------------------------|---------|-----|---------------|------|-------|----------|-------|------|
| Carbon 7440-44-0 (20) | Present | X | X | ENCS | X | KE-04671 | X | X |
| Water 7732-18-5 (to 100%) | Present | X | X | ENCS | X | KE-35400 | X | X |

U.S. Federal Regulations**SARA 313**

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product does not contain any chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372.

| Chemical Name | CAS-No | Weight % | SARA 313 - Threshold Values % |
|---------------|-----------|----------|-------------------------------|
| Carbon | 7440-44-0 | 20 | None Known |
| Water | 7732-18-5 | to 100% | None Known |

SARA 311/312 Hazard Categories

| | |
|-----------------------------------|-----|
| Acute Health Hazard | Yes |
| Chronic Health Hazard | No |
| Fire Hazard | No |
| Sudden Release of Pressure Hazard | No |
| Reactive Hazard | No |

Clean Water Act

This product does not contain any substances regulated as pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42).

| Component | CWA - Reportable Quantities | CWA - Toxic Pollutants | CWA - Priority Pollutants | CWA - Hazardous Substances |
|--------------------------------|-----------------------------|------------------------|---------------------------|----------------------------|
| Carbon 7440-44-0 (20) | None Known | None Known | None Known | None Known |
| Water 7732-18-5 (to 100%) | None Known | None Known | None Known | None Known |

Clean Air Act, Section 112 Hazardous Air Pollutants (HAPs) (see 40 CFR 61)

| Chemical Name | CAS-No | Weight % | HAPS data | VOC Chemicals | Class 1 Ozone Depletors | Class 2 Ozone Depletors |
|---------------|-----------|----------|------------|---------------|-------------------------|-------------------------|
| Carbon | 7440-44-0 | 20 | None Known | None Known | None Known | None Known |
| Water | 7732-18-5 | to 100% | None Known | None Known | None Known | None Known |

CERCLA

| Chemical Name | Hazardous Substances RQs | Extremely Hazardous Substances RQs |
|---------------|--------------------------|------------------------------------|
| Carbon | None Known | None Known |
| Water | None Known | None Known |

U.S. State Regulations**California Proposition 65**

This product does not contain any Proposition 65 chemicals

| Chemical Name | CAS-No | California Prop. 65 |
|---------------|-----------|---------------------|
| Carbon | 7440-44-0 | None Known |
| Water | 7732-18-5 | None Known |

| Chemical Name | Massachusetts | New Jersey | Pennsylvania | Illinois | Rhode Island |
|---------------|---------------|------------|--------------|------------|--------------|
| Carbon | X | None Known | X | None Known | X |
| Water | None Known | None Known | None Known | None Known | None Known |

International Regulations

Mexico - Grade

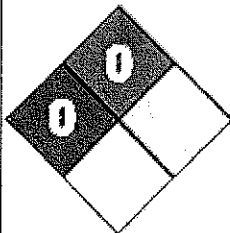

| Chemical Name | Carcinogen Status | Exposure Limits |
|---------------|-------------------|----------------------------------|
| Carbon | None Known | Mexico: TWA= 2 mg/m ³ |
| Water | None Known | None Known |

Canada

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

| Component | WHMIS Hazard Class |
|--------------------------------|---|
| Carbon 7440-44-0 (20) | Uncontrolled product according to WHMIS classification criteria |
| Water 7732-18-5 (to 100%) | Uncontrolled product according to WHMIS classification criteria |

16. OTHER INFORMATION

| NFPA | HMIS | PPE | Transport Symbol | | | | | | |
|---|---|---------------|------------------|-------------|---|------------|---|---|---------------|
|  | <table><tr><td>Health Hazard</td><td>0</td></tr><tr><td>Env. Hazard</td><td>0</td></tr><tr><td>Reactivity</td><td>0</td></tr></table> | Health Hazard | 0 | Env. Hazard | 0 | Reactivity | 0 |  | Not regulated |
| Health Hazard | 0 | | | | | | | | |
| Env. Hazard | 0 | | | | | | | | |
| Reactivity | 0 | | | | | | | | |

Prepared By Regulatory Affairs Department

Issuing Date 6/24/2011

Revision Date 24-Jun-2011

Revision Note

Initial Release

Disclaimer

The information provided on this MSDS is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guide for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered as a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other material or in any process, unless specified in the text.

End of MSDS



Issuing Date 9/22/2010

Revision Number 0

1. PRODUCT AND COMPANY IDENTIFICATION

Product Name Chloride Reagent #1

Product Code(s) 4504

Recommended Use Laboratory chemicals. Industrial (not for food or food contact use). Test kit reagent.

Company LaMotte Company, Inc.
802 Washington Avenue
P.O. Box 329
Chestertown, MD 21620
USA

Emergency Telephone Number 24 Hour Emergency Number (CHEM-TEL):
USA, Canada, Puerto Rico 1-800-255-3924
Outside North American Continent (Call collect) 813-248-0585

2. HAZARDS IDENTIFICATION**WARNING!****Emergency Overview**

Severe eye irritation

Harmful if swallowed

Harmful by inhalation

Irritating to skin

Appearance Clear, Yellow, Liquid

Physical State Liquid

Odor None

Potential Health Effects

Principle Routes of Exposure Skin and eye contact, Ingestion

Acute Toxicity

Eyes

Liquid may cause severe irritation and possible eye damage.

Skin

Contact can cause severe skin irritation. Effects are expected to be less severe than for exposures to higher concentrations which symptoms include severe burns, pain, redness.

Inhalation

May cause irritation of respiratory tract. May cause allergy or asthma symptoms or breathing difficulties if inhaled. Effects are expected to be less severe than for exposure to higher concentrations which symptoms can include coughing, nausea, vomiting.

Ingestion

Harmful if swallowed. May cause adverse kidney effects. May cause adverse liver effects.

Chronic Effects

Aggravated Medical Conditions Respiratory disorders.

3. COMPOSITION/INFORMATION ON INGREDIENTS

| Chemical Name | CAS-No | Weight % |
|--------------------|-----------|----------|
| Potassium chromate | 7789-00-6 | 5 |
| Silver nitrate | 7761-88-8 | <0.01 |
| Water | 7732-18-5 | to 100% |

4. FIRST AID MEASURES

| | |
|-----------------------------------|---|
| General Advice | Do not get in eyes, on skin, or on clothing. |
| Eye Contact | Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. If irritation persists or develops, contact a physician. |
| Skin Contact | Wash off immediately with soap and plenty of water for at least 15 minutes while removing all contaminated clothing and shoes. If skin irritation persists, call a physician. |
| Inhalation | Move to fresh air. If breathing is difficult, give oxygen. If not breathing, give artificial respiration and contact emergency personnel. Call a physician immediately. |
| Ingestion | Do not induce vomiting without medical advice. Rinse mouth with water and afterwards drink plenty of water or milk. Never give anything by mouth to an unconscious person. Consult a physician. |
| Protection of First-aiders | Use personal protective equipment. See Section 8 for more detail. Do not use mouth-to-mouth method if victim ingested or inhaled the substance; induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. |

5. FIRE-FIGHTING MEASURES

| | |
|-------------------------------------|--|
| Flash Point | Not combustible |
| Suitable Extinguishing Media | Dry chemical, CO ₂ , alcohol-resistant foam or water spray. |

Explosion Data

| | | | | |
|-------------|------------------------|-----------------------|--------------------|--|
| NFPA | Health Hazard 2 | Flammability 0 | Stability 0 | Physical and Chemical Hazards - |
|-------------|------------------------|-----------------------|--------------------|--|

6. ACCIDENTAL RELEASE MEASURES

| | |
|--------------------------------|---|
| Personal Precautions | Ensure adequate ventilation. Use personal protective equipment. Refer to Section 8. Avoid contact with skin, eyes and inhalation of vapors. |
| Methods for Containment | Soak up with inert absorbent material, containerize, and hold for disposal. Do not flush to sewer. |
| Methods for Cleaning Up | Keep in suitable and closed containers for disposal. |

7. HANDLING AND STORAGE

| | |
|-----------------|---|
| Handling | Handle in accordance with good industrial hygiene and safety practice. Prevent contact with skin, eyes and clothing. Do not ingest. Do not eat, drink or smoke when using this product. |
| Storage | Keep containers tightly closed in a dry, cool and well-ventilated place. Store at room temperature. Keep away from direct sunlight. Keep out of the reach of children. |

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

| Chemical Name | ACGIH TLV | OSHA PEL | NIOSH IDLH |
|---------------------------------|--|-----------------------------|--|
| Potassium chromate 7789-00-6 | TWA: 0.01 mg/m ³ TWA: 0.05 mg/m ³ | TWA: 5 µg/m ³ | IDLH: 15 mg/m ³ TWA: 0.001 mg/m ³ |
| Silver nitrate 7761-88-8 | TWA: 0.01 mg/m ³ | TWA: 0.01 mg/m ³ | IDLH: 10 mg/m ³ TWA: 0.01 mg/m ³ |
| Water 7732-18-5 | None Known | None Known | None Known |

Personal Protective Equipment

| | |
|--------------------------|--|
| Eye/Face Protection | Safety glasses with side-shields. |
| Skin and Body Protection | Wear protective gloves/clothing. Gloves & Lab Coat. |
| Respiratory Protection | When workers are facing concentrations above the exposure limit they must use appropriate certified respirators. |

Hygiene Measures

Handle in accordance with good industrial hygiene and safety practice. Do not eat, drink or smoke when using this product. Wash hands before breaks and immediately after handling the product.

9. PHYSICAL AND CHEMICAL PROPERTIES

| | | | |
|----------------|---------------------|---------------------|------------|
| Appearance | Clear Yellow Liquid | Odor | None |
| Physical State | Liquid | pH | 9 |
| Flash Point | Not combustible | Boiling Point/Range | ca. 101 °C |

| | | | |
|----------------|--------------------------|---------------|--------------------------|
| Vapor Pressure | No information available | Vapor Density | No information available |
|----------------|--------------------------|---------------|--------------------------|

10. STABILITY AND REACTIVITY

| | |
|--------------------------|---|
| Stability | Stable under normal conditions of use and storage. |
| Incompatible Products | Strong reducing agents. Hydrazine. |
| Conditions to Avoid | Excessive heat. Incompatible products. Direct sunlight. |
| Hazardous Polymerization | Hazardous polymerization does not occur. |

11. TOXICOLOGICAL INFORMATION**Acute Toxicity**

LD50 Oral VALUE (mg/kg) Potassium chromate 180mg/kg (Mouse)

| Chemical Name | LD50 Oral | LD50 Dermal | LC50 Inhalation |
|--------------------|--------------------|-------------|-----------------|
| Potassium chromate | None Known | None Known | None Known |
| Silver nitrate | 1173 mg/kg (Rat) | None Known | None Known |
| Water | 90 mL/kg (Rat) | None Known | None Known |

Chronic Toxicity

| Chemical Name | ACGIH | IARC | NTP | OSHA |
|--------------------|------------|------------|------------|------------|
| Potassium chromate | A1 | Group 1 | Known | X |
| Silver nitrate | None Known | None Known | None Known | None Known |
| Water | None Known | None Known | None Known | None Known |

| Chemical Name | EU - Endocrine Disruptors Candidate List | EU - Endocrine Disruptors - Evaluated Substances | Japan - Endocrine Disruptor Information |
|--------------------|--|--|---|
| Potassium chromate | None Known | None Known | None Known |
| Silver nitrate | None Known | None Known | None Known |
| Water | None Known | None Known | None Known |

12. ECOLOGICAL INFORMATION

Ecotoxicity

| Chemical Name | Toxicity to Algae | Toxicity to Fish | Microtox | Daphnia Magna (Water Flea) |
|--------------------|-------------------|--|--|---|
| Potassium chromate | None Known | None Known | None Known | None Known |
| Silver nitrate | None Known | LC50= 0.0056 mg/L Pimephales promelas 96 h LC50= 0.006 mg/L Oncorhynchus mykiss 96 h LC50= 0.0064 mg/L Pimephales promelas 96 h LC50= 0.00644 mg/L Poecilia reticulata 96 h LC50= 0.007 mg/L Lepomis macrochirus 96 h LC50= 0.0085 mg/L Poecilia reticulata 96 h LC50= 0.0094 mg/L Pimephales promelas 96 h | EC50 = 0.038 mg/L 24 h EC50 = 0.395 mg/l 15 min EC50 = 0.44 mg/L 30 min EC50 = 0.86 mg/L 15 min | EC50 = 0.0006 mg/L 48 h EC50 = 0.9 µg/L 48 h LC50 = 5 µg/L 96 h |
| Water | None Known | None Known | None Known | None Known |

| Chemical Name | Log Pow |
|--------------------|------------|
| Potassium chromate | None Known |
| Silver nitrate | None Known |
| Water | None Known |

13. DISPOSAL CONSIDERATIONS**Waste Disposal Method**

Dispose of contents/container in accordance with local regulation.

| Chemical Name |
|--------------------------------|
| Potassium chromate - 7789-00-6 |
| Silver nitrate - 7761-88-8 |
| Water - 7732-18-5 |

| Chemical Name | RCRA - Halogenated Organic Compounds | RCRA - P Series Wastes | RCRA - F Series Wastes | RCRA - K Series Wastes |
|--------------------------------|--------------------------------------|------------------------|------------------------|------------------------|
| Potassium chromate - 7789-00-6 | None Known | None Known | None Known | None Known |
| Silver nitrate - 7761-88-8 | None Known | None Known | None Known | None Known |
| Water - 7732-18-5 | None Known | None Known | None Known | None Known |

| Chemical Name | California Hazardous Waste Status |
|--------------------|-----------------------------------|
| Potassium chromate | Toxic; Corrosive; Ignitable |
| Silver nitrate | Toxic |

14. TRANSPORT INFORMATION**DOT** Not regulated**IATA** Not regulated**IMDG/IMO** Not regulated**15. REGULATORY INFORMATION****International Inventories**

| Component | TSCA | DSL | EINECS/ELINCS | ENCS | IECSC | KECL | PICCS | AICS |
|---------------------------------------|------|-----|---------------|-------|-------|----------|-------|------|
| Potassium chromate 7789-00-6 (5) | R | X | X | 1-661 | X | KE-29089 | X | X |

| | | | | | | | | |
|---------------------------------------|---------|---|---|------|---|----------|---|---|
| Silver nitrate 7761-88-8 (<0.01) | Present | X | X | 1-8 | X | KE-31281 | X | X |
| Water 7732-18-5 (to 100%) | Present | X | X | ENCS | X | KE-35400 | X | X |

U.S. Federal Regulations

SARA 313

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product contains a chemical or chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372:

| Chemical Name | CAS-No | Weight % | SARA 313 - Threshold Values % |
|--------------------|-----------|----------|-------------------------------|
| Potassium chromate | 7789-00-6 | 5 | 0.1 |
| Silver nitrate | 7761-88-8 | <0.01 | 1.0 |
| Water | 7732-18-5 | to 100% | None Known |

SARA 311/312 Hazard Categories

| | |
|-----------------------------------|-----|
| Acute Health Hazard | Yes |
| Chronic Health Hazard | Yes |
| Fire Hazard | No |
| Sudden Release of Pressure Hazard | No |
| Reactive Hazard | No |

Clean Water Act

This product contains the following substances which are regulated pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42).

| Component | CWA - Reportable Quantities | CWA - Toxic Pollutants | CWA - Priority Pollutants | CWA - Hazardous Substances |
|---------------------------------------|-----------------------------|------------------------|---------------------------|----------------------------|
| Potassium chromate 7789-00-6 (5) | 10 lb | X | None Known | X |
| Silver nitrate 7761-88-8 (<0.01) | 1 lb | X | None Known | X |
| Water 7732-18-5 (to 100%) | None Known | None Known | None Known | None Known |

| Chemical Name | CAS-No | Weight % | HAPS data | VOC Chemicals | Class 1 Ozone Depleters | Class 2 Ozone Depleters |
|--------------------|-----------|----------|---|---------------|-------------------------|-------------------------|
| Potassium chromate | 7789-00-6 | 5 | Present (includes any unique chemical substance that contains Chromium as part of its infrastructure) | None Known | None Known | None Known |
| Silver nitrate | 7761-88-8 | <0.01 | None Known | None Known | None Known | None Known |
| Water | 7732-18-5 | to 100% | None Known | None Known | None Known | None Known |

CERCLA

| Chemical Name | Hazardous Substances RQs | Extremely Hazardous Substances RQs |
|--------------------|--------------------------|------------------------------------|
| Potassium chromate | 10 lb | None Known |
| Silver nitrate | 1 lb | None Known |
| Water | None Known | None Known |

U.S. State Regulations

California Proposition 65

WARNING! This product contains a chemical known to the State of California to cause cancer

| Chemical Name | CAS-No | California Prop. 65 |
|--------------------|-----------|---------------------|
| Potassium chromate | 7789-00-6 | Carcinogen |
| Silver nitrate | 7761-88-8 | None Known |

| | | |
|-------|-----------|------------|
| Water | 7732-18-5 | None Known |
|-------|-----------|------------|

| Chemical Name | Massachusetts | New Jersey | Pennsylvania | Illinois | Rhode Island |
|--------------------|---------------|------------|--------------|------------|--------------|
| Potassium chromate | X | X | X | X | X |
| Silver nitrate | X | X | X | None Known | X |
| Water | None Known | None Known | None Known | None Known | None Known |

International Regulations

Mexico - Grade

| Chemical Name | Carcinogen Status | Exposure Limits |
|--------------------|-------------------|--|
| Potassium chromate | A1 | Mexico: TWA= 0.01 mg/m ³ Mexico: TWA= 0.05 mg/m ³ Mexico: TWA= 0.5 mg/m ³ |
| Silver nitrate | None Known | Mexico: TWA= 0.01 mg/m ³ |
| Water | None Known | None Known |

Canada

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

WHMIS Hazard Class

C Oxidizing materials

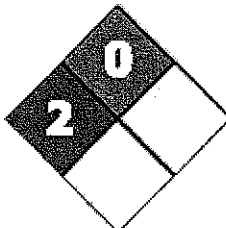

D2A - Poisonous and infectious material - Other effects - Very toxic

D2B - Poisonous and infectious material - Other effects - Toxic



| Chemical Name | NPRI |
|--------------------|------|
| Potassium chromate | X |
| Silver nitrate | X |

16. OTHER INFORMATION

| NFPA | HMIS | PPE | Transport Symbol | | | | | | |
|---|---|---------------|------------------|-----------------|---|------------|---|---|---------------|
|  | <table><tr><td>Health Hazard</td><td>2</td></tr><tr><td>Physical Hazard</td><td>0</td></tr><tr><td>Reactivity</td><td>1</td></tr></table> | Health Hazard | 2 | Physical Hazard | 0 | Reactivity | 1 |  | Not regulated |
| Health Hazard | 2 | | | | | | | | |
| Physical Hazard | 0 | | | | | | | | |
| Reactivity | 1 | | | | | | | | |

Prepared By

Regulatory Affairs Department

Issuing Date 9/22/2010

Revision Date

Revision Note Initial Release.

Disclaimer

The information provided on this MSDS is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guide for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered as a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other material or in any process, unless specified in the text.

End of MSDS



MSDS

P.O. Box 329 - 802 Washington Avenue Chestertown, MD 21620 - USA

MATERIAL SAFETY DATA SHEET

TELEPHONE # FOR INFORMATION 410 778-3100

24 HOUR EMERGENCY NUMBER (CHEM-TEL): USA, Canada, Puerto Rico 800-255-3924;

Outside North American Continent 813-248-0585 (call Collect)

1. Product Identification

Product Code: 7624

Product Description: Chloride Reagent 2S

Manufactured By: LaMotte Company

802 Washington Avenue

Chestertown, MD 21620

2. Composition/Information On Ingredients

| Hazard | CAS#/Name | % | PEL | TLV |
|--------|-----------------------------|---------|--|--|
| Yes | 7761-88-8 Silver Nitrate | 1 | 0.01 mg/m ³ (TWA) Silver metal dust/fume as Ag | 0.01 mg/m ³ (TWA) soluble silver compounds as Ag |
| No | 7732-18-5 Water | to 100% | None Established | None Established |

3. Hazards Overview

Primary Route Of Entry: Skin Ingestion

Vapors and liquid cause irritation to eyes, skin and respiratory system. Harmful if swallowed.

HMIS Hazard

Scale: 4 = Extreme, 3 = High, 2 = Moderate, 1 = Slight, 0 = Least

Health: 2 Flammability: 1 Reactivity: 1

Carcinogenicity: None:

Other Health Related Comments:

Product Code: 7624

Product Description: Chloride Reagent 2S

4. First Aid Measures

Eye Contact: Immediately flush with water for 15 minutes while lifting upper and lower eyelids. Contact physician immediately.

Skin Contact: Immediately flush with water for 15 minutes while removing affected clothing. Contact physician. Wash clothing prior to reuse.

Ingestion: Induce vomiting immediately as directed by medical personnel. Contact physician immediately.

Inhalation: Remove to fresh air. If breathing is difficult, give oxygen. If not breathing, administer artificial respiration.

5. Fire Fighting Measures

Flash Point (Method Used): N/A

LEL: N/A

UEL: N/A

Extinguishing Media: Water spray

Special Fire Fighting Procedures: Wear self contained breathing apparatus and protective clothing to prevent inhalation and contact with eyes.

Unusual Fire & Explosion Hazard: Silver nitrate reactions may cause explosions

6. Accidental Release Measures

Wear PPE noted in section 8. Collect spill in appropriate container or absorb spill on inert material and containerize. Hold for disposal according to federal, state, and local regulations.

7. Handling & Storage

Store in cool, dry ventilated area away from light, heat, and incompatible materials.

Product Code: 7624

Product Description: Chloride Reagent 2S

8. Exposure Controls/Personal Protection

Ventilation

Normal

A system or local or general exhaust is recommended to keep employees exposure below the permissible exposure limits.

Protection When Handling

Eye Protection Gloves Lab Coat, apron

face shield

Work/Hygenic Practices: Avoid contact with eyes, skin, and clothing.

9. Physical & Chemical Properties

| | | | |
|----------------------|------------------------|-----------------|----------------------|
| Appearance: | Clear Colorless Liquid | Vapor Density: | <1 (Air=1) |
| Solubility In Water: | Soluble | Vapor Pressure: | <17 @20° C |
| Odor: | Odorless | Boiling Point: | no information found |
| pH: | 5 | Melting Point: | no information found |

10. Stability & Reactivity

| | |
|---------------------------------------|--|
| Stable: | Yes |
| Conditions To Avoid: | Heat, Direct Sunlight, Incompatibles |
| Incompatibility (Materials To Avoid): | Alkalies, reducing agents, metals |
| Hazardous Decomposition Products: | NOx, toxic metal fumes may form when heated to decomposition |

11. Toxicological Information

Oral Rat LD50: 1173mg/kg for Silver Nitrate, solid. Std Rabbit Draize: 1mg (SEVERE). Investigated as a tumorigen, mutagen, reproductive effector.

Target Organs: Skin

Product Code: 7624

Product Description: Chloride Reagent 2S

12. Ecological Information

Information Not Yet Available

13. Disposal Considerations

Dispose according to federal, state, and local regulations.

14. Transportation Information

Not Regulated For Transport

15. Regulatory Information

Chemical Inventory Status

| Hazard | Ingredient | USA TSCA | Europe EC | --- Canada --- DSL | NDSL | Australia | Japan |
|--------|------------------------------|-------------|--------------|-----------------------|------|-----------|-------|
| Yes | 7761-88-8 Silver Nitrate | Yes | Yes | Yes | No | Yes | Yes |
| No | 7732-18-5 Distilled Water | Yes | Yes | Yes | No | Yes | Yes |

Federal, State, & International Regulations

| Ingredient | --- SARA 302 --- | | ----- SARA 313 ----- | | CERCLA | RCRA 261.33 | TSCA 8(D) |
|------------------------------|------------------|-----|----------------------|-------------------|--------|----------------|--------------|
| | RQ | TPQ | Listed | Chemical Category | | | |
| 7761-88-8 Silver Nitrate | No | No | No | Silver comp | 1 | No | No |
| 7732-18-5 Distilled Water | No | No | No | No | No | No | No |

Product Code: 7624

Product Description: Chloride Reagent 2S

| Ingredient | --- SARA 311/312 --- | | | | | ----- Australia ----- | | This MSDS Is WHMIS Compliant |
|------------------------------|----------------------|---------|------|----------|------------|-----------------------|--------------------|---------------------------------|
| | Acute | Chronic | Fire | Pressure | Reactivity | Hazchem Code | Poison Schedule | |
| 7761-88-8 Silver Nitrate | Yes | Yes | No | No | Yes | 2X | S6 | |
| 7732-18-5 Distilled Water | No | No | No | No | No | None Allocated | None Allocated | |
| product 7624 as a whole | Yes | Yes | No | No | No | 2X | None Allocated | Yes |

16. Other Information

Keep out of the reach of children.

Prepared By: Regulatory Affairs Department

Revised: 9/28/2009



MSDS

P.O. Box 329 - 802 Washington Avenue Chestertown, MD 21620 - USA

MATERIAL SAFETY DATA SHEET

TELEPHONE # FOR INFORMATION 410 778-3100

24 HOUR EMERGENCY NUMBER (CHEM-TEL): USA, Canada, Puerto Rico 800-255-3924;

Outside North American Continent 813-248-0585 (call Collect)

1. Product Identification

Product Code: 6522

Product Description: CM Indicator Reagent

Manufactured By: LaMotte Company

802 Washington Avenue

Chestertown, MD 21620

2. Composition/Information On Ingredients

| Hazard | CAS#/Name | % | PEL | TLV |
|--------|--|------|---------------------------------------|---------------------------|
| Yes | 64-17-5 Ethanol | 22 | 1000ppm TWA (1900 mg/m ³) | 1000 ppm TWA |
| Yes | 67-56-1 Methanol | 1 | 200ppm TWA (260 mg/m ³) | 200 ppm TWA |
| Yes | 102-71-6 Triethanolamine | 76 | None Established | 5 mg/m ³ (TWA) |
| Yes | 1787-61-7 Eriochrome Black T; (Mordant Black) | <0.1 | None Established | None Established |

3. Hazards Overview

Primary Route Of Entry: Skin Ingestion Inhalation

May irritate eyes and skin. Harmful if swallowed.

HMIS Hazard

Scale: 4 = Extreme, 3 = High, 2 = Moderate, 1 = Slight, 0 = Least

Health: 2 Flammability: 1 Reactivity: 1

Carcinogenicity: None:

Other Health Related Comments:

See Section 11

4. First Aid Measures

Eye Contact: Immediately flush with water for 15 minutes lifting upper and lower eyelids occasionally. Consult a physician if irritation persists.

Skin Contact: Flush skin with water for 15 minutes while removing affected clothing. Wash skin with soap and water. Consult physician if irritation persists.

Ingestion: Drink large quantity of water. Consult physician immediately.

Inhalation: Remove to fresh air. Consult a physician.

5. Fire Fighting Measures

Flash Point (Method Used): N/A

LEL: N/A

UEL: N/A

Extinguishing Media: Dry chemical, alcohol-resistant foam, CO2

Special Fire Fighting Procedures: N/A

Unusual Fire & Explosion Hazard: N/A

6. Accidental Release Measures

Ventilate area. Eliminate sources of ignition. Absorb on inert material, containerize, and hold for disposal as hazardous waste. Do not flush to sewer!

7. Handling & Storage

Keep in a tightly closed container. Store in cool, dry place away from incompatible materials. (Triethanolamine is incompatible with copper, copper alloys, galvanized iron, acids, and oxidizers).

Product Code: 6522

Product Description: CM Indicator Reagent

8. Exposure Controls/Personal Protection

Ventilation

Normal

Protection When Handling

Eye Protection Gloves Lab Coat

Work/Hygenic Practices: Use with adequate ventilation. Avoid contact with eyes, skin, and clothing.

9. Physical & Chemical Properties

| | | | |
|----------------------|------------------|-----------------|---------------------------|
| Appearance: | Dark Blue Liquid | Vapor Density: | 3 (Air=1) |
| Solubility In Water: | Soluble | Vapor Pressure: | <1 mm Hg@ 20C (Trolamine) |
| Odor: | Slightly fishy | Boiling Point: | >330° C (Trolamine) |
| pH: | 10 - 11 | Melting Point: | ca. 21° C (Trolamine) |

10. Stability & Reactivity

| | |
|---------------------------------------|--|
| Stable: | Yes |
| Conditions To Avoid: | Heat |
| Incompatibility (Materials To Avoid): | Acids, metals, strong oxidizers |
| Hazardous Decomposition Products: | Toxic fumes of COx or NOx under fire conditions. |

11. Toxicological Information

Oral Rat LD50: 7060mg/kg Ethanol. Oral Rat LD50: 4920mg/kg Triethanolamine; Trolamine has been investigated as a tumorigen and a mutagen.

Target Organs: Eyes Skin

Product Code: 6522**Product Description:** CM Indicator Reagent

12. Ecological Information

When released into soil or water, this material is expected to readily biodegrade. Not expected to significantly bioaccumulate. When released into the air this material is expected to be readily removed from the atmosphere by dry and wet decomposition.

13. Disposal Considerations

Dispose of as hazardous waste. Follow federal, state, and local regulations.

14. Transportation Information

Not Regulated For Transport

15. Regulatory Information**Chemical Inventory Status**

| Hazard | Ingredient | USA | Europe | --- Canada --- | | Australia | Japan |
|--------|--|------|--------|----------------|------|-----------|-------|
| | | TSCA | EC | DSL | NDSL | | |
| Yes | 64-17-5 Ethanol | Yes | Yes | Yes | No | Yes | Yes |
| Yes | 67-56-1 Methyl Alcohol | Yes | Yes | Yes | No | Yes | Yes |
| Yes | 102-71-6 Triethanolamine | Yes | Yes | Yes | No | Yes | Yes |
| Yes | 1787-61-7 Eriochrome Black T (C.I. 14645) | Yes | Yes | Yes | No | Yes | Yes |

Federal, State, & International Regulations

| Ingredient | --- SARA 302 --- | | ----- SARA 313 ----- | | CERCLA | RCRA 261.33 | TSCA 8(D) |
|--|------------------|-----|----------------------|-------------------|--------|----------------|--------------|
| | RQ | TPQ | Listed | Chemical Category | | | |
| 64-17-5 Ethanol | No | No | No | No | No | No | No |
| 67-56-1 Methyl Alcohol | No | No | Yes | Toxic Pollutant | 5000 | U154 | No |
| 102-71-6 Triethanolamine | No | No | No | No | No | No | No |
| 1787-61-7 Eriochrome Black T (C.I. 14645) | No | No | No | No | No | No | No |

Product Code: 6522

Product Description: CM Indicator Reagent

| Ingredient | Acute | SARA 311/312 | | | | Hazard Categories | Reactivity | Australia | | This MSDS Is |
|--|-------|--------------|------|----------|----|-------------------|------------|----------------|-----------------|--------------|
| | | Chronic | Fire | Pressure | | | | Hazchem Code | Poison Schedule | |
| 64-17-5 Ethanol | Yes | Yes | Yes | No | No | | | None Allocated | None Allocated | |
| 67-56-1 Methyl Alcohol | Yes | Yes | Yes | No | No | | | 2PE | S6 | |
| 102-71-6 Triethanolamine | Yes | No | No | No | No | | | None Allocated | None Allocated | |
| 1787-61-7 Eriochrome Black T (C.I. 14645) | No | No | No | No | No | | | None Allocated | None Allocated | |
| product 6522 as a whole | Yes | No | No | No | No | | | None Allocated | None Allocated | Yes |

16. Other Information

Keep out of reach of children.

Prepared By: Regulatory Affairs Department

Revised: 9/15/2009



Issuing Date 5/31/2012

Revision Number 0

1. PRODUCT AND COMPANY IDENTIFICATION

Product Name COLOR DEVELOPING REAGENT

Product Code(s) V-6281

Recommended Use Test kit reagent. Laboratory chemicals. Industrial (not for food or food contact use).

Company LaMotte Company, Inc.
802 Washington Avenue
P.O. Box 329
Chestertown, MD 21620
USA

Emergency Telephone Number 24 Hour Emergency Number (CHEM-TEL):
USA, Canada, Puerto Rico 1-800-255-3924
Outside North American Continent (Call collect) 813-248-0585

2. HAZARDS IDENTIFICATION**WARNING!****Emergency Overview**

Harmful if swallowed

Harmful by inhalation

Product dust may be irritating to eyes, skin and respiratory system

Appearance White**Physical State** Powder**Odor** Odorless**Potential Health Effects****Principle Routes of Exposure**

Eye contact, Inhalation, skin contact, and ingestion.

Acute Toxicity**Eyes**

Irritating to eyes. Causes irritation, redness, and pain.

Skin

May cause irritation. Symptoms can include redness, itching, and pain. May be absorbed through the skin in harmful amounts.

Inhalation

Harmful by inhalation. May cause irritation of respiratory tract.

Ingestion

Harmful if swallowed. Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea.

Chronic Effects

Chronic manganese poisoning primarily involves the central nervous system. Chronic manganese poisoning can result from excessive inhalation and ingestion. Early symptoms include sluggishness, sleepiness, and weakness in the legs. Kidney effects. Chronic inhalation exposure can cause lung damage.

3. COMPOSITION/INFORMATION ON INGREDIENTS

| Chemical Name | CAS-No | Weight % |
|---|------------|----------|
| N-(1-Naphthyl)ethylenediamine dihydrochloride | 1465-25-4 | 1 |
| Sulfanilamide | 63-74-1 | 2 |
| Manganese sulfate monohydrate | 10034-96-5 | 10 |
| Sodium citrate, dihydrate | 6132-04-3 | 30-40 |
| Ammonium chloride | 12125-02-9 | 45-55 |

4. FIRST AID MEASURES

| | |
|----------------------------|---|
| General Advice | Show this safety data sheet to the doctor in attendance. Consult a physician. |
| Eye Contact | Rinse thoroughly with plenty of water for at least 15 minutes, lifting lower and upper eyelids. Consult a physician. |
| Skin Contact | Wash off immediately with soap and plenty of water for at least 15 minutes while removing all contaminated clothing and shoes. Remove and wash contaminated clothing before re-use. Consult a physician. |
| Inhalation | Move to fresh air. If breathing is difficult, give oxygen. If not breathing, give artificial respiration and contact emergency personnel. Call a physician immediately. |
| Ingestion | Induce vomiting, but only if victim is fully conscious. Immediate medical attention is required. Drink plenty of water. Never give anything by mouth to an unconscious person. |
| Notes to Physician | See MSDS (material safety data sheet) for additional information. |
| Protection of First-aiders | Use personal protective equipment. See Section 8 for more detail. Do not use mouth-to-mouth method if victim ingested or inhaled the substance; induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. |

5. FIRE-FIGHTING MEASURES

| | | | | |
|--|-----------------|--|-------------|-----------------------------------|
| Flammable Properties | | Not flammable. | | |
| Flash Point | | Not applicable | | |
| Suitable Extinguishing Media | | Dry chemical, CO ₂ , water spray or alcohol-resistant foam. | | |
| Explosion Data | | | | |
| Specific Hazards Arising from the Chemical | | | | |
| Thermal decomposition can lead to release of toxic and corrosive gases/vapors. | | | | |
| Protective Equipment and Precautions for Firefighters | | As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear. | | |
| NFPA | Health Hazard 2 | Flammability 0 | Stability 0 | Physical and Chemical Hazards N/A |
| HMIS | Health Hazard 2 | Flammability 0 | Stability 0 | |

6. ACCIDENTAL RELEASE MEASURES

| | |
|-------------------------|--|
| Personal Precautions | Use personal protective equipment. Ensure adequate ventilation. Wear respiratory protection. Remove all sources of ignition. Keep people away from and upwind of spill/leak. |
| Methods for Containment | Sweep up in a manner that does not disperse dust and shovel into suitable containers for disposal. Do not flush to sewer. |
| Methods for Cleaning Up | Clean contaminated surface thoroughly. After cleaning, flush away traces with water. |
| Other Information | Ventilate the area. |

7. HANDLING AND STORAGE

| | |
|----------|--|
| Handling | Handle in accordance with good industrial hygiene and safety practice. Prevent contact with skin, eyes, and clothing. Do not ingest. Do not breathe vapors/dust. |
|----------|--|

Storage

Keep containers tightly closed in a dry, cool, and well-ventilated place. Keep away from oxidizing agents. Keep away from heat and sources of ignition. Keep away from heat, moisture, and incompatibles. Protect from moisture. Do not allow contact with air. Keep out of the reach of children.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

| Chemical Name | ACGIH TLV | OSHA PEL | NIOSH IDLH |
|--|--|------------|--|
| N-(1-Naphthyl)ethylenediamine dihydrochloride 1465-25-4 | None Known | None Known | None Known |
| Sulfanilamide 63-74-1 | None Known | None Known | None Known |
| Manganese sulfate monohydrate 10034-96-5 | TWA: 0.2 mg/m ³ | None Known | IDLH: 500 mg/m ³ TWA: 1 mg/m ³ STEL: 3 mg/m ³ |
| Sodium citrate, dihydrate 6132-04-3 | None Known | None Known | None Known |
| Ammonium chloride 12125-02-9 | = 20 mg/m ³ STEL TWA: 10 mg/m ³ | None Known | TWA: 10 mg/m ³ STEL: 20 mg/m ³ |

NIOSH IDLH: Immediately Dangerous to Life or Health

Engineering Measures

Showers
Eyewash stations
Ventilation systems.

Personal Protective Equipment**Eye/Face Protection**

Safety glasses with side-shields.

Skin and Body Protection

Wear protective gloves/clothing. Wear latex or nitrile gloves.

Respiratory Protection

Use mechanical ventilation (fume hood). When workers are facing concentrations above the exposure limit they must use appropriate certified respirators.

Hygiene Measures

Use only with adequate ventilation. Wear suitable gloves and eye/face protection. Avoid contact with skin, eyes and clothing. Wash hands and face before breaks and immediately after handling the product. Handle in accordance with good industrial hygiene and safety practice.

9. PHYSICAL AND CHEMICAL PROPERTIES

| | | | |
|---------------------|-------------------|--------------------------|--------------------------|
| Appearance | White | Odor | Odorless |
| Physical State | Powder | pH | 7 (0.1g/10mL water) |
| Flash Point | Not applicable | Autoignition Temperature | No data available |
| Boiling Point/Range | No data available | Freezing Point | No information available |

| | | | |
|----------------|-------------------|------------------|----------------|
| Solubility | Partly soluble | Evaporation Rate | Not applicable |
| Vapor Pressure | No data available | | |

10. STABILITY AND REACTIVITY

| | |
|-----------------------|--|
| Stability | Stable under normal conditions of use and storage. |
| Incompatible Products | Strong acids. Strong oxidizing agents. Strong bases. Finely powdered metals. |
| Conditions to Avoid | Exposure to air or moisture over prolonged periods. Excessive heat. Incompatible products. |

Hazardous Decomposition Products Ammonia. Hazardous decomposition products formed under fire conditions - carbon oxides (COx), nitrogen oxides (NOx), sulfur oxides (SOx), hydrogen chloride gas.

Hazardous Polymerization Hazardous polymerization does not occur.

11. TOXICOLOGICAL INFORMATION

Acute Toxicity

| Chemical Name | LD50 Oral | LD50 Dermal | LC50 Inhalation |
|---|--------------------|-------------|-----------------|
| N-(1-Naphthyl)ethylenediamine dihydrochloride | None Known | None Known | None Known |
| Sulfanilamide | 3900 mg/kg (Rat) | None Known | None Known |
| Manganese sulfate monohydrate | None Known | None Known | None Known |
| Sodium citrate, dihydrate | None Known | None Known | None Known |
| Ammonium chloride | 1410 mg/kg (Rat) | None Known | None Known |

Chronic Toxicity

Chronic Toxicity

Chronic manganese poisoning primarily involves the central nervous system. Chronic manganese poisoning can result from excessive inhalation and ingestion. Early symptoms include sluggishness, sleepiness, and weakness in the legs. Kidney effects. Chronic inhalation exposure can cause lung damage.

| Chemical Name | ACGIH | IARC | NTP | OSHA |
|---|------------|------------|------------|------------|
| N-(1-Naphthyl)ethylenediamine dihydrochloride | None Known | None Known | None Known | None Known |
| Sulfanilamide | None Known | None Known | None Known | None Known |
| Manganese sulfate monohydrate | None Known | None Known | None Known | None Known |
| Sodium citrate, dihydrate | None Known | None Known | None Known | None Known |
| Ammonium chloride | None Known | None Known | None Known | None Known |

Endocrine Disruptor Information

| Chemical Name | EU - Endocrine Disruptors Candidate List | EU - Endocrine Disruptors - Evaluated Substances | Japan - Endocrine Disruptor Information |
|---|--|--|---|
| N-(1-Naphthyl)ethylenediamine dihydrochloride | None Known | None Known | None Known |
| Sulfanilamide | None Known | None Known | None Known |
| Manganese sulfate monohydrate | None Known | None Known | None Known |
| Sodium citrate, dihydrate | None Known | None Known | None Known |
| Ammonium chloride | None Known | None Known | None Known |

12. ECOLOGICAL INFORMATION**Ecotoxicity**

May be harmful to aquatic organisms.

| Chemical Name | Toxicity to Algae | Toxicity to Fish | Microtox | Daphnia Magna (Water Flea) |
|---|----------------------------|---|------------|----------------------------|
| N-(1-Naphthyl)ethylenediamine dihydrochloride | None Known | None Known | None Known | None Known |
| Sulfanilamide | None Known | None Known | None Known | None Known |
| Manganese sulfate monohydrate | None Known | None Known | None Known | None Known |
| Sodium citrate, dihydrate | EC50 1800 - 3200 mg/L 96 h | LC50= 18000 mg/L Poecilia reticulata 96 h | None Known | None Known |
| Ammonium chloride | None Known | LC50= 209 mg/L Cyprinus carpio 96 h | None Known | EC50 = 202 mg/L 24 h |

| Chemical Name | Log Pow |
|---|------------|
| N-(1-Naphthyl)ethylenediamine dihydrochloride | None Known |
| Sulfanilamide | None Known |
| Manganese sulfate monohydrate | None Known |
| Sodium citrate, dihydrate | None Known |
| Ammonium chloride | None Known |

13. DISPOSAL CONSIDERATIONS**Waste Disposal Method**

Dispose of in accordance with local regulations.

Contaminated Packaging

Dispose of in accordance with local regulations.

| Chemical Name | RCRA - Halogenated Organic Compounds | RCRA - P Series Wastes | RCRA - F Series Wastes | RCRA - K Series Wastes |
|---|--------------------------------------|------------------------|------------------------|------------------------|
| N-(1-Naphthyl)ethylenediamine dihydrochloride - 1465-25-4 | None Known | None Known | None Known | None Known |
| Sulfanilamide - 63-74-1 | None Known | None Known | None Known | None Known |
| Manganese sulfate monohydrate - 10034-96-5 | None Known | None Known | None Known | None Known |
| Sodium citrate, dihydrate - 6132-04-3 | None Known | None Known | None Known | None Known |
| Ammonium chloride - 12125-02-9 | None Known | None Known | None Known | None Known |

14. TRANSPORT INFORMATION**DOT**

Not regulated

IATA

Not regulated

IMDG/IMO

Not regulated

15. REGULATORY INFORMATION**International Inventories**

COLOR DEVELOPING REAGENT

Product Code(s) V-6281

| Component | TSCA | DSL | EINECS/ELINCS | ENCS | IECSC | KECL | PICCS | AICS |
|--|---------|-----|---------------|------------------------------|-------|----------|-------|------|
| N-(1-Naphthyl)ethylenediamine dihydrochloride 1465-25-4 (1) | Present | X | X | ENCS | X | KECL | X | X |
| Sulfanilamide 63-74-1 (2) | Present | X | X | 3-1913; 3-1973; 3-2179 | X | KE-01188 | X | X |
| Manganese sulfate monohydrate 10034-96-5 (10) | TSCA | DSL | EINECS/ELINCS | ENCS | X | KECL | X | X |
| Sodium citrate, dihydrate 6132-04-3 (30-40) | TSCA | DSL | EINECS/ELINCS | ENCS | X | KECL | X | X |
| Ammonium chloride 12125-02-9 (45-55) | Present | X | X | 1-218 | X | KE-01645 | X | X |

U.S. Federal Regulations

SARA 313

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product contains a chemical or chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372

| Chemical Name | CAS-No | Weight % | SARA 313 - Threshold Values % |
|---|------------|----------|-------------------------------|
| N-(1-Naphthyl)ethylenediamine dihydrochloride | 1465-25-4 | 1 | None Known |
| Sulfanilamide | 63-74-1 | 2 | None Known |
| Manganese sulfate monohydrate | 10034-96-5 | 10 | 1.0 |
| Sodium citrate, dihydrate | 6132-04-3 | 30-40 | None Known |
| Ammonium chloride | 12125-02-9 | 45-55 | 1.0 |

SARA 311/312 Hazard Categories

| | |
|-----------------------------------|-----|
| Acute Health Hazard | Yes |
| Chronic Health Hazard | Yes |
| Fire Hazard | No |
| Sudden Release of Pressure Hazard | No |
| Reactive Hazard | No |

Clean Water Act

This product contains the following substances which are regulated pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42).

| Component | CWA - Reportable Quantities | CWA - Toxic Pollutants | CWA - Priority Pollutants | CWA - Hazardous Substances |
|--|-----------------------------|------------------------|---------------------------|----------------------------|
| N-(1-Naphthyl)ethylenediamine dihydrochloride 1465-25-4 (1) | None Known | None Known | None Known | None Known |
| Sulfanilamide 63-74-1 (2) | None Known | None Known | None Known | None Known |
| Manganese sulfate monohydrate 10034-96-5 (10) | None Known | None Known | None Known | None Known |
| Sodium citrate, dihydrate 6132-04-3 (30-40) | None Known | None Known | None Known | None Known |
| Ammonium chloride 12125-02-9 (45-55) | 5000 lb | None Known | None Known | X |

Clean Air Act, Section 112 Hazardous Air Pollutants (HAPs) (see 40 CFR 61)

| Chemical Name | CAS-No | Weight % | HAPS data | VOC Chemicals | Class 1 Ozone Depletors | Class 2 Ozone Depletors |
|---------------|--------|----------|-----------|---------------|-------------------------|-------------------------|
|---------------|--------|----------|-----------|---------------|-------------------------|-------------------------|

| | | | | | | |
|---|------------|-------|--|------------|------------|------------|
| N-(1-Naphthyl)ethylenediamine dihydrochloride | 1465-25-4 | 1 | None Known | None Known | None Known | None Known |
| Sulfanilamide | 63-74-1 | 2 | None Known | None Known | None Known | None Known |
| Manganese sulfate monohydrate | 10034-96-5 | 10 | Present (Includes any unique chemical substance that contains Manganese as part of its infrastructure) | None Known | None Known | None Known |
| Sodium citrate, dihydrate | 6132-04-3 | 30-40 | None Known | None Known | None Known | None Known |
| Ammonium chloride | 12125-02-9 | 45-55 | None Known | None Known | None Known | None Known |

CERCLA

| Chemical Name | Hazardous Substances RQs | Extremely Hazardous Substances RQs |
|---|--------------------------|------------------------------------|
| N-(1-Naphthyl)ethylenediamine dihydrochloride | None Known | None Known |
| Sulfanilamide | None Known | None Known |
| Manganese sulfate monohydrate | None Known | None Known |
| Sodium citrate, dihydrate | None Known | None Known |
| Ammonium chloride | 5000 lb | None Known |

U.S. State Regulations**California Proposition 65**

This product does not contain any Proposition 65 chemicals

| Chemical Name | CAS-No | California Prop. 65 |
|---|------------|---------------------|
| N-(1-Naphthyl)ethylenediamine dihydrochloride | 1465-25-4 | None Known |
| Sulfanilamide | 63-74-1 | None Known |
| Manganese sulfate monohydrate | 10034-96-5 | None Known |
| Sodium citrate, dihydrate | 6132-04-3 | None Known |
| Ammonium chloride | 12125-02-9 | None Known |

| Chemical Name | Massachusetts | New Jersey | Pennsylvania | Illinois | Rhode Island |
|---|---------------|------------|--------------|------------|--------------|
| N-(1-Naphthyl)ethylenediamine dihydrochloride | None Known | None Known | None Known | None Known | None Known |
| Sulfanilamide | None Known | None Known | None Known | None Known | None Known |
| Manganese sulfate monohydrate | None Known | X | X | X | None Known |
| Sodium citrate, dihydrate | None Known | None Known | None Known | None Known | None Known |
| Ammonium chloride | X | X | X | None Known | X |

International Regulations**Mexico - Grade**

| Chemical Name | Carcinogen Status | Exposure Limits |
|---|-------------------|------------------------------------|
| N-(1-Naphthyl)ethylenediamine dihydrochloride | None Known | None Known |
| Sulfanilamide | None Known | None Known |
| Manganese sulfate monohydrate | None Known | Mexico: TWA= 0.2 mg/m ³ |
| Sodium citrate, dihydrate | None Known | None Known |
| Ammonium chloride | None Known | Mexico: TWA= 10 mg/m ³ |

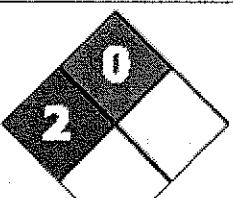

Canada

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all the information required by the CPR

| Component | WHMIS Hazard Class |
|--|---|
| N-(1-Naphthyl)ethylenediamine dihydrochloride 1465-25-4 (1) | Not determined |
| Sulfanilamide 63-74-1 (2) | Not determined |
| Manganese sulfate monohydrate 10034-96-5 (10) | 1 % D2B |
| Sodium citrate, dihydrate 6132-04-3 (30-40) | Uncontrolled product according to WHMIS classification criteria |
| Ammonium chloride 12125-02-9 (45-55) | 1 % D2B |



16. OTHER INFORMATION

| NFPA | HMIS | PPE | Transport Symbol | | | | | | |
|---|---|---------------|------------------|-----------------|---|------------|---|---|--|
|  | <table><tr><td>Health Hazard</td><td>2</td></tr><tr><td>Physical Hazard</td><td>0</td></tr><tr><td>Reactivity</td><td>0</td></tr></table> | Health Hazard | 2 | Physical Hazard | 0 | Reactivity | 0 |  | |
| Health Hazard | 2 | | | | | | | | |
| Physical Hazard | 0 | | | | | | | | |
| Reactivity | 0 | | | | | | | | |

Prepared By
 Issuing Date
 Revision Date
 Revision Note
 Update to Format
 Disclaimer

Regulatory Affairs Department
 5/31/2012
 31-May-2012

The information provided on this MSDS is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guide for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered as a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other material or in any process, unless specified in the text.

End of MSDS



Issuing Date 3/3/2010

Revision Number 0

1. PRODUCT AND COMPANY IDENTIFICATION

Product Name Copper 1

Product Code(s) 6446

Synonyms none

Recommended Use Laboratory chemicals. Industrial (not for food or food contact use). Chemical additive. Swimming pool chemicals.

Company LaMotte Company, Inc.
802 Washington Avenue
P.O. Box 329
Chestertown, MD 21620
USA

Emergency Telephone Number 24 Hour Emergency Number (CHEM-TEL):
USA, Canada, Puerto Rico 1-800-255-3924
Outside North American Continent (Call collect) 813-248-0585

2. HAZARDS IDENTIFICATION**Emergency Overview**

Harmful if swallowed
Irritating to eyes, respiratory system and skin

| | | |
|--------------------------------------|-----------------------|--------------------------|
| Appearance Clear, colorless solution | Physical State Liquid | Odor Pungent, Ammoniacal |
|--------------------------------------|-----------------------|--------------------------|

OSHA Regulatory Status This product is an article which contains a chemical substance. Safety information is given for exposure to the article as sold, but considers exposure to the chemical if user has direct eye and skin contact with the chemical.

Potential Health Effects

Principle Routes of Exposure Skin contact, Inhalation, Ingestion

Acute Toxicity

| | |
|------------|-----------------------------------|
| Eyes | Irritating to eyes. |
| Skin | Irritating to skin. |
| Inhalation | Irritating to respiratory system. |
| Ingestion | Harmful if swallowed. |

Chronic Effects**3. COMPOSITION/INFORMATION ON INGREDIENTS**

| Chemical Name | CAS-No | Weight % |
|--|------------|----------|
| Ammonium hydroxide | 1336-21-6 | <4 |
| Diethylcarbamodithioic acid sodium salt trihydrate | 20624-25-3 | 1 |
| Toluene | 108-88-3 | <0.1 |
| Water | 7732-18-5 | to 100% |

WARNING! This product contains Toluene, a chemical known to the State of California to cause birth defects or other reproductive harm.

4. FIRST AID MEASURES

| | |
|-----------------------------------|---|
| General Advice | Do not get in eyes, on skin, or on clothing. |
| Eye Contact | Rinse thoroughly with plenty of water for at least 15 minutes, lifting lower and upper eyelids. Consult a physician. |
| Skin Contact | Wash off immediately with soap and plenty of water for at least 15 minutes while removing all contaminated clothing and shoes. Consult a physician. |
| Inhalation | Move to fresh air. If breathing is difficult, give oxygen. If not breathing, give artificial respiration. Call a physician immediately. |
| Ingestion | Do NOT induce vomiting. Drink plenty of water. Clean mouth with water. Never give anything by mouth to an unconscious person. Consult a physician. |
| Protection of First-aiders | Use personal protective equipment. See Section 8 for more detail. Do not use mouth-to-mouth method if victim ingested or inhaled the substance; induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. |

5. FIRE-FIGHTING MEASURES

Suitable Extinguishing Media Water spray, dry chemical, carbon dioxide (CO₂), or foam.

Explosion Data

NFPA

Health Hazard 1

Flammability 0

Stability 0

Physical and Chemical
Hazards -

6. ACCIDENTAL RELEASE MEASURES

| | |
|--------------------------------|---|
| Personal Precautions | Refer to Section 8. Avoid contact with skin, eyes and clothing. |
| Methods for Containment | Contain and collect spillage with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations (see Section 13). |
| Methods for Cleaning Up | Use personal protective equipment. Contain and collect spillage with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations (see Section 13). Following product recovery, flush area with water. |

7. HANDLING AND STORAGE

| | |
|-----------------|---|
| Handling | Handle in accordance with good industrial hygiene and safety practice. Prevent contact with skin, eyes and clothing. Do not ingest. Do not eat, drink or smoke when using this product. |
| Storage | Keep containers tightly closed in a dry, cool and well-ventilated place. Separate from acids and alkalis. Keep out of the reach of children. |

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

| Chemical Name | ACGIH TLV | OSHA PEL | NIOSH IDLH |
|---------------------------------|------------------|------------------|------------------|
| Ammonium hydroxide 1336-21-6 | None Established | None Established | None Established |

| | | | |
|--|------------------|------------------|---|
| Diethylcarbamodithioic acid sodium salt trihydrate 20624-25-3 | None Established | None Established | None Established |
| Toluene 108-88-3 | TWA: 20 ppm | TWA: 200 ppm | IDLH: 500 ppm TWA: 100 ppm TWA: 375 mg/m ³ STEL: 560 mg/m ³ STEL: 150 ppm |
| Water 7732-18-5 | None Established | None Established | None Established |

Personal Protective Equipment**Eye/Face Protection**

Safety glasses with side-shields.

Skin and Body Protection

Gloves & Lab Coat.

Respiratory Protection

Use only with adequate ventilation. In case of insufficient ventilation wear suitable respiratory equipment.

Hygiene Measures

Handle in accordance with good industrial hygiene and safety practice.

9. PHYSICAL AND CHEMICAL PROPERTIES

| | | | |
|---------------------|---------------------------|----------------|--------------------------|
| Appearance | Clear, colorless solution | Odor | Pungent, Ammoniacal |
| Physical State | Liquid | pH | 12 |
| Boiling Point/Range | ca 100 °C | Freezing Point | No information available |

| | | | |
|----------------|------------------|---------------|-------------------|
| Vapor Pressure | >20 mmHg @ 20 °C | Vapor Density | No data available |
|----------------|------------------|---------------|-------------------|

10. STABILITY AND REACTIVITY

| | |
|----------------------------------|--|
| Stability | Stable under normal conditions. |
| Incompatible Products | Strong acids. Metals. Chlorine. |
| Conditions to Avoid | Excessive heat. |
| Hazardous Decomposition Products | Ammonia. Nitrogen oxides (NOx). Contact with acid can release carbon disulfide.. |
| Hazardous Polymerization | Hazardous polymerization does not occur. |

11. TOXICOLOGICAL INFORMATION**Acute Toxicity**

| Chemical Name | LD50 Oral | LD50 Dermal | LC50 Inhalation |
|--|--------------------|-----------------------|--|
| Ammonium hydroxide | 350 mg/kg (Rat) | None Established | None Established |
| Diethylcarbamodithioic acid sodium salt trihydrate | 1500 mg/kg (Rat) | None Established | None Established |
| Toluene | 636 mg/kg (Rat) | 8390 mg/kg (Rabbit) | 12.5 mg/L (Rat) 4 h 26700 ppm (Rat) 1 h |
| Water | 90 mL/kg (Rat) | None Established | None Established |

Chronic Toxicity

| Chemical Name | ACGIH | IARC | NTP | OSHA |
|--------------------|------------------|------------------|------------------|------------------|
| Ammonium hydroxide | None Established | None Established | None Established | None Established |

| | | | | |
|--|------------------|------------------|------------------|------------------|
| Diethylcarbamidithioic acid sodium salt trihydrate | None Established | None Established | None Established | None Established |
| Toluene | None Established | None Established | None Established | None Established |
| Water | None Established | None Established | None Established | None Established |

| Chemical Name | EU - Endocrine Disruptors Candidate List | EU - Endocrine Disruptors - Evaluated Substances | Japan - Endocrine Disruptor Information |
|--|--|--|---|
| Ammonium hydroxide | None Established | None Established | None Established |
| Diethylcarbamidithioic acid sodium salt trihydrate | None Established | None Established | None Established |
| Toluene | None Established | None Established | None Established |
| Water | None Established | None Established | None Established |

12. ECOLOGICAL INFORMATION

Ecotoxicity

| Chemical Name | Toxicity to Algae | Toxicity to Fish | Microtox | Daphnia Magna (Water Flea) |
|--|----------------------|--|-------------------------|---|
| Ammonium hydroxide | None Established | LC50= 8.2 mg/L Pimephales promelas 96 h | None Established | EC50 = 0.66 mg/L 48 h |
| Diethylcarbamidithioic acid sodium salt trihydrate | None Established | None Established | None Established | None Established |
| Toluene | EC50 > 433 mg/L 96 h | LC50= 13 mg/L Lepomis macrochirus 96 h LC50= 24.0 mg/L Lepomis macrochirus 96 h LC50= 24.0 mg/L Oncorhynchus mykiss 96 h LC50= 25 mg/L Pimephales promelas 96 h | EC50 = 19.7 mg/L 30 min | EC50 = 11.3 mg/L 48 h EC50 = 310 mg/L 48 h |
| Water | None Established | None Established | None Established | None Established |

| Chemical Name | Log Pow |
|--|------------------|
| Ammonium hydroxide | None Established |
| Diethylcarbamidithioic acid sodium salt trihydrate | None Established |
| Toluene | = 2.65 |
| Water | None Established |

13. DISPOSAL CONSIDERATIONS

Waste Disposal Method

Dispose of in accordance with local regulations.

| Chemical Name |
|---|
| Ammonium hydroxide - 1336-21-6 |
| Diethylcarbamidithioic acid sodium salt trihydrate - 20624-25-3 |
| Toluene - 108-88-3 |
| Water - 7732-18-5 |

| Chemical Name | RCRA - Halogenated Organic Compounds | RCRA - P Series Wastes | RCRA - F Series Wastes | RCRA - K Series Wastes |
|---|--------------------------------------|------------------------|------------------------|------------------------|
| Ammonium hydroxide - 1336-21-6 | None Established | None Established | None Established | None Established |
| Diethylcarbamidithioic acid sodium salt trihydrate - 20624-25-3 | None Established | None Established | None Established | None Established |

| | | | | |
|--------------------|------------------|------------------|--|------------------|
| Toluene - 108-88-3 | None Established | None Established | Toxic waste; (waste number F025); Waste description: Condensed light ends, spent filters and filter aids, and spent desiccant wastes from the production of certain chlorinated aliphatic hydrocarbons, by free radical catalyzed processes. These chlorinated | None Established |
| Water - 7732-18-5 | None Established | None Established | None Established | None Established |

| Chemical Name | California Hazardous Waste Status |
|--------------------|-----------------------------------|
| Ammonium hydroxide | Toxic; Corrosive |
| Toluene | Toxic; Ignitable |

14. TRANSPORT INFORMATION

DOT Not regulated

IATA Not regulated

IMDG/IMO Not regulated

15. REGULATORY INFORMATION

International Inventories

| Component | TSCA | DSL | EINECS/ELINCS | ENCS | IECSC | KECL | PICCS | AICS |
|--|---------|-----|---------------|-------|-------|----------|-------|------|
| Ammonium hydroxide 1336-21-6 (<4) | Present | X | X | 1-314 | X | KE-01688 | X | X |
| Diethylcarbomodithioic acid sodium salt trihydrate 20624-25-3 (1) | TSCA | DSL | EINECS/ELINCS | ENCS | X | KECL | X | X |
| Toluene 108-88-3 (<0.1) | Present | X | X | 3-2 | X | KE-33936 | X | X |
| Water 7732-18-5 (to 100%) | Present | X | X | ENCS | X | KE-35400 | X | X |

U.S. Federal Regulations

SARA 313

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product contains a chemical or chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372:

| Chemical Name | CAS-No | Weight % | SARA 313 - Threshold Values % |
|--|------------|----------|-------------------------------|
| Ammonium hydroxide | 1336-21-6 | <4 | 1.0 |
| Diethylcarbomodithioic acid sodium salt trihydrate | 20624-25-3 | 1 | None Established |
| Toluene | 108-88-3 | <0.1 | 1.0 |
| Water | 7732-18-5 | to 100% | None Established |

SARA 311/312 Hazard Categories

| | |
|-----------------------------------|-----|
| Acute Health Hazard | Yes |
| Chronic Health Hazard | No |
| Fire Hazard | No |
| Sudden Release of Pressure Hazard | No |
| Reactive Hazard | No |

Clean Water Act

| Component | CWA - Reportable Quantities | CWA - Toxic Pollutants | CWA - Priority Pollutants | CWA - Hazardous Substances |
|--|-----------------------------|------------------------|---------------------------|----------------------------|
| Ammonium hydroxide 1336-21-6 (<4) | 1000 lb | None Established | None Established | X |
| Diethylcarbamodithioic acid sodium salt trihydrate 20624-25-3 (1) | None Established | None Established | None Established | None Established |
| Toluene 108-88-3 (<0.1) | 1000 lb | X | X | X |
| Water 7732-18-5 (to 100%) | None Established | None Established | None Established | None Established |

| Chemical Name | CAS-No | Weight % | HAPS data | VOC Chemicals | Class 1 Ozone Depletors | Class 2 Ozone Depletors |
|--|------------|----------|------------------|------------------|-------------------------|-------------------------|
| Ammonium hydroxide | 1336-21-6 | <4 | None Established | None Established | None Established | None Established |
| Diethylcarbamodithioic acid sodium salt trihydrate | 20624-25-3 | 1 | None Established | None Established | None Established | None Established |
| Toluene | 108-88-3 | <0.1 | Present | Group I | None Established | None Established |
| Water | 7732-18-5 | to 100% | None Established | None Established | None Established | None Established |

CERCLA

| Chemical Name | Hazardous Substances RQs | Extremely Hazardous Substances RQs |
|--|--------------------------|------------------------------------|
| Ammonium hydroxide | 1000 lb | None Established |
| Diethylcarbamodithioic acid sodium salt trihydrate | None Established | None Established |
| Toluene | 1000 lb | None Established |
| Water | None Established | None Established |

U.S. State Regulations**California Proposition 65**

WARNING! This product contains a chemical known to the State of California to cause birth defects or other reproductive harm.

| Chemical Name | CAS-No | California Prop. 65 |
|--|------------|---------------------|
| Ammonium hydroxide | 1336-21-6 | None Established |
| Diethylcarbamodithioic acid sodium salt trihydrate | 20624-25-3 | None Established |
| Toluene | 108-88-3 | Developmental |
| Water | 7732-18-5 | None Established |

| Chemical Name | Massachusetts | New Jersey | Pennsylvania | Illinois | Rhode Island |
|--|------------------|------------------|------------------|------------------|------------------|
| Ammonium hydroxide | X | X | X | None Established | None Established |
| Diethylcarbamodithioic acid sodium salt trihydrate | None Established | None Established | None Established | None Established | None Established |
| Toluene | X | X | X | X | X |
| Water | None Established | None Established | None Established | None Established | None Established |

International Regulations**Mexico - Grade**

No information available.

| Chemical Name | Carcinogen Status | Exposure Limits |
|--|-------------------|---|
| Ammonium hydroxide | None Established | None Established |
| Diethylcarbamodithioic acid sodium salt trihydrate | None Established | None Established |
| Toluene | None Established | Mexico: TWA= 188 mg/m ³ Mexico: TWA= 50 ppm |
| Water | None Established | None Established |

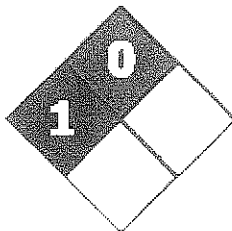

Canada

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

WHMIS Hazard Class
Not determined

| Chemical Name | NPRI |
|---------------|------|
| Toluene | X |

16. OTHER INFORMATION

| NFPA | HMIS | PPE | Transport Symbol | | | | | | |
|---|---|---------------|------------------|-------------|---|------------|---|--|--|
|  | <table><tr><td>Health Hazard</td><td>1</td></tr><tr><td>Fire Hazard</td><td>0</td></tr><tr><td>Reactivity</td><td>0</td></tr></table> | Health Hazard | 1 | Fire Hazard | 0 | Reactivity | 0 |  | |
| Health Hazard | 1 | | | | | | | | |
| Fire Hazard | 0 | | | | | | | | |
| Reactivity | 0 | | | | | | | | |

Prepared By Regulatory Affairs Department

Issuing Date 3/3/2010

Revision Date

Revision Note Initial Release.

Disclaimer

The information provided on this MSDS is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guide for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered as a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other material or in any process, unless specified in the text.

End of MSDS



Issuing Date 4/25/2011

Revision Number 0

1. PRODUCT AND COMPANY IDENTIFICATION

Product Name Hardness Buffer Reagent

Product Code(s) 4255

Recommended Use Test kit reagent. Laboratory chemicals. Industrial (not for food or food contact use).

Company LaMotte Company, Inc.
802 Washington Avenue
P.O. Box 329
Chestertown, MD 21620
USA

Emergency Telephone Number 24 Hour Emergency Number (CHEM-TEL):
USA, Canada, Puerto Rico 1-800-255-3924
Outside North American Continent (Call collect) 813-248-0585

2. HAZARDS IDENTIFICATION**DANGER! POISON!****Emergency Overview**

Corrosive

Liquid and mist cause severe burns to all body tissue
Inhalation may cause coughing, chest pains, damage to lungs
May be fatal if inhaled or swallowed

Appearance Clear, colorless**Physical State** Liquid**Odor** Pungent, Ammonia

OSHA Regulatory Status Safety information is given for exposure to the reagent as sold and considers exposure to the chemical if user has direct eye and skin contact.

Potential Health Effects

Principle Routes of Exposure Eye contact, Inhalation, skin contact, and ingestion.

Acute Toxicity**Eyes**

Corrosive to the eyes and may cause severe damage including blindness. Vapor may cause irritation.

Skin

Contact with skin causes irritation and burns.

Inhalation

Inhalation of vapors can cause coughing, choking, inflammation of the upper respiratory tract; in higher concentrations, burns pulmonary edema, and death. Brief exposure to 5000ppm can be fatal.

Ingestion

May be fatal if swallowed. Swallowing may cause severe burns of mouth, throat, and stomach. Scarring of tissues and death may result. Symptoms may include pain in mouth, chest, abdomen, coughing, vomiting, and collapse.

Chronic Effects

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

Aggravated Medical Conditions Respiratory disorders.

Environmental Hazard See Section 12 for additional Ecological Information.

3. COMPOSITION/INFORMATION ON INGREDIENTS

| Chemical Name | CAS-No | Weight % |
|--------------------|------------|----------|
| Ammonium chloride | 12125-02-9 | 7 |
| Ammonium hydroxide | 1336-21-6 | <57 |
| Water, distilled | 7732-18-5 | to 100% |

4. FIRST AID MEASURES

| | |
|-----------------------------------|---|
| General Advice | Do not get in eyes, on skin, or on clothing. Do not breathe dust/fume/gas/mist/vapors/spray. Take off contaminated clothing and shoes immediately. Immediate medical attention is required. |
| Eye Contact | Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Seek immediate medical attention/advice. |
| Skin Contact | Remove material from skin immediately. Wash off immediately with soap and plenty of water for at least 15 minutes while removing all contaminated clothing and shoes. Remove and wash contaminated clothing before re-use. Seek immediate medical attention/advice. |
| Inhalation | Move to fresh air. If breathing is difficult, give oxygen. If not breathing, give artificial respiration and contact emergency personnel. Call a physician immediately. |
| Ingestion | DO NOT INDUCE VOMITING. Drink plenty of water. Clean mouth with water. Never give anything by mouth to an unconscious person. Immediate medical attention is required. |
| Notes to Physician | See MSDS (material safety data sheet) for additional information. |
| Protection of First-aiders | Use personal protective equipment. See Section 8 for more detail. Do not use mouth-to-mouth method if victim ingested or inhaled the substance; induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. |

5. FIRE-FIGHTING MEASURES

| | | | | |
|--|-----------------|--|-------------|-----------------------------------|
| Flammable Properties | | Vapors are flammable. | | |
| Flash Point | | Not applicable | | |
| Suitable Extinguishing Media | | Water spray, dry chemical, carbon dioxide (CO ₂), or foam. | | |
| <u>Explosion Data</u> | | | | |
| Specific Hazards Arising from the Chemical | | | | |
| Closed containers may explode when heated. | | | | |
| <u>NFPA</u> | Health Hazard 3 | Flammability 1 | Stability 0 | Physical and Chemical Hazards N/A |
| HMIS | Health Hazard 3 | Flammability 0 | Stability 1 | |

6. ACCIDENTAL RELEASE MEASURES

| | |
|-------------------------|---|
| Personal Precautions | Use personal protective equipment. Ensure adequate ventilation. Wear respiratory protection. If you have not donned special protective clothing approved for this material, do not expose yourself to any risk of this material touching you. Evacuate personnel to safe areas. |
| Methods for Containment | Dike to collect large liquid spills. Contain and collect spillage with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations (see Section 13). Do not flush to sewer. |
| Methods for Cleaning Up | Use a non-combustible material like vermiculite, sand or earth to soak up the product and place into a container for later disposal. Keep in suitable and closed containers for disposal. |
| Other Information | Ventilate the area. |

7. HANDLING AND STORAGE

| | |
|----------|---|
| Handling | Handle in accordance with good industrial hygiene and safety practice. Prevent contact with skin, eyes, and clothing. Do not ingest. Do not breathe vapors or spray mist. Do NOT mix with acids. |
| Storage | Keep containers tightly closed in a dry, cool, and well-ventilated place. Store below 25°C (77°F). Keep away from heat and incompatibles. Protect from sunlight. Keep out of the reach of children. |

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

| Chemical Name | ACGIH TLV | OSHA PEL | NIOSH IDLH |
|---------------------------------|--|------------|---|
| Ammonium chloride 12125-02-9 | = 20 mg/m ³ STEL TWA: 10 mg/m ³ | None Known | TWA: 10 mg/m ³ STEL: 20 mg/m ³ |
| Ammonium hydroxide 1336-21-6 | None Known | None Known | None Known |
| Water, distilled 7732-18-5 | None Known | None Known | None Known |

Personal Protective Equipment**Eye/Face Protection**

Safety glasses with side-shields. If splashes are likely to occur, wear:. Face-shield. Maintain eye wash and quick drench shower facilities in work area.

Skin and Body Protection

Wear protective gloves/clothing. Neoprene and nitrile rubber are recommended materials.

Respiratory Protection

Use mechanical ventilation (fume hood). If exposure limits are exceeded or irritation is experienced, NIOSH/MSHA approved respiratory protection with *Ammonia* cartridges should be worn.

Hygiene Measures

Use only with adequate ventilation. Wear suitable gloves and eye/face protection. Avoid contact with skin, eyes and clothing. Wash hands and face before breaks and immediately after handling the product. Handle in accordance with good industrial hygiene and safety practice.

9. PHYSICAL AND CHEMICAL PROPERTIES

| | | | |
|---------------------|--|----------------------------|---------------------------------------|
| Appearance | Clear, colorless | Odor | Pungent, Ammonia |
| Physical State | Liquid | pH | 11 |
| Flash Point | Not applicable | Autoignition Temperature | 651°C (1204°F) for Ammonium Hydroxide |
| Boiling Point/Range | ca. 36°C / 97°F for Ammonium Hydroxide | Freezing Point | No information available |
| | | Flammability Limits in Air | For Ammonium Hydroxide |
| | | Upper | 16% |
| | | Lower | 25% |
| Solubility | Soluble | Evaporation Rate | No data available |
| Vapor Pressure | No data available | Vapor Density | 0.60 NH ₃ (Air = 1) |

10. STABILITY AND REACTIVITY

| | |
|----------------------------------|---|
| Stability | Stable under normal conditions of use and storage. |
| Incompatible Products | Strong acids. Metals. Sodium hypochlorite. |
| Conditions to Avoid | Ignitions sources - heat, sparks and open flames. Direct sunlight. Incompatible products. |
| Hazardous Decomposition Products | Burning may produce: Ammonia. Nitrogen oxides (NOx). |
| Hazardous Polymerization | Hazardous polymerization does not occur. |

11. TOXICOLOGICAL INFORMATION

Acute Toxicity

| | |
|---------------------|--|
| Product Information | Harmful if swallowed, inhaled, or absorbed through skin. |
|---------------------|--|

| Chemical Name | LD50 Oral | LD50 Dermal | LC50 Inhalation |
|--------------------|--------------------|-------------|-----------------|
| Ammonium chloride | 1410 mg/kg (Rat) | None Known | None Known |
| Ammonium hydroxide | 350 mg/kg (Rat) | None Known | None Known |
| Water, distilled | None Known | None Known | None Known |

Chronic Toxicity

| | |
|------------------|---|
| Chronic Toxicity | Repeated exposure may cause damage to the tissues of the mucous membranes, respiratory tract, eyes, and skin. |
|------------------|---|

| Chemical Name | ACGIH | IARC | NTP | OSHA |
|--------------------|------------|------------|------------|------------|
| Ammonium chloride | None Known | None Known | None Known | None Known |
| Ammonium hydroxide | None Known | None Known | None Known | None Known |
| Water, distilled | None Known | None Known | None Known | None Known |

| Chemical Name | EU - Endocrine Disruptors Candidate List | EU - Endocrine Disruptors - Evaluated Substances | Japan - Endocrine Disruptor Information |
|--------------------|--|--|---|
| Ammonium chloride | None Known | None Known | None Known |
| Ammonium hydroxide | None Known | None Known | None Known |
| Water, distilled | None Known | None Known | None Known |

12. ECOLOGICAL INFORMATION**Ecotoxicity**

| Chemical Name | Toxicity to Algae | Toxicity to Fish | Microtox | Daphnia Magna (Water Flea) |
|--------------------|-------------------|---|------------|----------------------------|
| Ammonium chloride | None Known | LC50= 209 mg/L Cyprinus carpio 96 h | None Known | EC50 = 202 mg/L 24 h |
| Ammonium hydroxide | None Known | LC50= 8.2 mg/L Pimephales promelas 96 h | None Known | EC50 = 0.66 mg/L 48 h |
| Water, distilled | None Known | None Known | None Known | None Known |

Bioaccumulation/Accumulation

This material is not expected to significantly bioaccumulate.

| Chemical Name | Log Pow |
|--------------------|------------|
| Ammonium chloride | None Known |
| Ammonium hydroxide | None Known |
| Water, distilled | None Known |

13. DISPOSAL CONSIDERATIONS**Waste Disposal Method**

Dispose of in accordance with local regulations. Should not be released into the environment.

Contaminated Packaging

Dispose of in accordance with local regulations.

| Chemical Name | RCRA - Halogenated Organic Compounds | RCRA - P Series Wastes | RCRA - F Series Wastes | RCRA - K Series Wastes |
|--------------------------------|--------------------------------------|------------------------|------------------------|------------------------|
| Ammonium chloride - 12125-02-9 | None Known | None Known | None Known | None Known |
| Ammonium hydroxide - 1336-21-6 | None Known | None Known | None Known | None Known |
| Water, distilled - 7732-18-5 | None Known | None Known | None Known | None Known |

14. TRANSPORT INFORMATIONDOT

| | |
|--------------------------|---|
| Proper Shipping Name | AMMONIA SOLUTION (With >10% - <35% AMMONIA) |
| Hazard Class | 8 |
| UN-No | 2672 |
| Packing Group | III |
| Reportable Quantity (RQ) | 1000lb for Ammonium hydroxide, 5000lb Ammonium chloride |

IATA

| | |
|----------------------|---|
| UN-No | 2672 |
| Proper Shipping Name | AMMONIA SOLUTION (With >10% - <35% AMMONIA) |
| Hazard Class | 8 |
| Packing Group | III |

IMDG/IMO

| | |
|----------------------|---|
| Proper Shipping Name | AMMONIA SOLUTION (With >10% - <35% AMMONIA) |
| Hazard Class | 8 |
| UN-No | 2672 |
| Packing Group | III |

15. REGULATORY INFORMATIONInternational Inventories

| Component | TSCA | DSL | EINECS/ELINCS | ENCS | IECSC | KECL | PICCS | AICS |
|---|---------|-----|---------------|-------|-------|----------|-------|------|
| Ammonium chloride 12125-02-9 (7) | Present | X | X | 1-218 | X | KE-01645 | X | X |
| Ammonium hydroxide 1336-21-6 (<57) | Present | X | X | 1-314 | X | KE-01688 | X | X |
| Water, distilled 7732-18-5 (to 100%) | Present | X | X | ENCS | X | KE-35400 | X | X |

U.S. Federal Regulations**SARA 313**

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product contains a chemical or chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372

| Chemical Name | CAS-No | Weight % | SARA 313 - Threshold Values % |
|--------------------|------------|----------|-------------------------------|
| Ammonium chloride | 12125-02-9 | 7 | 1.0 |
| Ammonium hydroxide | 1336-21-6 | <57 | 1.0 |
| Water, distilled | 7732-18-5 | to 100% | None Known |

SARA 311/312 Hazard Categories

| | |
|-----------------------------------|-----|
| Acute Health Hazard | Yes |
| Chronic Health Hazard | Yes |
| Fire Hazard | No |
| Sudden Release of Pressure Hazard | No |
| Reactive Hazard | No |

Clean Water Act

This product contains the following substances which are regulated pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42).

| Component | CWA - Reportable Quantities | CWA - Toxic Pollutants | CWA - Priority Pollutants | CWA - Hazardous Substances |
|---|-----------------------------|------------------------|---------------------------|----------------------------|
| Ammonium chloride 12125-02-9 (7) | 5000 lb | None Known | None Known | X |
| Ammonium hydroxide 1336-21-6 (<57) | 1000 lb | None Known | None Known | X |
| Water, distilled 7732-18-5 (to 100%) | None Known | None Known | None Known | None Known |

Clean Air Act, Section 112 Hazardous Air Pollutants (HAPs) (see 40 CFR 61)

This product does not contain any HAPs.

| Chemical Name | CAS-No | Weight % | HAPS data | VOC Chemicals | Class 1 Ozone Depletors | Class 2 Ozone Depletors |
|--------------------|------------|----------|------------|---------------|-------------------------|-------------------------|
| Ammonium chloride | 12125-02-9 | 7 | None Known | None Known | None Known | None Known |
| Ammonium hydroxide | 1336-21-6 | <57 | None Known | None Known | None Known | None Known |
| Water, distilled | 7732-18-5 | to 100% | None Known | None Known | None Known | None Known |

CERCLA

| Chemical Name | Hazardous Substances RQs | Extremely Hazardous Substances RQs |
|--------------------|--------------------------|------------------------------------|
| Ammonium chloride | 5000 lb | None Known |
| Ammonium hydroxide | 1000 lb | None Known |

| | | |
|------------------|------------|------------|
| Water, distilled | None Known | None Known |
|------------------|------------|------------|

U.S. State Regulations**California Proposition 65**

This product does not contain any Proposition 65 chemicals

| Chemical Name | CAS-No | California Prop. 65 |
|--------------------|------------|---------------------|
| Ammonium chloride | 12125-02-9 | None Known |
| Ammonium hydroxide | 1336-21-6 | None Known |
| Water, distilled | 7732-18-5 | None Known |

| Chemical Name | Massachusetts | New Jersey | Pennsylvania | Illinois | Rhode Island |
|--------------------|---------------|------------|--------------|------------|--------------|
| Ammonium chloride | X | X | X | None Known | X |
| Ammonium hydroxide | X | X | X | None Known | None Known |
| Water, distilled | None Known | None Known | None Known | None Known | None Known |

International Regulations**Mexico - Grade**

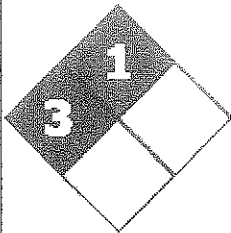

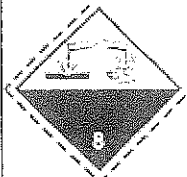
| Chemical Name | Carcinogen Status | Exposure Limits |
|--------------------|-------------------|-----------------------------------|
| Ammonium chloride | None Known | Mexico: TWA= 10 mg/m ³ |
| Ammonium hydroxide | None Known | None Known |
| Water, distilled | None Known | None Known |

Canada

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

| Component | WHMIS Hazard Class |
|---|---|
| Ammonium chloride 12125-02-9 (7) | 1 % D2B |
| Ammonium hydroxide 1336-21-6 (<57) | 1 % E |
| Water, distilled 7732-18-5 (to 100%) | Uncontrolled product according to WHMIS classification criteria |

**16. OTHER INFORMATION**

| NFPA | HMIS | PPE | Transport Symbol | | | | | | |
|---|---|---------------|------------------|-----------------|---|------------|---|---|--|
|  | <table><tr><td>Health Hazard</td><td>3</td></tr><tr><td>Physical Hazard</td><td>0</td></tr><tr><td>Reactivity</td><td>1</td></tr></table> | Health Hazard | 3 | Physical Hazard | 0 | Reactivity | 1 |  | |
| Health Hazard | 3 | | | | | | | | |
| Physical Hazard | 0 | | | | | | | | |
| Reactivity | 1 | | | | | | | | |
|  | | | | | | | | | |

Prepared By Regulatory Affairs Department

Issuing Date 4/25/2011

Revision Date 26-Apr-2011

Revision Note
Initial Release

Disclaimer

The information provided on this MSDS is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guide for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered as a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other material or in any process, unless specified in the text.

End of MSDS



Issuing Date 8/27/2012

Revision Number 0

1. PRODUCT AND COMPANY IDENTIFICATION

Product Name HARDNESS REAGENT #7

Product Code(s) 4487

Recommended Use Test kit reagent. Laboratory chemicals. Industrial (not for food or food contact use).

Company LaMotte Company, Inc.
802 Washington Avenue
P.O. Box 329
Chestertown, MD 21620
USA

Emergency Telephone Number 24 Hour Emergency Number (CHEM-TEL):
USA, Canada, Puerto Rico 1-800-255-3924
Outside North American Continent (Call collect) 813-248-0585

2. HAZARDS IDENTIFICATION**Emergency Overview**

May be harmful if swallowed, inhaled, or absorbed through skin
May cause skin, eye, and respiratory tract irritation

Appearance Clear, colorless**Physical State** Liquid**Odor** Odorless**Potential Health Effects****Principle Routes of Exposure** Eye contact, Skin contact.**Acute Toxicity****Eyes**

May cause irritation.

Skin

May cause irritation. May be harmful in contact with skin.

Inhalation

May cause irritation of respiratory tract. May be harmful if inhaled.

Ingestion

May be harmful if swallowed. Ingestion may cause gastrointestinal irritation.

Chronic Effects

None known.

3. COMPOSITION/INFORMATION ON INGREDIENTS

| Chemical Name | CAS-No | Weight % |
|-----------------------------------|-----------|----------|
| Tergitol No. 4 | 139-88-8 | <0.01 |
| Diethylene glycol monoethyl ether | 111-90-0 | <0.01 |
| Magnesium chloride, hexahydrate | 7791-18-6 | <0.04 |
| Sodium hydroxide | 1310-73-2 | 0.04 |
| EDTA disodium salt, dihydrate | 6381-92-6 | 1 |
| Water | 7732-18-5 | to 100% |

4. FIRST AID MEASURES**General Advice**

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

| | |
|-----------------------------------|---|
| Eye Contact | Immediately flush eyes with gentle stream of water for at least 15 minutes, occasionally lifting upper and lower eyelids. If irritation persists or develops, contact a physician. |
| Skin Contact | Wash off immediately with soap and plenty of water for at least 15 minutes while removing all contaminated clothing and shoes. If irritation develops or persists, consult physician. |
| Inhalation | Move to fresh air. If breathing is difficult, give oxygen. Consult a physician. |
| Ingestion | Drink plenty of water. If gastrointestinal distress occurs contact physician. Never give anything by mouth to an unconscious person. |
| Protection of First-aiders | Use personal protective equipment. See Section 8 for more detail. Do not use mouth-to-mouth method if victim ingested or inhaled the substance; induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. |

5. FIRE-FIGHTING MEASURES

| | | | | |
|-------------------------------------|--|-----------------------|--------------------|--|
| Flammable Properties | Not flammable. | | | |
| Flash Point | Not applicable | | | |
| Suitable Extinguishing Media | Dry chemical, CO ₂ , water spray or alcohol-resistant foam. | | | |
| Explosion Data | | | | |
| NFPA | Health Hazard 1 | Flammability 0 | Stability 0 | Physical and Chemical Hazards - |
| HMIS | Health Hazard 1 | Flammability 0 | Stability 0 | |

6. ACCIDENTAL RELEASE MEASURES

| | |
|--------------------------------|---|
| Personal Precautions | Ensure adequate ventilation. Avoid contact with skin, eyes and inhalation of vapors. Use personal protective equipment. Refer to Section 8. |
| Methods for Containment | Absorb/Cover spill with sodium bicarbonate or sodium carbonate to neutralize, then place in a chemical waste container for later disposal. Dispose according to local regulations, if permitted dissolve in water and rinse to drain. |
| Methods for Cleaning Up | After cleaning, flush away traces with water. |

7. HANDLING AND STORAGE

| | |
|-----------------|---|
| Handling | Handle in accordance with good industrial hygiene and safety practice. Prevent contact with skin, eyes, and clothing. Do not ingest. Do not eat, drink, or smoke when using this product. |
| Storage | Keep containers tightly closed in a dry, cool, and well-ventilated place. Keep out of the reach of children. |

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

| Chemical Name | ACGIH TLV | OSHA PEL | NIOSH IDLH |
|---|------------|--------------------------|--|
| Tergitol No. 4 139-88-8 | None Known | None Known | None Known |
| Diethylene glycol monoethyl ether 111-90-0 | None Known | None Known | None Known |
| Magnesium chloride, hexahydrate 7791-18-6 | None Known | None Known | None Known |
| Sodium hydroxide 1310-73-2 | None Known | TWA: 2 mg/m ³ | IDLH: 10 mg/m ³ Ceiling: 2 mg/m ³ |
| EDTA disodium salt, dihydrate 6381-92-6 | None Known | None Known | None Known |

| | | | |
|--------------------|------------|------------|------------|
| Water 7732-18-5 | None Known | None Known | None Known |
|--------------------|------------|------------|------------|

Engineering Measures
Showers
Eyewash stations
Ventilation systems.

Personal Protective Equipment

Eye/Face Protection Safety glasses with side-shields.
Skin and Body Protection Wear protective gloves/clothing.
Respiratory Protection No special protective equipment required under normal use conditions.

Hygiene Measures

Handle in accordance with good industrial hygiene and safety practice. Do not eat, drink or smoke when using this product. Wash hands before breaks and immediately after handling the product.

9. PHYSICAL AND CHEMICAL PROPERTIES

| | | | |
|---------------------|-------------------|----------------------------|----------------|
| Appearance | Clear, colorless | Odor | Odorless |
| Physical State | Liquid | pH | 4 |
| Flash Point | Not applicable | Autoignition Temperature | Not applicable |
| Boiling Point/Range | No data available | Flammability Limits in Air | Not applicable |

| | | | |
|----------------|--------------------------|---------------|--------------------------|
| Vapor Pressure | No information available | Vapor Density | No information available |
|----------------|--------------------------|---------------|--------------------------|

10. STABILITY AND REACTIVITY

Stability Stable under normal conditions of use and storage.

Incompatible Products Strong oxidizing agents. Copper. Aluminium.

Conditions to Avoid Temperature extremes.

Hazardous Decomposition Products Carbon oxides (COx). Nitrogen oxides (NOx).

Hazardous Reactions Contact with metals may evolve flammable hydrogen gas.

Hazardous Polymerization Hazardous polymerization does not occur.

11. TOXICOLOGICAL INFORMATION**Acute Toxicity**

| Chemical Name | LD50 Oral | LD50 Dermal | LC50 Inhalation |
|-----------------------------------|--------------------|-----------------------|-----------------|
| Tergitol No. 4 | 1250 mg/kg (Rat) | 3 mL/kg (Rabbit) | None Known |
| Diethylene glycol monoethyl ether | 1920 mg/kg (Rat) | 4200 µL/kg (Rabbit) | None Known |
| Magnesium chloride, hexahydrate | 8100 mg/kg (Rat) | None Known | None Known |
| Sodium hydroxide | None Known | 1350 mg/kg (Rabbit) | None Known |
| EDTA disodium salt, dihydrate | None Known | None Known | None Known |
| Water | 90 mL/kg (Rat) | None Known | None Known |

Chronic Toxicity

Chronic Toxicity None known.

| Chemical Name | ACGIH | IARC | NTP | OSHA |
|----------------|------------|------------|------------|------------|
| Tergitol No. 4 | None Known | None Known | None Known | None Known |

| | | | | |
|-----------------------------------|------------|------------|------------|------------|
| Diethylene glycol monoethyl ether | None Known | None Known | None Known | None Known |
| Magnesium chloride, hexahydrate | None Known | None Known | None Known | None Known |
| Sodium hydroxide | None Known | None Known | None Known | None Known |
| EDTA disodium salt, dihydrate | None Known | None Known | None Known | None Known |
| Water | None Known | None Known | None Known | None Known |

Endocrine Disruptor Information

| Chemical Name | EU - Endocrine Disruptors Candidate List | EU - Endocrine Disruptors - Evaluated Substances | Japan - Endocrine Disruptor Information |
|-----------------------------------|--|--|---|
| Tergitol No. 4 | None Known | None Known | None Known |
| Diethylene glycol monoethyl ether | None Known | None Known | None Known |
| Magnesium chloride, hexahydrate | None Known | None Known | None Known |
| Sodium hydroxide | None Known | None Known | None Known |
| EDTA disodium salt, dihydrate | None Known | None Known | None Known |
| Water | None Known | None Known | None Known |

12. ECOLOGICAL INFORMATION**Ecotoxicity**

| Chemical Name | Toxicity to Algae | Toxicity to Fish | Microtox | Daphnia Magna (Water Flea) |
|-----------------------------------|-------------------|--|------------|---|
| Tergitol No. 4 | None Known | None Known | None Known | None Known |
| Diethylene glycol monoethyl ether | None Known | LC50= 10000 mg/L Lepomis macrochirus 96 h LC50= 13400 mg/L Salmo gairdneri 96 h LC50= 13420 mg/L Oncorhynchus mykiss 96 h LC50= 26400 mg/L Pimephales promelas 96 h | None Known | LC50 3940 - 4670 mg/L 48 h EC50 = 4026 mg/L 48 h |
| Magnesium chloride, hexahydrate | None Known | None Known | None Known | None Known |
| Sodium hydroxide | None Known | LC50= 45.4 mg/L Oncorhynchus mykiss 96 h | None Known | None Known |
| EDTA disodium salt, dihydrate | None Known | None Known | None Known | None Known |
| Water | None Known | None Known | None Known | None Known |

Persistence and Degradability No information available.

Bioaccumulation/Accumulation No information available.

| Chemical Name | Log Pow |
|-----------------------------------|------------|
| Tergitol No. 4 | None Known |
| Diethylene glycol monoethyl ether | = -0.8 |
| Magnesium chloride, hexahydrate | None Known |
| Sodium hydroxide | None Known |
| EDTA disodium salt, dihydrate | None Known |
| Water | None Known |

13. DISPOSAL CONSIDERATIONS

Waste Disposal Method Dispose of in accordance with local regulations.

| Chemical Name | RCRA - Halogenated Organic Compounds | RCRA - P Series Wastes | RCRA - F Series Wastes | RCRA - K Series Wastes |
|---------------------------|--------------------------------------|------------------------|------------------------|------------------------|
| Tergitol No. 4 - 139-88-8 | None Known | None Known | None Known | None Known |

| | | | | |
|--|------------|------------|------------|------------|
| Diethylene glycol monoethyl ether - 111-90-0 | None Known | None Known | None Known | None Known |
| Magnesium chloride, hexahydrate - 7791-18-6 | None Known | None Known | None Known | None Known |
| Sodium hydroxide - 1310-73-2 | None Known | None Known | None Known | None Known |
| EDTA disodium salt, dihydrate - 6381-92-6 | None Known | None Known | None Known | None Known |
| Water - 7732-18-5 | None Known | None Known | None Known | None Known |

14. TRANSPORT INFORMATION

DOT Not regulated

IATA Not regulated

IMDG/IMO Not regulated

15. REGULATORY INFORMATION

International Inventories

| Component | TSCA | DSL | EINECS/ELINCS | ENCS | IECSC | KECL | PICCS | AICS |
|---|---------|-----|---------------|---------------|-------|----------|-------|------|
| Tergitol No. 4 139-88-8 (<0.01) | Present | X | X | 2-1679 | IECSC | KECL | PICCS | X |
| Diethylene glycol monoethyl ether 111-90-0 (<0.01) | Present | X | X | 2-422; 7-97 | X | KE-10467 | X | X |
| Magnesium chloride, hexahydrate 7791-18-6 (<0.04) | TSCA | DSL | EINECS/ELINCS | 1-233 | X | KECL | X | X |
| Sodium hydroxide 1310-73-2 (0.04) | Present | X | X | 1-410; 2-1972 | X | KE-31487 | X | X |
| EDTA disodium salt, dihydrate 6381-92-6 (1) | TSCA | X | EINECS/ELINCS | 2-1265 | X | KECL | X | X |
| Water 7732-18-5 (to 100%) | Present | X | X | ENCS | X | KE-35400 | X | X |

U.S. Federal Regulations

SARA 313

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product contains a chemical or chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372

| Chemical Name | CAS-No | Weight % | SARA 313 - Threshold Values % |
|-----------------------------------|-----------|----------|-------------------------------|
| Tergitol No. 4 | 139-88-8 | <0.01 | None Known |
| Diethylene glycol monoethyl ether | 111-90-0 | <0.01 | 1.0 |
| Magnesium chloride, hexahydrate | 7791-18-6 | <0.04 | None Known |
| Sodium hydroxide | 1310-73-2 | 0.04 | None Known |
| EDTA disodium salt, dihydrate | 6381-92-6 | 1 | None Known |
| Water | 7732-18-5 | to 100% | None Known |

SARA 311/312 Hazard Categories

| | |
|-----------------------------------|----|
| Acute Health Hazard | No |
| Chronic Health Hazard | No |
| Fire Hazard | No |
| Sudden Release of Pressure Hazard | No |
| Reactive Hazard | No |

Clean Water Act

This product does not contain any substances regulated as pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42).

| Component | CWA - Reportable Quantities | CWA - Toxic Pollutants | CWA - Priority Pollutants | CWA - Hazardous Substances |
|---|-----------------------------|------------------------|---------------------------|----------------------------|
| Tergitol No. 4 139-88-8 (<0.01) | None Known | None Known | None Known | None Known |
| Diethylene glycol monoethyl ether 111-90-0 (<0.01) | None Known | None Known | None Known | None Known |
| Magnesium chloride, hexahydrate 7791-18-6 (<0.04) | None Known | None Known | None Known | None Known |
| Sodium hydroxide 1310-73-2 (0.04) | None Known | None Known | None Known | None Known |
| EDTA disodium salt, dihydrate 6381-92-6 (1) | None Known | None Known | None Known | None Known |
| Water 7732-18-5 (to 100%) | None Known | None Known | None Known | None Known |

Clean Air Act, Section 112 Hazardous Air Pollutants (HAPs) (see 40 CFR 61)

This product contains the following HAPs:

| Chemical Name | CAS-No | Weight % | HAPS data | VOC Chemicals | Class 1 Ozone Depletors | Class 2 Ozone Depletors |
|-----------------------------------|-----------|----------|---|---------------|-------------------------|-------------------------|
| Tergitol No. 4 | 139-88-8 | <0.01 | None Known | None Known | None Known | None Known |
| Diethylene glycol monoethyl ether | 111-90-0 | <0.01 | Present (includes mono- and di-ethers of ethylene glycol, diethylene glycol, and triethylene glycol, except Ethylene glycol monobutyl ether [EGBE]. See 40 CFR 63.62 for Redefinition of glycol ethers listed as hazardous air pollutants and 40 CFR 63.63 fo | Group I | None Known | None Known |
| Magnesium chloride, hexahydrate | 7791-18-6 | <0.04 | None Known | None Known | None Known | None Known |
| Sodium hydroxide | 1310-73-2 | 0.04 | None Known | None Known | None Known | None Known |
| EDTA disodium salt, dihydrate | 6381-92-6 | 1 | None Known | None Known | None Known | None Known |
| Water | 7732-18-5 | to 100% | None Known | None Known | None Known | None Known |

CERCLA

| Chemical Name | Hazardous Substances RQs | Extremely Hazardous Substances RQs |
|-----------------------------------|--------------------------|------------------------------------|
| Tergitol No. 4 | None Known | None Known |
| Diethylene glycol monoethyl ether | None Known | None Known |
| Magnesium chloride, hexahydrate | None Known | None Known |
| Sodium hydroxide | 1000 lb | None Known |
| EDTA disodium salt, dihydrate | None Known | None Known |
| Water | None Known | None Known |

U.S. State Regulations

California Proposition 65

This product does not contain any Proposition 65 chemicals

| Chemical Name | CAS-No | California Prop. 65 |
|-----------------------------------|-----------|---------------------|
| Tergitol No. 4 | 139-88-8 | None Known |
| Diethylene glycol monoethyl ether | 111-90-0 | None Known |
| Magnesium chloride, hexahydrate | 7791-18-6 | None Known |
| Sodium hydroxide | 1310-73-2 | None Known |
| EDTA disodium salt, dihydrate | 6381-92-6 | None Known |

| | | |
|-------|-----------|------------|
| Water | 7732-18-5 | None Known |
|-------|-----------|------------|

U.S. State Right-to-Know Regulations

| Chemical Name | Massachusetts | New Jersey | Pennsylvania | Illinois | Rhode Island |
|-----------------------------------|---------------|------------|--------------|------------|--------------|
| Tergitol No. 4 | None Known | None Known | None Known | None Known | None Known |
| Diethylene glycol monoethyl ether | None Known | X | X | X | None Known |
| Magnesium chloride, hexahydrate | None Known | None Known | None Known | None Known | None Known |
| Sodium hydroxide | X | X | X | None Known | X |
| EDTA disodium salt, dihydrate | None Known | None Known | None Known | None Known | None Known |
| Water | None Known | None Known | None Known | None Known | None Known |

International Regulations**Mexico - Grade**

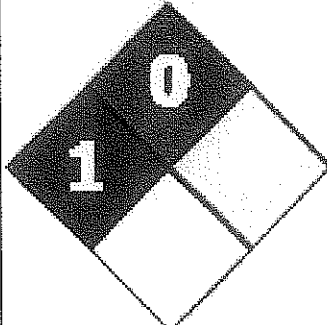

| Chemical Name | Carcinogen Status | Exposure Limits |
|-----------------------------------|-------------------|-----------------|
| Tergitol No. 4 | None Known | None Known |
| Diethylene glycol monoethyl ether | None Known | None Known |
| Magnesium chloride, hexahydrate | None Known | None Known |
| Sodium hydroxide | None Known | None Known |
| EDTA disodium salt, dihydrate | None Known | None Known |
| Water | None Known | None Known |

Canada

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all the information required by the CPR

| Component | WHMIS Hazard Class |
|---|---|
| Tergitol No. 4 139-88-8 (<0.01) | 1 % |
| Diethylene glycol monoethyl ether 111-90-0 (<0.01) | 1 % B3 D2B |
| Magnesium chloride, hexahydrate 7791-18-6 (<0.04) | Uncontrolled product according to WHMIS classification criteria |
| Sodium hydroxide 1310-73-2 (0.04) | 1 % E |
| EDTA disodium salt, dihydrate 6381-92-6 (1) | Uncontrolled product according to WHMIS classification criteria |
| Water 7732-18-5 (to 100%) | Uncontrolled product according to WHMIS classification criteria |

16. OTHER INFORMATION

| NFPA | HMIS | PPE | Transport Symbol | | | | | | |
|---|---|---------------|------------------|-----------------|---|------------|---|---|--|
|  | <table><tr><td>Health Hazard</td><td>1</td></tr><tr><td>Physical Hazard</td><td>0</td></tr><tr><td>Reactivity</td><td>0</td></tr></table> | Health Hazard | 1 | Physical Hazard | 0 | Reactivity | 0 |  | |
| Health Hazard | 1 | | | | | | | | |
| Physical Hazard | 0 | | | | | | | | |
| Reactivity | 0 | | | | | | | | |

| | |
|---------------|-------------------------------|
| Prepared By | Regulatory Affairs Department |
| Issuing Date | 8/27/2012 |
| Revision Date | - |
| Revision Note | Initial Release. |

Disclaimer

The information provided on this MSDS is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guide for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered as a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other material or in any process, unless specified in the text.

End of MSDS



MSDS

P.O. Box 329 - 802 Washington Avenue Chestertown, MD 21620 - USA

TELEPHONE # FOR INFORMATION 410 778-3100

24 HOUR EMERGENCY NUMBER (CHEM-TEL): USA, Canada, Puerto Rico 800-255-3924;

MATERIAL SAFETY DATA SHEET

Outside North American Continent 813-248-0585 (call Collect)

1. Product Identification

Product Code: 9258

Product Description: Inhibitor Solution

Manufactured By: LaMotte Company

802 Washington Avenue

Chestertown, MD 21620

2. Composition/Information On Ingredients

| Hazard | CAS#/Name | % | PEL | TLV |
|--------|--|---------|----------------------------|------------------------------|
| Yes | 1313-84-4 Sodium Sulfide, 9-hydrate | 35 | 10 ppm as H ₂ S | C 20 ppm as H ₂ S |
| No | 7732-18-5 Water | to 100% | None Established | None Established |

(11% as "Sodium sulfide")

3. Hazards Overview

Primary Route Of Entry: Eye Skin Ingestion Inhalation

Danger! Corrosive. Can cause severe irritation or burns to eyes, skin, and lungs. Harmful or fatal if swallowed.

HMIS Hazard

Scale: 4 = Extreme, 3 = High, 2 = Moderate, 1 = Slight, 0 = Least

Health: 2 Flammability: 0 Reactivity: 1

Carcinogenicity: None:

Other Health Related Comments:

See Section 11.

Product Code: 9258

Product Description: Inhibitor Solution

4. First Aid Measures

Eye Contact: Immediately flush with water for 15 minutes while lifting upper and lower eyelids. Get prompt medical attention.

Skin Contact: Immediately flush with water for 15 minutes while removing contaminated clothing and shoes. Wash with soap and water. Get prompt medical attention.

Ingestion: Do Not Induce Vomiting. Rinse out mouth. Drink large quantity of water. Get prompt medical attention.

Inhalation: Remove to fresh air. Give artificial respiration if breathing has stopped. If breathing is difficult, give oxygen. Get prompt medical attention.

5. Fire Fighting Measures

Flash Point (Method Used):

LEL: N/A

UEL: N/A

Extinguishing Media:

Not a fire hazard

Special Fire Fighting Procedures:

Unusual Fire & Explosion Hazard: May emit toxic, flammable vapors of hydrogen sulfide under fire conditions

6. Accidental Release Measures

Ventilate area. Wear PPE noted in Section 8. Carefully collect spill and place in non-metal container. Hold for proper disposal according to federal, state, and local regulations.

7. Handling & Storage

Keep in a tightly closed container. Store in a cool, dry, ventilated area away from heat sources, acids, and other incompatible materials. Protect from light and air. Keep out of reach of children.

Product Code: 9258

Product Description: Inhibitor Solution

8. Exposure Controls/Personal Protection

Ventilation

Mechanical

A system of local or general exhaust is recommended. Work in fume hood.

Protection When Handling

Eye Protection Gloves Lab Coat

Work/Hygenic Practices: Use with adequate ventilation. Avoid contact with eyes and skin. Wash after handling.

9. Physical & Chemical Properties

Appearance: Clear Colorless Liquid

Vapor Density: Unknown

Solubility In Water: Soluble

Vapor Pressure: Unknown

Odor: Rotten egg, sulfide odor

Boiling Point: Unknown

pH: 13 - 14

Melting Point: Unknown

10. Stability & Reactivity

Stable: Yes

Conditions To Avoid: Contact with acids liberates poisonous gas

Incompatibility (Materials To Avoid): Strong oxidizers, acids, metals

Hazardous Decomposition Products: Decomposed by acid to hydrogen sulfide gas--highly toxic & combustible

11. Toxicological Information

For anhydrous sodium sulfide-- Oral rat LD50: 208 mg/kg. IPR Mouse LD50: 53 mg/kg. Toxic!

Target Organs: Eyes Heart Lung Skin

Pre-Existing Conditions Aggravated By Exposure: Pre-existing skin or eye problems

Product Code: 9258

Product Description: Inhibitor Solution

12. Ecological Information

ENVIRONMENTAL FATE: No information found.

ENVIRONMENTAL TOXICITY: Sodium sulfide is dangerous to the environment. Very toxic to aquatic organisms.

13. Disposal Considerations

Dispose of in accordance to federal, state, and local regulations.

15. Regulatory Information

Chemical Inventory Status

| Hazard | Ingredient | USA | Europe | --- Canada --- | | Australia | Japan |
|--------|--|------|--------|----------------|------|-----------|-------|
| | | TSCA | EC | DSL | NDSL | | |
| Yes | 1313-82-2 Sodium Sulfide, 9-hydrate | Yes | Yes | Yes | No | Yes | Yes |
| No | 7732-18-5 Distilled Water | Yes | Yes | Yes | No | Yes | Yes |

Federal, State, & International Regulations

| Ingredient | --- SARA 302 --- | | ----- SARA 313 ----- | | CERCLA | RCRA 261.33 | TSCA 8(D) |
|--|------------------|-----|----------------------|-------------------|--------|----------------|--------------|
| | RQ | TPQ | Listed | Chemical Category | | | |
| 1313-82-2 Sodium Sulfide, 9-hydrate | No | No | No | No | No | No | No |
| 7732-18-5 Distilled Water | No | No | No | No | No | No | No |

Product Code: 9258

Product Description: Inhibitor Solution

| Ingredient | --- SARA 311/312 --- | | | | | ----- Australia ----- | | This MSDS Is WHMIS Compliant |
|--|----------------------|---------|------|----------|------------|-----------------------|--------------------|---------------------------------|
| | Acute | Chronic | Fire | Pressure | Reactivity | Hazchem Code | Poison Schedule | |
| 1313-82-2 Sodium Sulfide, 9-hydrate | Yes | No | No | No | No | 2X | None Allocated | |
| 7732-18-5 Distilled Water | No | No | No | No | No | None Allocated | None Allocated | |
| product 9258 as a whole | Yes | No | No | No | No | 2X | None Allocated | Yes |

16. Other Information

Keep out of the reach of children.

Prepared By: Regulatory Affairs Department

Revised: 9/4/2009



Issuing Date 2/1/2012

Revision Number 0

1. PRODUCT AND COMPANY IDENTIFICATION

Product Name IRON REAGENT 2 POWDER

Product Code(s) 4451

Synonyms none

Recommended Use Test kit reagent. Industrial (not for food or food contact use). Laboratory chemicals.

Company LaMotte Company, Inc.
802 Washington Avenue
P.O. Box 329
Chestertown, MD 21620
USA

Emergency Telephone Number 24 Hour Emergency Number (CHEM-TEL):
USA, Canada, Puerto Rico 1-800-255-3924
Outside North American Continent (Call collect) 813-248-0585

2. HAZARDS IDENTIFICATION**Emergency Overview**

May be harmful if swallowed

Irritating to eyes, respiratory system, and skin

Product dust may be irritating to eyes, skin and respiratory system

Contains sulfites - may produce allergic reaction in highly sensitive individuals

Appearance Gray

Physical State Powder

Odor Slight, Sulphurous

Potential Health Effects

Principle Routes of Exposure Ingestion, and, Inhalation.

Acute Toxicity

Eyes

Irritating to eyes. Risk of serious damage to eyes.

Skin

Irritating to skin.

Inhalation

Irritating to respiratory system.

Ingestion

Causes irritation. Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea.

Chronic Effects**3. COMPOSITION/INFORMATION ON INGREDIENTS**

| Chemical Name | CAS-No | Weight % |
|----------------------|-----------|----------|
| Zinc | - | 1 |
| Sodium sulfite | 7757-83-7 | 1-5 |
| 2,2'-Bipyridine | 366-18-7 | 5-10 |
| Sodium metabisulfite | 7681-57-4 | 80-90 |

LaMotte Company proprietary formulation under the State of New Jersey Trade Secret Protection Law, assigned the NJTSRN 80100291-5021p, and may be disclosed only in a medical emergency.

4. FIRST AID MEASURES

| | |
|----------------------------|---|
| General Advice | Do not get in eyes, on skin, or on clothing. Show this safety data sheet to the doctor in attendance. |
| Eye Contact | Rinse thoroughly with plenty of water for at least 15 minutes, lifting lower and upper eyelids. Consult a physician. |
| Skin Contact | Wash off immediately with soap and plenty of water for at least 15 minutes while removing all contaminated clothing and shoes. |
| Inhalation | Move to fresh air. If symptoms arise, call a physician. |
| Ingestion | Drink plenty of water. Clean mouth with water. Never give anything by mouth to an unconscious person. Consult a physician. |
| Notes to Physician | Treat symptomatically. |
| Protection of First-aiders | Use personal protective equipment. See Section 8 for more detail. Do not use mouth-to-mouth method if victim ingested or inhaled the substance; induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. |

5. FIRE-FIGHTING MEASURES

| | | | | |
|------------------------------|--|----------------|-------------|---------------------------------|
| Flammable Properties | Not a fire hazard. | | | |
| Flash Point | Not applicable | | | |
| Suitable Extinguishing Media | Water spray, dry chemical, carbon dioxide (CO ₂), or foam. | | | |
| Explosion Data | | | | |
| NFPA | Health Hazard 2 | Flammability 0 | Stability 0 | Physical and Chemical Hazards - |
| HMIS | Health Hazard 2 | Flammability 0 | Stability 1 | |

6. ACCIDENTAL RELEASE MEASURES

| | |
|-------------------------|--|
| Personal Precautions | Refer to Section 8. |
| Methods for Containment | Sweep up in a manner that does not disperse dust and shovel into suitable containers for disposal. Dispose according to federal, state, and local regulations. |
| Methods for Cleaning Up | Use personal protective equipment. Avoid dust formation. After cleaning, flush away traces with water. |

7. HANDLING AND STORAGE

| | |
|----------|---|
| Handling | Handle in accordance with good industrial hygiene and safety practice. Prevent contact with skin, eyes, and clothing. Do not ingest. Do not eat, drink, or smoke when using this product. |
| Storage | Keep containers tightly closed in a dry, cool, and well-ventilated place. Keep away from heat and incompatibles. Keep out of the reach of children. |

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

| Chemical Name | ACGIH TLV | OSHA PEL | NIOSH IDLH |
|---------------|-----------|----------|------------|
|---------------|-----------|----------|------------|

| | | | |
|-----------------------------------|--------------------------|------------|------------|
| Zinc | None Known | None Known | None Known |
| Sodium sulfite 7757-83-7 | None Known | None Known | None Known |
| 2,2'-Bipyridine 366-18-7 | None Known | None Known | None Known |
| Sodium metabisulfite 7681-57-4 | TWA: 5 mg/m ³ | None Known | N/A |

Engineering Measures

Showers
Eyewash stations
Ventilation systems.

Personal Protective Equipment

Eye/Face Protection
Skin and Body Protection
Respiratory Protection

Safety glasses with side-shields. Goggles.
Wear protective gloves/clothing.
Maintain adequate ventilation.

Hygiene Measures

Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and immediately after handling the product. Do not eat, drink or smoke when using this product.

9. PHYSICAL AND CHEMICAL PROPERTIES

| | | | |
|---------------------|--|--------------------------|-------------------------------|
| Appearance | Gray | Odor | Slight, Sulphurous |
| Physical State | Powder | pH | 6 (1 tablet in 10mL of water) |
| Flash Point | Not applicable | Autoignition Temperature | Not applicable |
| Boiling Point/Range | No information available | | |
| Freezing Point | ca. 150°C / 302°F sodium metabisulfite | | |

| | | | |
|------------------|--------------------------|----------------|--------------------------|
| Water Solubility | Soluble in water | Vapor Pressure | No information available |
| Vapor Density | No information available | | |

10. STABILITY AND REACTIVITY

| | |
|----------------------------------|--|
| Stability | Stable under normal conditions of use and storage. |
| Incompatible Products | Acids. Alkalis. Strong oxidizing agents. |
| Conditions to Avoid | Excessive heat. Exposure to air or moisture over prolonged periods. Keep away from children. |
| Hazardous Decomposition Products | Carbon oxides (COx). Sulfur oxides (SOx). Sodium oxides. |
| Hazardous Reactions | None under normal processing. |
| Hazardous Polymerization | Hazardous polymerization does not occur. |

11. TOXICOLOGICAL INFORMATION**Acute Toxicity**

| Chemical Name | LD50 Oral | LD50 Dermal | LC50 Inhalation |
|---------------|------------|-------------|-----------------|
| Zinc | None Known | None Known | None Known |

| | | | |
|----------------------|--------------------|-------------------|---|
| Sodium sulfite | 820 mg/kg (Rat) | None Known | 22 mg/L (Rat) 1 h 5.5 mg/L (Rat) 4 h |
| 2,2'-Bipyridine | 100 mg/kg (Rat) | 250 mg/kg (Rat) | None Known |
| Sodium metabisulfite | 1131 mg/kg (Rat) | None Known | None Known |

Chronic Toxicity

| Chemical Name | ACGIH | IARC | NTP | OSHA |
|----------------------|------------|------------|------------|------------|
| Zinc | None Known | None Known | None Known | None Known |
| Sodium sulfite | None Known | None Known | None Known | None Known |
| 2,2'-Bipyridine | None Known | None Known | None Known | None Known |
| Sodium metabisulfite | None Known | None Known | None Known | None Known |

Endocrine Disruptor Information

| Chemical Name | EU - Endocrine Disruptors Candidate List | EU - Endocrine Disruptors - Evaluated Substances | Japan - Endocrine Disruptor Information |
|----------------------|---|---|--|
| Zinc | None Known | None Known | None Known |
| Sodium sulfite | None Known | None Known | None Known |
| 2,2'-Bipyridine | None Known | None Known | None Known |
| Sodium metabisulfite | None Known | None Known | None Known |

12. ECOLOGICAL INFORMATION**Ecotoxicity**

Harmful to aquatic organisms.

| Chemical Name | Toxicity to Algae | Toxicity to Fish | Microtox | Daphnia Magna (Water Flea) |
|----------------------|--|--|----------------------|-------------------------------|
| Zinc | EC50 = 30 µg/L 96 h | LC50= 6.4 mg/L Pimephales promelas 96 h | None Known | EC50 = 5 µg/L 72 h |
| Sodium sulfite | None Known | LC50 220 - 460 mg/L Leuciscus idus 96 h | EC50 = 770 mg/L 17 h | LC50 = 330 mg/L 24 h |
| 2,2'-Bipyridine | None Known | None Known | None Known | None Known |
| Sodium metabisulfite | EC50 = 40 mg/L 96 h EC50 = 48 mg/L 72 h | LC50= 32 mg/L Lepomis macrochirus 96 h | EC50 = 56 mg/L 17 h | EC50 = 89 mg/L 24 h |

| Chemical Name | Log Pow |
|----------------------|--------------|
| Zinc | None Known |
| Sodium sulfite | = -4 25 °C |
| 2,2'-Bipyridine | None Known |
| Sodium metabisulfite | = -3.7 25 °C |

13. DISPOSAL CONSIDERATIONS**Waste Disposal Method**

Dispose of contents/container in accordance with local regulation. This material, as supplied, is not a hazardous waste according to state and Federal regulations (40 CFR 261). This material could become a hazardous waste if it is mixed with or otherwise comes in contact with a hazardous waste, if chemical additions are made to this material, or if the material is processed or otherwise altered. Consult 40 CFR 261 to determine whether the altered material is a hazardous waste pursuant to Federal regulations, and the applicable state requirements for the specific area of disposal. Consult the appropriate state, regional, or local regulations for additional requirements.

| Chemical Name | RCRA - Halogenated Organic Compounds | RCRA - P Series Wastes | RCRA - F Series Wastes | RCRA - K Series Wastes |
|----------------------------------|--------------------------------------|------------------------|------------------------|------------------------|
| Zinc - | None Known | None Known | None Known | None Known |
| Sodium sulfite - 7757-83-7 | None Known | None Known | None Known | None Known |
| 2,2'-Bipyridine - 366-18-7 | None Known | None Known | None Known | None Known |
| Sodium metabisulfite - 7681-57-4 | None Known | None Known | None Known | None Known |

14. TRANSPORT INFORMATION**DOT**

Proper Shipping Name CORROSIVE SOLID, ACIDIC, INORGANIC, N.O.S.(SODIUM DISULPHITE)
Hazard Class 8
UN-No 3260
Packing Group III

IATA

UN-No 3260
Proper Shipping Name CORROSIVE SOLID, ACIDIC, INORGANIC, N.O.S.(SODIUM DISULPHITE)
Hazard Class 8
Packing Group III

IMDG/IMO

Proper Shipping Name CORROSIVE SOLID, ACIDIC, INORGANIC, N.O.S. (SODIUM DISULPHITE)
Hazard Class 8
UN-No 3260

15. REGULATORY INFORMATION**International Inventories**

| Component | TSCA | DSL | EINECS/ELINCS | ENCS | IECSC | KECL | PICCS | AICS |
|---|---------|-----|---------------|--------|-------|----------|-------|------|
| Zinc (1) | Present | X | X | ENCS | X | KE-35518 | X | X |
| Sodium sulfite 7757-83-7 (1-5) | Present | X | X | 1-502 | X | KE-31612 | X | X |
| 2,2'-Bipyridine 366-18-7 (5-10) | Present | X | X | 5-3723 | X | KE-12238 | X | X |
| Sodium metabisulfite 7681-57-4 (80-90) | Present | X | X | 1-502 | X | KE-12701 | X | X |

U.S. Federal Regulations**SARA 313**

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product contains a chemical or chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372

| Chemical Name | CAS-No | Weight % | SARA 313 - Threshold Values % |
|----------------------|-----------|----------|-------------------------------|
| Zinc | | 1 | 1.0 |
| Sodium sulfite | 7757-83-7 | 1-5 | None Known |
| 2,2'-Bipyridine | 366-18-7 | 5-10 | None Known |
| Sodium metabisulfite | 7681-57-4 | 80-90 | None Known |

SARA 311/312 Hazard Categories

| | |
|-----------------------------------|-----|
| Acute Health Hazard | Yes |
| Chronic Health Hazard | No |
| Fire Hazard | No |
| Sudden Release of Pressure Hazard | No |
| Reactive Hazard | Yes |

Clean Water Act

| Component | CWA - Reportable Quantities | CWA - Toxic Pollutants | CWA - Priority Pollutants | CWA - Hazardous Substances |
|---|-----------------------------|------------------------|---------------------------|----------------------------|
| Zinc (1) | None Known | X | X | None Known |
| Sodium sulfite 7757-83-7 (1-5) | None Known | None Known | None Known | None Known |
| 2,2'-Bipyridine 366-18-7 (5-10) | None Known | None Known | None Known | None Known |
| Sodium metabisulfite 7681-57-4 (80-90) | None Known | None Known | None Known | None Known |

Clean Air Act, Section 112 Hazardous Air Pollutants (HAPs) (see 40 CFR 61)

| Chemical Name | CAS-No | Weight % | HAPS data | VOC Chemicals | Class 1 Ozone Depleters | Class 2 Ozone Depleters |
|----------------------|-----------|----------|------------|---------------|-------------------------|-------------------------|
| Zinc | | 1 | None Known | None Known | None Known | None Known |
| Sodium sulfite | 7757-83-7 | 1-5 | None Known | None Known | None Known | None Known |
| 2,2'-Bipyridine | 366-18-7 | 5-10 | None Known | None Known | None Known | None Known |
| Sodium metabisulfite | 7681-57-4 | 80-90 | None Known | None Known | None Known | None Known |

CERCLA

| Chemical Name | Hazardous Substances RQs | Extremely Hazardous Substances RQs |
|----------------------|--------------------------|------------------------------------|
| Zinc | 1000 lb | None Known |
| Sodium sulfite | None Known | None Known |
| 2,2'-Bipyridine | None Known | None Known |
| Sodium metabisulfite | None Known | None Known |

U.S. State Regulations**California Proposition 65**

This product does not contain any Proposition 65 chemicals

| Chemical Name | CAS-No | California Prop. 65 |
|----------------------|-----------|---------------------|
| Zinc | | None Known |
| Sodium sulfite | 7757-83-7 | None Known |
| 2,2'-Bipyridine | 366-18-7 | None Known |
| Sodium metabisulfite | 7681-57-4 | None Known |

U.S. State Right-to-Know Regulations

| Chemical Name | Massachusetts | New Jersey | Pennsylvania | Illinois | Rhode Island |
|----------------------|---------------|------------|--------------|------------|--------------|
| Zinc | X | X | X | None Known | X |
| Sodium sulfite | None Known | None Known | None Known | None Known | None Known |
| 2,2'-Bipyridine | None Known | None Known | None Known | None Known | None Known |
| Sodium metabisulfite | X | X | X | None Known | X |

International Regulations**Mexico - Grade**

| Chemical Name | Carcinogen Status | Exposure Limits |
|----------------------|-------------------|-----------------|
| Zinc | None Known | None Known |
| Sodium sulfite | None Known | None Known |
| 2,2'-Bipyridine | None Known | None Known |
| Sodium metabisulfite | None Known | None Known |

Canada

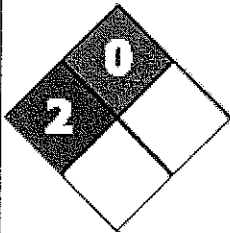

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all the information required by the CPR

| Component | WHMIS Hazard Class |
|---|--|
| Zinc (1) | Not determined |
| Sodium sulfite 7757-83-7 (1-5) | Uncontrolled product according to WHMIS classification criteria |
| 2,2'-Bipyridine 366-18-7 (5-10) | D1B |
| Sodium metabisulfite 7681-57-4 (80-90) | 1 % Uncontrolled product according to WHMIS classification criteria |



| Chemical Name | NPRI |
|---------------|------|
| Zinc | X |

16. OTHER INFORMATION

| NFPA | HMIS | PPE | Transport Symbol | | | | | | |
|---|---|---------------|------------------|-------------|---|------------|---|---|--|
|  | <table><tr><td>Health Hazard</td><td>2</td></tr><tr><td>Env. Hazard</td><td>0</td></tr><tr><td>Reactivity</td><td>1</td></tr></table> | Health Hazard | 2 | Env. Hazard | 0 | Reactivity | 1 |  | |
| Health Hazard | 2 | | | | | | | | |
| Env. Hazard | 0 | | | | | | | | |
| Reactivity | 1 | | | | | | | | |

Prepared By Regulatory Affairs Department

Issuing Date 2/1/2012

Revision Date 02-Feb-2012

Revision Note
Initial Release

Disclaimer

The information provided on this MSDS is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guide for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered as a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other material or in any process, unless specified in the text.

End of MSDS



Issuing Date 12/6/2011

Revision Number 0

1. PRODUCT AND COMPANY IDENTIFICATION

Product Name IRON REAGENT 1 SOLUTION

Product Code(s) 4450

Recommended Use Test kit reagent. Laboratory chemicals. Industrial (not for food or food contact use).

Company LaMotte Company, Inc.
802 Washington Avenue
P.O. Box 329
Chestertown, MD 21620
USA

Emergency Telephone Number 24 Hour Emergency Number (CHEM-TEL):
USA, Canada, Puerto Rico 1-800-255-3924
Outside North American Continent (Call collect) 813-248-0585

2. HAZARDS IDENTIFICATION**DANGER!****Emergency Overview**

Corrosive

Liquid and mist can cause burns to all body tissue

Harmful if swallowed

Harmful in contact with skin

Water reactive

Appearance Clear, colorless**Physical State** Liquid**Odor** Odorless**OSHA Regulatory Status**

This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200). Safety information is given for exposure to the reagent as sold and considers exposure to the chemical if user has direct eye and skin contact.

Potential Health Effects**Principle Routes of Exposure**

Inhalation, skin contact, and ingestion

Acute Toxicity**Eyes**

Corrosive to the eyes and may cause severe damage including blindness.

Skin

Corrosive. Can cause redness, pain, and severe skin burns. May discolor the skin. Harmful if absorbed through skin.

Inhalation

Inhalation of corrosive mist may cause coughing, choking, headache, dizziness, and weakness for several hours. Pulmonary edema may occur with tightness in the chest, shortness of breath, bluish skin, decreased blood pressure, and increased heart rate.

Ingestion

Corrosive. Causes burns. May be fatal if swallowed. Can cause immediate pain and burning in the mouth, throat, esophagus and GI tract. May cause nausea, vomiting, and diarrhea, and in severe cases death.

Chronic Effects

Chronic exposure to corrosive mists or vapors may cause erosion of the teeth. Chronic exposure to mists containing sulfuric acid is a cancer hazard.

Aggravated Medical Conditions

Hypersensitivity may occur in those with preexisting skin disorders. Respiratory disorders. Preexisting eye disorders.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Formula

Hin H

| Chemical Name | CAS-No | Weight % |
|---------------|-----------|----------|
| Sulfuric acid | 7664-93-9 | 3-5 |
| Water | 7732-18-5 | to 100% |

4. FIRST AID MEASURES**General Advice**

Do not get in eyes, on skin, or on clothing. Do not breathe dust/fume/gas/mist/vapors/spray.

Eye Contact

Immediately flush eyes with gentle stream of water for at least 15 minutes, occasionally lifting upper and lower eyelids. Call a physician immediately.

Skin Contact

Wash off immediately with soap and plenty of water for at least 15 minutes while removing all contaminated clothing and shoes. Excess acid on skin can be neutralized with a 2% solution of sodium bicarbonate in water. Call a physician immediately.

Inhalation

Move to fresh air. If breathing is difficult, give oxygen. If not breathing, give artificial respiration and contact emergency personnel. Call a physician immediately.

Ingestion

DO NOT INDUCE VOMITING. Drink plenty of water. Clean mouth with water. Call a physician immediately. Never give anything by mouth to an unconscious person.

Protection of First-aiders

Use personal protective equipment. See Section 8 for more detail. Do not use mouth-to-mouth method if victim ingested or inhaled the substance; induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.

5. FIRE-FIGHTING MEASURES**Flammable Properties**

Not flammable.

Flash Point

Not applicable

Suitable Extinguishing MediaDry chemical or CO₂. DO NOT USE WATER.**Explosion Data****Specific Hazards Arising from the Chemical**

Contact with most metals causes the formation of explosive and flammable hydrogen gas. React vigorously with water.

NFPA

Health Hazard 3

Flammability 0

Stability 0

Physical and Chemical Hazards W**HMIS**

Health Hazard 3

Flammability 0

Stability 1

6. ACCIDENTAL RELEASE MEASURES**Personal Precautions**

Ensure adequate ventilation. Avoid contact with skin, eyes and inhalation of vapors. Use personal protective equipment. Refer to Section 8.

Methods for Cleaning Up

Neutralize spill with alkaline material (sodium bicarbonate), being careful to prevent splattering, then containerize slurry and hold for later disposal. If local regulations permit, dilute slurry with water and rinse to drain with excess water. After cleaning, flush away traces with water.

7. HANDLING AND STORAGE**Handling**

Handle in accordance with good industrial hygiene and safety practice. Prevent contact with skin, eyes, and clothing. Do not ingest. Do not eat, drink, or smoke when using this product.

Storage

Keep containers tightly closed in a dry, cool, and well-ventilated place. Keep away from incompatible materials such as cyanides or sulfides. Store away from strong bases or metals. Do not store near combustible materials. Keep out of the reach of children.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

| Chemical Name | ACGIH TLV | OSHA PEL | NIOSH IDLH |
|----------------------------|----------------------------|--------------------------|--|
| Sulfuric acid 7664-93-9 | TWA: 0.2 mg/m ³ | TWA: 1 mg/m ³ | IDLH: 15 mg/m ³ TWA: 1 mg/m ³ |
| Water 7732-18-5 | None Known | None Known | None Known |

Engineering Measures

Ensure adequate ventilation, especially in confined areas.

Personal Protective Equipment**Eye/Face Protection**

Safety glasses with side-shields.

Skin and Body Protection

Wear protective gloves/clothing.

Respiratory Protection

When workers are facing concentrations above the exposure limit they must use appropriate certified respirators.

Hygiene Measures

Handle in accordance with good industrial hygiene and safety practice. Do not eat, drink or smoke when using this product. Wash hands before breaks and immediately after handling the product.

9. PHYSICAL AND CHEMICAL PROPERTIES

| | | | |
|---------------------|--------------------------|----------------------------|--------------------------|
| Appearance | Clear, colorless | Odor | Odorless |
| Physical State | Liquid | pH | 1 |
| Flash Point | Not applicable | Autoignition Temperature | Not applicable |
| Boiling Point/Range | No data available | Flammability Limits in Air | Not applicable |
| Vapor Pressure | No information available | Vapor Density | No information available |

10. STABILITY AND REACTIVITY**Stability**

Stable under normal conditions of use and storage.

Incompatible Products

Water. Strong bases. Metals. Combustible materials. Cyanides. Sulfides. Formaldehyde.

Conditions to Avoid

Excessive heat. Incompatible products. Direct sunlight.

Hazardous Decomposition Products Hydrogen gas. Sulfur oxides (SO_x).**Hazardous Reactions**

Reacts violently with water. Contact with metals may evolve flammable hydrogen gas.

Hazardous Polymerization

Hazardous polymerization does not occur.

11. TOXICOLOGICAL INFORMATION

Acute Toxicity

| Chemical Name | LD50 Oral | LD50 Dermal | LC50 Inhalation |
|---------------|--------------------|-------------|-----------------------------------|
| Sulfuric acid | 2140 mg/kg (Rat) | None Known | 510 mg/m ³ (Rat) 2 h |
| Water | 90 mL/kg (Rat) | None Known | None Known |

Chronic Toxicity**Chronic Toxicity**

Chronic exposure to corrosive mists or vapors may cause erosion of the teeth. Chronic exposure to mists containing sulfuric acid is a cancer hazard.

| Chemical Name | ACGIH | IARC | NTP | OSHA |
|---------------|------------|------------|------------|------------|
| Sulfuric acid | A2 | Group 1 | Known | X |
| Water | None Known | None Known | None Known | None Known |

ACGIH: (American Conference of Governmental Industrial Hygienists)

A2 - Suspected Human Carcinogen

IARC: (International Agency for Research on Cancer)

Group 1 - Carcinogenic to Humans

NTP: (National Toxicity Program)

Known - Known Carcinogen

OSHA: (Occupational Safety & Health Administration)

X - Present

| Chemical Name | EU - Endocrine Disruptors Candidate List | EU - Endocrine Disruptors - Evaluated Substances | Japan - Endocrine Disruptor Information |
|---------------|---|---|--|
| Sulfuric acid | None Known | None Known | None Known |
| Water | None Known | None Known | None Known |

12. ECOLOGICAL INFORMATION**Ecotoxicity**

The material may be toxic to aquatic life.

| Chemical Name | Toxicity to Algae | Toxicity to Fish | Microtox | Daphnia Magna (Water Flea) |
|---------------|-------------------|---|------------|-------------------------------|
| Sulfuric acid | None Known | LC50 > 500 mg/L Brachydanio rerio 96 h | None Known | EC50 = 29 mg/L 24 h |
| Water | None Known | None Known | None Known | None Known |

Bioaccumulation/Accumulation

When released into the soil, this material may leach into ground water. When released into the air, this material may be removed from the atmosphere to a moderate extent by wet or dry deposition.

| Chemical Name | Log Pow |
|---------------|------------|
| Sulfuric acid | None Known |
| Water | None Known |

13. DISPOSAL CONSIDERATIONS**Waste Disposal Method**

Dispose according to federal, state, and local regulations. If permitted, neutralize reagent with sodium bicarbonate/sodium carbonate, add slurry to large volume of water to dilute, rinse to drain with excess water.

| Chemical Name | RCRA - Halogenated Organic Compounds | RCRA - P Series Wastes | RCRA - F Series Wastes | RCRA - K Series Wastes |
|---------------------------|--------------------------------------|------------------------|------------------------|------------------------|
| Sulfuric acid - 7664-93-9 | None Known | None Known | None Known | None Known |
| Water - 7732-18-5 | None Known | None Known | None Known | None Known |

14. TRANSPORT INFORMATION**DOT**

Proper Shipping Name SULFURIC ACID (< 51% ACID)
Hazard Class 8
UN-No 2796
Packing Group II
Reportable Quantity (RQ) 1000

IATA

UN-No 2796
Proper Shipping Name SULPHURIC ACID (<51% ACID)
Hazard Class 8
Packing Group II

IMDG/IMO

Proper Shipping Name SULPHURIC ACID (<51% ACID)
Hazard Class 8
UN-No 2796
Packing Group II

15. REGULATORY INFORMATION**International Inventories**

| Component | TSCA | DSL | EINECS/ELINCS | ENCS | IECSC | KECL | PICCS | AICS |
|------------------------------------|---------|-----|---------------|--------------|-------|----------|-------|------|
| Sulfuric acid 7664-93-9 (3-5) | Present | X | X | 1-430; 1-724 | X | KE-32570 | X | X |
| Water 7732-18-5 (to 100%) | Present | X | X | ENCS | X | KE-35400 | X | X |

U.S. Federal Regulations**SARA 313**

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product contains a chemical or chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372

| Chemical Name | CAS-No | Weight % | SARA 313 - Threshold Values % |
|---------------|-----------|----------|-------------------------------|
| Sulfuric acid | 7664-93-9 | 3-5 | 1.0 |
| Water | 7732-18-5 | to 100% | None Known |

SARA 311/312 Hazard Categories

| | |
|-----------------------------------|-----|
| Acute Health Hazard | Yes |
| Chronic Health Hazard | Yes |
| Fire Hazard | No |
| Sudden Release of Pressure Hazard | No |
| Reactive Hazard | Yes |

Clean Water Act

This product contains the following substances which are regulated pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42).

| Component | CWA - Reportable Quantities | CWA - Toxic Pollutants | CWA - Priority Pollutants | CWA - Hazardous Substances |
|------------------------------------|-----------------------------|------------------------|---------------------------|----------------------------|
| Sulfuric acid 7664-93-9 (3-5) | 1000 lb | None Known | None Known | X |
| Water 7732-18-5 (to 100%) | None Known | None Known | None Known | None Known |

Clean Air Act, Section 112 Hazardous Air Pollutants (HAPs) (see 40 CFR 61)

This product does not contain any HAPs.

| Chemical Name | CAS-No | Weight % | HAPS data | VOC Chemicals | Class 1 Ozone Depletors | Class 2 Ozone Depletors |
|---------------|-----------|----------|------------|---------------|-------------------------|-------------------------|
| Sulfuric acid | 7664-93-9 | 3-5 | None Known | None Known | None Known | None Known |
| Water | 7732-18-5 | to 100% | None Known | None Known | None Known | None Known |

CERCLA

| Chemical Name | Hazardous Substances RQs | Extremely Hazardous Substances RQs |
|---------------|--------------------------|------------------------------------|
| Sulfuric acid | 1000 lb | 1000 lb |
| Water | None Known | None Known |

U.S. State Regulations

California Proposition 65

Warning! California Proposition 65 has classified "strong inorganic acid mists containing sulfuric acid" as a chemical known to the State of California to cause cancer. This classification applies only to "mists" containing sulfuric acid and not to sulfuric acid or sulfuric acid solutions, as is this solution.

| Chemical Name | CAS-No | California Prop. 65 |
|---------------|-----------|---------------------|
| Sulfuric acid | 7664-93-9 | Carcinogen |
| Water | 7732-18-5 | None Known |

U.S. State Right-to-Know Regulations

| Chemical Name | Massachusetts | New Jersey | Pennsylvania | Illinois | Rhode Island |
|---------------|---------------|------------|--------------|------------|--------------|
| Sulfuric acid | X | X | X | X | X |
| Water | None Known | None Known | None Known | None Known | None Known |

International Regulations**Mexico - Grade**

| Chemical Name | Carcinogen Status | Exposure Limits |
|---------------|-------------------|----------------------------------|
| Sulfuric acid | A2 | Mexico: TWA= 1 mg/m ³ |
| Water | None Known | None Known |

Canada

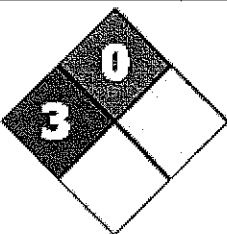

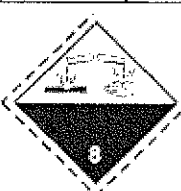
This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all the information required by the CPR.

| Component | WHMIS Hazard Class |
|------------------------------------|---|
| Sulfuric acid 7664-93-9 (3-5) | 1 % D1A E |
| Water 7732-18-5 (to 100%) | Uncontrolled product according to WHMIS classification criteria |



| Chemical Name | NPRI |
|---------------|------|
| Sulfuric acid | X |

16. OTHER INFORMATION

| NFPA | HMIS | PPE | Transport Symbol | | | | | | |
|---|--|---------------|------------------|--------------|---|------------|---|---|---|
|  | <table><tr><td>Health Hazard</td><td>3</td></tr><tr><td>Flammability</td><td>0</td></tr><tr><td>Reactivity</td><td>1</td></tr></table> | Health Hazard | 3 | Flammability | 0 | Reactivity | 1 |  |  |
| Health Hazard | 3 | | | | | | | | |
| Flammability | 0 | | | | | | | | |
| Reactivity | 1 | | | | | | | | |

Prepared By Regulatory Affairs Department

Issuing Date 12/6/2011

Revision Date 06-Dec-2011

Revision Note

Initial Release

Disclaimer

The information provided on this MSDS is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guide for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered as a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other material or in any process, unless specified in the text.

End of MSDS



MSDS

P.O. Box 329 - 802 Washington Avenue Chestertown, MD 21620 - USA

TELEPHONE # FOR INFORMATION 410 778-3100

24 HOUR EMERGENCY NUMBER (CHEM-TEL): USA, Canada, Puerto Rico 800-255-3924;

Outside North American Continent 813-248-0585 (call Collect)

MATERIAL SAFETY DATA SHEET

1. Product Identification

Product Code: 6310

Product Description: Manganese Buffer Reagent

Manufactured By: LaMotte Company

802 Washington Avenue

Chestertown, MD 21620

2. Composition/Information On Ingredients

| Hazard | CAS#/Name | % | PEL | TLV |
|--------|--|----|-----|-----|
| | 5949-29-1 Citric Acid | 26 | | |
| | 7558-79-4 Sodium Phosphate, Dibasic | 74 | | |

3. Hazards Overview

Primary Route Of Entry: Inhalation

Dust may irritate eyes, skin, respiratory tract.

HMIS Hazard

Scale: 4 = Extreme, 3 = High, 2 = Moderate, 1 = Slight, 0 = Least

Health: 1 Flammability: 0 Reactivity: 0

Carcinogenicity: None

Other Health Related Comments:

Product Code: 6310

Product Description: Manganese Buffer Reagent

4. First Aid Measures

Eye Contact: Flush with water for 15 minutes.

Skin Contact: Flush with water. Wash with soap and water.

Ingestion: Drink plenty of water. Consult a physician.

Inhalation: Remove to fresh air.

5. Fire Fighting Measures

Flash Point (Method Used): N/A

LEL: N/A

UEL: N/A

Extinguishing Media: Not a fire hazard

Special Fire Fighting Procedures: N/A

Unusual Fire & Explosion Hazard: N/A

6. Accidental Release Measures

Spray with water to keep dust to minimum. Sweep up, dissolve in water, and flush to drain with excess water.

7. Handling & Storage

Store in cool, dry, storage area away from incompatible materials.

Product Code: 6310

Product Description: Manganese Buffer Reagent

8. Exposure Controls/Personal Protection

Ventilation

Normal

Protection When Handling

Gloves Eye Protection Lab Coat

Work/Hygenic Practices: N/A

9. Physical & Chemical Properties

Appearance: White Crystalline powder

Solubility In Water: Soluble

Odor: None

pH: 6 (0.1g/10ml water)

Vapor Density: N/A

Vapor Pressure: N/A

Boiling Point: Unknown

Melting Point: Unknown

10. Stability & Reactivity

Stable: Yes

Conditions To Avoid: N/A

Incompatibility (Materials To Avoid): N/A

Hazardous Decomposition Products: N/A

11. Toxicological Information

Target Organs: N/A

Product Code: 6310

Product Description: Manganese Buffer Reagent

12. Ecological Information

Information Not Yet Available

13. Disposal Considerations

Dissolve and wash down drain with water. Dispose according to federal, state and local regulations.

14. Transportation Information

Not Regulated For Transport

15. Regulatory Information

Chemical Inventory Status

| Hazard | Ingredient | USA TSCA | Europe EC | --- Canada --- DSL NDSL | Australia | Japan |
|--------|------------|-------------|--------------|----------------------------|-----------|-------|
|--------|------------|-------------|--------------|----------------------------|-----------|-------|

Federal, State, & International Regulations

| Ingredient | --- SARA 302 --- | | ----- SARA 313 ----- | | CERCLA | RCRA 261.33 | TSCA 8(D) |
|------------|------------------|-----|----------------------|-------------------|--------|----------------|--------------|
| | RQ | TPQ | Listed | Chemical Category | | | |

Product Code: 6310

Product Description: Manganese Buffer Reagent

| | --- SARA 311/312 --- | | | | | ----- Australia ----- | | |
|------------|----------------------|---------|------|----------|------------|-----------------------|----------|-----------------|
| | Hazard Categories | | | | | Hazchem | Poison | This MSDS Is |
| Ingredient | Acute | Chronic | Fire | Pressure | Reactivity | Code | Schedule | WHMIS Compliant |

product 6310
as a whole

16. Other Information

Prepared By: Regulatory Affairs Department

Revised: 7/11/2009



Issuing Date 11/14/2011

Revision Number 0

1. PRODUCT AND COMPANY IDENTIFICATION

Product Name MANGANESE PERIODATE REAGENT

Product Code(s) 6311

Synonyms none

Recommended Use Test kit reagent. Industrial (not for food or food contact use). Laboratory chemicals.

Company LaMotte Company, Inc.
802 Washington Avenue
P.O. Box 329
Chestertown, MD 21620
USA

Emergency Telephone Number 24 Hour Emergency Number (CHEM-TEL):
USA, Canada, Puerto Rico 1-800-255-3924
Outside North American Continent (Call collect) 813-248-0585

2. HAZARDS IDENTIFICATION**WARNING!****Emergency Overview**

Harmful if swallowed

Harmful by inhalation

May cause skin, eye, and respiratory tract irritation

Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea

Appearance White

Physical State Crystalline, Powder

Odor Slight

Potential Health Effects

Principle Routes of Exposure Ingestion, and, Inhalation.

Acute Toxicity**Eyes**

May cause irritation. May cause redness, itching, and pain.

Skin

May cause irritation. Symptoms can include redness, itching, and pain.

Inhalation

May cause irritation of respiratory tract.

Ingestion

Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea.

Chronic Effects

Chronic exposure causes detriment of thyroid gland function Prolonged skin contact may defat the skin and produce dermatitis

3. COMPOSITION/INFORMATION ON INGREDIENTS

| Chemical Name | CAS-No | Weight % |
|----------------------|-----------|----------|
| Sodium metaperiodate | 7790-28-5 | 1-5 |
| Sodium sulfate | 7757-82-6 | to 100% |

4. FIRST AID MEASURES

| | |
|-----------------------------------|---|
| General Advice | Do not breathe dust. Do not get in eyes, on skin, or on clothing. Show this safety data sheet to the doctor in attendance. |
| Eye Contact | Rinse thoroughly with plenty of water for at least 15 minutes, lifting lower and upper eyelids. Consult a physician. |
| Skin Contact | Wash off immediately with soap and plenty of water for at least 15 minutes while removing all contaminated clothing and shoes. If irritation develops or persists, consult physician. |
| Inhalation | Move to fresh air. If breathing is difficult, give oxygen. If symptoms persist, call a physician. |
| Ingestion | DO NOT induce vomiting unless directed to do so by a physician or poison control center. Drink plenty of water. Never give anything by mouth to an unconscious person. Consult a physician. |
| Protection of First-aiders | Use personal protective equipment. See Section 8 for more detail. Do not use mouth-to-mouth method if victim ingested or inhaled the substance; induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. |

5. FIRE-FIGHTING MEASURES

| | | | | |
|---|--|-----------------------|--------------------|---|
| Flammable Properties | Not flammable. Non-combustible, substance itself does not burn but may decompose upon heating to produce corrosive and/or toxic fumes. | | | |
| Flash Point | Not applicable | | | |
| Suitable Extinguishing Media | Water spray, dry chemical, carbon dioxide (CO ₂), or foam. | | | |
| <i>Contains a chemical that is an oxidizer: Sodium metaperiodate</i> | | | | |
| Explosion Data | | | | |
| Specific Hazards Arising from the Chemical | | | | |
| This is a strong oxidizer and will react vigorously or explosively with many materials including fuels. | | | | |
| NFPA | Health Hazard 1 | Flammability 0 | Stability 1 | Physical and Chemical Hazards OX |
| HMIS | Health Hazard 1 | Flammability 0 | Stability 1 | |

6. ACCIDENTAL RELEASE MEASURES

| | |
|--------------------------------|---|
| Personal Precautions | Refer to Section 8. Ensure adequate ventilation. Wear protective gloves/clothing and eye/face protection. |
| Methods for Containment | Sweep up in a manner that does not disperse dust and shovel into suitable containers for disposal. |
| Methods for Cleaning Up | After cleaning, flush away traces with water. |

7. HANDLING AND STORAGE

| | |
|-----------------|---|
| Handling | Handle in accordance with good industrial hygiene and safety practice. Prevent contact with skin, eyes, and clothing. Do not ingest. Do not eat, drink, or smoke when using this product. |
| Storage | Keep containers tightly closed in a dry, cool, and well-ventilated place. Keep out of the reach of children. |

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

| Chemical Name | ACGIH TLV | OSHA PEL | NIOSH IDLH |
|-----------------------------------|------------|------------|------------|
| Sodium metaperiodate 7790-28-5 | None Known | None Known | None Known |
| Sodium sulfate 7757-82-6 | None Known | None Known | None Known |

Personal Protective Equipment

| | |
|---------------------------------|--|
| Eye/Face Protection | Safety glasses with side-shields. Goggles. |
| Skin and Body Protection | Wear protective gloves/clothing. |
| Respiratory Protection | Maintain adequate ventilation. |

Hygiene Measures

Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and immediately after handling the product. Do not eat, drink or smoke when using this product.

9. PHYSICAL AND CHEMICAL PROPERTIES

| | | | |
|-----------------------|---------------------|-----------------------------------|---------------------|
| Appearance | White | Odor | Slight |
| Physical State | Crystalline, Powder | pH | 4 (0.1g/10mL water) |
| Flash Point | Not applicable | Boiling Point/Range | No data available |
| | | Flammability Limits in Air | Not flammable |

| | | | |
|-----------------------|--------------------------|----------------------|--------------------------|
| Vapor Pressure | No information available | Vapor Density | No information available |
|-----------------------|--------------------------|----------------------|--------------------------|

10. STABILITY AND REACTIVITY

| | |
|---|--|
| Stability | Stable under normal conditions of use and storage. |
| Incompatible Products | Strong reducing agents. Combustible materials. Organic material. Incompatible with strong acids and bases. |
| Conditions to Avoid | Heat, flames and sparks. Exposure to air or moisture over prolonged periods. |
| Hazardous Decomposition Products | Carbon oxides (COx). Nitrogen oxides (NOx). Sulfur oxides (SOx). Ammonia. |
| Hazardous Reactions | None under normal processing. |
| Hazardous Polymerization | Hazardous polymerization does not occur. |

11. TOXICOLOGICAL INFORMATION**Acute Toxicity**

| Chemical Name | LD50 Oral | LD50 Dermal | LC50 Inhalation |
|----------------------|------------|-------------|-----------------|
| Sodium metaperiodate | None Known | None Known | None Known |
| Sodium sulfate | None Known | None Known | None Known |

Chronic Toxicity

| | |
|-------------------------|---|
| Chronic Toxicity | Chronic exposure causes detriment of thyroid gland function . Prolonged skin contact may defat the skin and produce dermatitis. |
|-------------------------|---|

| Chemical Name | ACGIH | IARC | NTP | OSHA |
|----------------------|------------|------------|------------|------------|
| Sodium metaperiodate | None Known | None Known | None Known | None Known |
| Sodium sulfate | None Known | None Known | None Known | None Known |

Endocrine Disruptor Information

| Chemical Name | EU - Endocrine Disruptors Candidate List | EU - Endocrine Disruptors - Evaluated Substances | Japan - Endocrine Disruptor Information |
|----------------------|--|--|---|
| Sodium metaperiodate | None Known | None Known | None Known |
| Sodium sulfate | None Known | None Known | None Known |

12. ECOLOGICAL INFORMATION**Ecotoxicity**

May cause long-term adverse effects in the aquatic environment.

| Chemical Name | Toxicity to Algae | Toxicity to Fish | Microtox | Daphnia Magna (Water Flea) |
|----------------------|-------------------|---|------------|--|
| Sodium metaperiodate | None Known | None Known | None Known | None Known |
| Sodium sulfate | None Known | LC50= 13 mg/L <i>Lepomis macrochirus</i> 96 h | None Known | EC50 = 2564 mg/L 48 h EC50 = 4547 mg/L 96 h |

Persistence and Degradability

Based on components, product is expected to be readily biodegradable.

| Chemical Name | Log Pow |
|----------------------|------------|
| Sodium metaperiodate | None Known |
| Sodium sulfate | None Known |

13. DISPOSAL CONSIDERATIONS**Waste Disposal Method**

Dispose of contents/container in accordance with local regulation.

Contaminated Packaging

Dispose of in accordance with local regulations.

| Chemical Name | RCRA - Halogenated Organic Compounds | RCRA - P Series Wastes | RCRA - F Series Wastes | RCRA - K Series Wastes |
|----------------------------------|--------------------------------------|------------------------|------------------------|------------------------|
| Sodium metaperiodate - 7790-28-5 | None Known | None Known | None Known | None Known |
| Sodium sulfate - 7757-82-6 | None Known | None Known | None Known | None Known |

14. TRANSPORT INFORMATIONDOT

| | |
|----------------------|---|
| Proper Shipping Name | OXIDIZING SOLID, N. O. S. (3% Sodium metaperiodate) |
| Hazard Class | 5.1 |
| UN-No | 1479 |
| Packing Group | III |

IATA

| | |
|----------------------|---|
| UN-No | 1479 |
| Proper Shipping Name | OXIDIZING SOLID, N. O. S. (3% Sodium metaperiodate) |
| Hazard Class | 5.1 |
| Packing Group | III |

IMDG/IMO

| | |
|----------------------|---|
| Proper Shipping Name | OXIDIZING SOLID, N. O. S. (3% Sodium metaperiodate) |
| Hazard Class | 5.1 |
| UN-No | 1479 |
| Packing Group | III |

15. REGULATORY INFORMATION**International Inventories**

| Component | TSCA | DSL | EINECS/ELINCS | ENCS | IECSC | KECL | PICCS | AICS |
|---|---------|-----|---------------|-------|-------|----------|-------|------|
| Sodium metaperiodate 7790-28-5 (1-5) | Present | X | X | 1-444 | X | KE-31572 | X | X |
| Sodium sulfate 7757-82-6 (to 100%) | Present | X | X | 1-501 | X | KE-31609 | X | X |

U.S. Federal Regulations**SARA 313**

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product does not contain any chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372.

| Chemical Name | CAS-No | Weight % | SARA 313 - Threshold Values % |
|----------------------|-----------|----------|-------------------------------|
| Sodium metaperiodate | 7790-28-5 | 1-5 | None Known |
| Sodium sulfate | 7757-82-6 | to 100% | None Known |

SARA 311/312 Hazard Categories

| | |
|-----------------------------------|-----|
| Acute Health Hazard | Yes |
| Chronic Health Hazard | Yes |
| Fire Hazard | No |
| Sudden Release of Pressure Hazard | No |
| Reactive Hazard | Yes |

Clean Water Act

| Component | CWA - Reportable Quantities | CWA - Toxic Pollutants | CWA - Priority Pollutants | CWA - Hazardous Substances |
|---|-----------------------------|------------------------|---------------------------|----------------------------|
| Sodium metaperiodate 7790-28-5 (1-5) | None Known | None Known | None Known | None Known |
| Sodium sulfate 7757-82-6 (to 100%) | None Known | None Known | None Known | None Known |

Clean Air Act, Section 112 Hazardous Air Pollutants (HAPs) (see 40 CFR 61)

This product does not contain any HAPs.

| Chemical Name | CAS-No | Weight % | HAPS data | VOC Chemicals | Class 1 Ozone Depletors | Class 2 Ozone Depletors |
|----------------------|-----------|----------|------------|---------------|-------------------------|-------------------------|
| Sodium metaperiodate | 7790-28-5 | 1-5 | None Known | None Known | None Known | None Known |
| Sodium sulfate | 7757-82-6 | to 100% | None Known | None Known | None Known | None Known |

CERCLA

| Chemical Name | Hazardous Substances RQs | Extremely Hazardous Substances RQs |
|----------------------|--------------------------|------------------------------------|
| Sodium metaperiodate | None Known | None Known |
| Sodium sulfate | None Known | None Known |

U.S. State Regulations**California Proposition 65**

This product does not contain any Proposition 65 chemicals

| Chemical Name | CAS-No | California Prop. 65 |
|---------------|--------|---------------------|
| | | |

| | | |
|----------------------|-----------|------------|
| Sodium metaperiodate | 7790-28-5 | None Known |
| Sodium sulfate | 7757-82-6 | None Known |

U.S. State Right-to-Know Regulations

| Chemical Name | Massachusetts | New Jersey | Pennsylvania | Illinois | Rhode Island |
|----------------------|---------------|------------|--------------|------------|--------------|
| Sodium metaperiodate | None Known | None Known | None Known | None Known | None Known |
| Sodium sulfate | X | None Known | X | None Known | None Known |

International Regulations**Mexico - Grade**



| Chemical Name | Carcinogen Status | Exposure Limits |
|----------------------|-------------------|-----------------|
| Sodium metaperiodate | None Known | None Known |
| Sodium sulfate | None Known | None Known |

Canada

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

| Component | WHMIS Hazard Class |
|---|---|
| Sodium metaperiodate 7790-28-5 (1-5) | C |
| Sodium sulfate 7757-82-6 (to 100%) | Uncontrolled product according to WHMIS classification criteria |

**16. OTHER INFORMATION**

| NFPA | HMIS | PPE | Transport Symbol | | | | | | |
|---|---|---------------|------------------|-------------|---|------------|---|---|--|
|  | <table><tr><td>Health Hazard</td><td>1</td></tr><tr><td>Env. Hazard</td><td>0</td></tr><tr><td>Reactivity</td><td>1</td></tr></table> | Health Hazard | 1 | Env. Hazard | 0 | Reactivity | 1 |  | |
| Health Hazard | 1 | | | | | | | | |
| Env. Hazard | 0 | | | | | | | | |
| Reactivity | 1 | | | | | | | | |

Prepared By Regulatory Affairs Department

Issuing Date 11/14/2011

Revision Date 17-Nov-2011

Revision Note

Initial Release

Disclaimer

The information provided on this MSDS is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guide for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered as a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other material or in any process, unless specified in the text.

End of MSDS



MSDS

P.O. Box 329 - 802 Washington Avenue Chestertown, MD 21620 - USA

TELEPHONE # FOR INFORMATION 410 778-3100

24 HOUR EMERGENCY NUMBER (CHEM-TEL): USA, Canada, Puerto Rico 800-255-3924;

Outside North American Continent 813-248-0585 (call Collect)

MATERIAL SAFETY DATA SHEET

1. Product Identification

Product Code: 5145

Product Description: Manganese-Magnesium
Test Solution #2

Manufactured By: LaMotte Company

802 Washington Avenue
Chestertown, MD 21620

2. Composition/Information On Ingredients

| Hazard | CAS#/Name | % | PEL | TLV |
|--------|-------------------------------|----|-----------------------|-----------------------|
| Yes | 1310-73-2 Sodium Hydroxide | 15 | C 2 mg/m ³ | C 2 mg/m ³ |
| No | 7732-18-5 Water | 85 | None Established | None Established |

3. Hazards Overview

Primary Route Of Entry: Eye Skin Ingestion Inhalation

Poison! Danger! Corrosive. Liquid and mist cause severe burns to all body tissue. Inhalation may cause coughing, chest pains, damage to lungs. Ingestion may be fatal. Reacts with water, acids, and other materials.

HMIS Hazard

Scale: 4 = Extreme, 3 = High, 2 = Moderate, 1 = Slight, 0 = Least

Health: 3 Flammability: 0 Reactivity: 2

Carcinogenicity: None:

Other Health Related Comments:

Sodium hydroxide has been investigated as a mutagen.

Product Code: 5145

Product Description: Manganese-Magnesium
Test Solution #2

4. First Aid Measures

Eye Contact: Immediately flush with water for 15 minutes while periodically lifting upper and lower eyelids. Contact physician immediately.

Skin Contact: Flush with water for 15 minutes while removing affected clothing/shoes. Wash. Contact physician. Wash clothing prior to reuse.

Ingestion: DO NOT induce vomiting. Drink several glasses of water or milk. Contact physician immediately.

Inhalation: Remove to fresh air. If breathing is difficult, give oxygen. If not breathing, begin artificial respiration and seek immediate medical attention.

5. Fire Fighting Measures

Flash Point (Method Used): N/A

LEL: N/A

UEL: N/A

Extinguishing Media: Not a fire hazard

Special Fire Fighting Procedures: Wear protective equipment.

Unusual Fire & Explosion Hazard: Can react with metals to produce hydrogen gas which can form an explosive mixture with air.

6. Accidental Release Measures

Wear appropriate PPE and ventilate area. Neutralize spill with 6M hydrochloric (or similar) acid, place into chemical waste container, and hold for disposal. Dispose according to federal, state, and local regulations.

7. Handling & Storage

Store in cool, dry, area away from incompatible materials such as strong acids and metals

Product Code: 5145

Product Description: Manganese-Magnesium

Test Solution #2

8. Exposure Controls/Personal Protection

Ventilation

Normal

Protection When Handling

Eye Protection Gloves Lab Coat

chemical gloves

safety glasses

Work/Hygenic Practices: Avoid all contact with eyes, skin, or clothing. Wash after handling.

9. Physical & Chemical Properties

Appearance: Clear Colorless Liquid

Vapor Density: Unknown

Solubility In Water: Soluble

Vapor Pressure: <13 mm @ 20° C

Odor: None

Boiling Point: 107° C

pH: 14

Melting Point: ca. -10° C

10. Stability & Reactivity

Stable: Yes

Conditions To Avoid: Heat

Incompatibility (Materials To Avoid): Strong acids, metals

Hazardous Decomposition Products: N/A

11. Toxicological Information

Target Organs: Corrosive to all body parts Eyes Skin

Product Code: 5145

Product Description: Manganese-Magnesium
Test Solution #2

12. Ecological Information

Information Not Yet Available

13. Disposal Considerations

Dispose according to federal, state, and local regulations.

14. Transportation Information

Proper Shipping Name:

DOT: SODIUM HYDROXIDE SOLUTION

IATA: SODIUM HYDROXIDE SOLUTION

Hazard Class/Div:

DOT: 8

IATA: 8

UN: 1824

Packing Group: II

15. Regulatory Information

Chemical Inventory Status

| Hazard | Ingredient | USA TSCA | Europe EC | --- Canada --- DSL | NDSL | Australia | Japan |
|--------|-------------------------------|-------------|--------------|-----------------------|------|-----------|-------|
| Yes | 1310-73-2 Sodium Hydroxide | Yes | Yes | Yes | No | Yes | Yes |
| No | 7732-18-5 Distilled Water | Yes | Yes | Yes | No | Yes | Yes |

Federal, State, & International Regulations

| Ingredient | --- SARA 302 --- | | ----- SARA 313 ----- | | CERCLA | RCRA 261.33 | TSCA 8(D) |
|-------------------------------|------------------|-----|----------------------|-------------------|--------|----------------|--------------|
| | RQ | TPQ | Listed | Chemical Category | | | |
| 1310-73-2 Sodium Hydroxide | No | No | No | No | 1000 | No | No |
| 7732-18-5 Distilled Water | No | No | No | No | No | No | No |

Product Code: 5145

Product Description: Manganese-Magnesium
Test Solution #2

| Ingredient | --- SARA 311/312 --- | | | | | ----- Australia ----- | | This MSDS Is WHMIS Compliant |
|-------------------------------|----------------------|---------|------|----------|------------|-----------------------|--------------------|---------------------------------|
| | Acute | Chronic | Fire | Pressure | Reactivity | Hazchem Code | Poison Schedule | |
| 1310-73-2 Sodium Hydroxide | Yes | No | No | No | Yes | 2R | S6 | |
| 7732-18-5 Distilled Water | No | No | No | No | No | None Allocated | None Allocated | |
| product 5145 as a whole | Yes | Yes | No | No | Yes | 2R | S6 | Yes |

16. Other Information

Keep out of reach of children.

Prepared By: Regulatory Affairs Department

Revised: 7/10/2009



Issuing Date 10/24/2011

Revision Number 0

1. PRODUCT AND COMPANY IDENTIFICATION

Product Name MIXED ACID REAGENT

Product Code(s) V-6278

Synonyms none / ninguno / aucun

Recommended Use Test kit reagent. Laboratory chemicals. Industrial (not for food or food contact use).

Company LaMotte Company, Inc.
802 Washington Avenue
P.O. Box 329
Chestertown, MD 21620
USA

Emergency Telephone Number 24 Hour Emergency Number (CHEM-TEL):
USA, Canada, Puerto Rico 1-800-255-3924
Outside North American Continent (Call collect) 813-248-0585

2. HAZARDS IDENTIFICATION

Emergency Overview
May be harmful if swallowed
May cause skin, eye, and respiratory tract irritation

Appearance Clear, Blue green **Physical State** Liquid **Odor** Vinegar

Potential Health Effects

Principle Routes of Exposure Eye contact, Skin contact, and, Ingestion.

Acute Toxicity

Eyes May cause irritation.
Skin May cause irritation.
Inhalation May cause irritation of respiratory tract.
Ingestion May cause irritation. May be harmful if swallowed.

Chronic Effects

Aggravated Medical Conditions None known.

Environmental Hazard No information available.

3. COMPOSITION/INFORMATION ON INGREDIENTS

| Chemical Name | CAS-No | Weight % |
|--|------------|----------|
| Copper (II) sulfate pentahydrate (1:1:5) | 7758-99-8 | <0.1 |
| Sodium phosphate dibasic | 7558-79-4 | <0.5 |
| Acetic acid | 64-19-7 | 1-5 |
| Citric acid | 77-92-9 | 1-5 |
| Sodium chloride USP | 7647-14-5 | 5-15 |
| Ammonium chloride | 12125-02-9 | 10-20 |
| Water | 7732-18-5 | to 100% |

4. FIRST AID MEASURES

| | |
|----------------------------|---|
| General Advice | Do not get in eyes, on skin, or on clothing. Show this safety data sheet to the doctor in attendance. |
| Eye Contact | Rinse thoroughly with plenty of water for at least 15 minutes, lifting lower and upper eyelids. Consult a physician. |
| Skin Contact | Wash off with soap and plenty of water removing all contaminated clothes and shoes. If irritation develops or persists, consult physician. |
| Inhalation | Move to fresh air. If breathing is difficult, give oxygen. |
| Ingestion | Drink plenty of water. Clean mouth with water. Consult a physician. |
| Notes to Physician | Treat symptomatically. |
| Protection of First-aiders | Use personal protective equipment. See Section 8 for more detail. Do not use mouth-to-mouth method if victim ingested or inhaled the substance; induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. |

5. FIRE-FIGHTING MEASURES

| | | | | |
|---|-----------------|---|-------------|-----------------------------------|
| Flammable Properties | | Not a fire hazard. | | |
| Flash Point | | Not applicable | | |
| Suitable Extinguishing Media | | Water spray, dry chemical, carbon dioxide (CO ₂), or foam. | | |
| Explosion Data | | | | |
| Protective Equipment and Precautions for Firefighters | | As in any fire, wear self-contained breathing apparatus and full protective gear. | | |
| NFPA | Health Hazard 1 | Flammability 0 | Stability 0 | Physical and Chemical Hazards N/A |
| HMIS | Health Hazard 1 | Flammability 0 | Stability 0 | |

6. ACCIDENTAL RELEASE MEASURES

| | |
|-------------------------|---|
| Personal Precautions | Avoid contact with the skin and the eyes. Refer to Section 8. |
| Methods for Containment | Sweep up in a manner that does not disperse dust and shovel into suitable containers for disposal. Dispose according to federal, state, and local regulations. |
| Methods for Cleaning Up | Containerize spill material and hold for later disposal. If local regulations permit, dissolve with large volume of water, neutralize with alkaline material (sodium bicarbonate), then rinse to drain with excess water. After cleaning, flush away traces with water. |

7. HANDLING AND STORAGE

| | |
|----------|---|
| Handling | Handle in accordance with good industrial hygiene and safety practice. Provide appropriate exhaust ventilation at places where dust is formed. Prevent contact with skin, eyes, and clothing. Do not ingest. Do not eat, drink, or smoke when using this product. |
| Storage | Keep containers tightly closed in a dry, cool, and well-ventilated place. Protect from moisture. Keep out of the reach of children. |

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

| Chemical Name | ACGIH TLV | OSHA PEL | NIOSH IDLH |
|--|--|--|--|
| Copper (II) sulfate pentahydrate (1:1:5) 7758-99-8 | None Known | None Known | TWA: 1 mg/m ³ |
| Sodium phosphate dibasic 7558-79-4 | None Known | None Known | None Known |
| Acetic acid 64-19-7 | = 15 ppm STEL TWA: 10 ppm | TWA: 10 ppm TWA: 25 mg/m ³ | IDLH: 50 ppm TWA: 25 mg/m ³ TWA: 10 ppm STEL: 15 ppm STEL: 37 mg/m ³ |
| Citric acid 77-92-9 | None Known | None Known | None Known |
| Sodium chloride USP 7647-14-5 | None Known | None Known | None Known |
| Ammonium chloride 12125-02-9 | = 20 mg/m ³ STEL TWA: 10 mg/m ³ | None Known | TWA: 10 mg/m ³ STEL: 20 mg/m ³ |
| Water 7732-18-5 | None Known | None Known | None Known |

Engineering Measures

Provide appropriate exhaust ventilation at places where dust is formed. Ensure that eyewash stations and safety showers are close to the workstation location.

Personal Protective Equipment**Eye/Face Protection**

Safety glasses with side-shields. Avoid contact with eyes.

Skin and Body Protection

Gloves & Lab Coat.

Respiratory Protection

Maintain adequate ventilation.

Hygiene Measures

Avoid contact with skin, eyes and clothing. Handle in accordance with good industrial hygiene and safety practice. Wash hands and face before breaks and immediately after handling the product.

9. PHYSICAL AND CHEMICAL PROPERTIES

| | | | |
|---------------------|--------------------------|----------------------------|--------------------------|
| Appearance | Clear Blue green | Odor | Vinegar |
| Physical State | Liquid | pH | 2-3 (0.1g/10mL water) |
| Flash Point | Not applicable | Autoignition Temperature | Not applicable |
| Boiling Point/Range | > 100°C/212°F | Flammability Limits in Air | No data available |
| Explosion Limits | No data available | | |
| Specific Gravity | No data available | Molecular Weight | No data available |
| Water Solubility | Soluble in water | Solubility | Soluble |
| Vapor Pressure | No information available | Vapor Density | No information available |

10. STABILITY AND REACTIVITY**Stability**

Stable.

Incompatible Products

Alkalis. Strong oxidizing agents. Strong bases.

Conditions to Avoid

Exposure to air or moisture over prolonged periods. Excessive heat.

Hazardous Decomposition Products Ammonia. Hydrogen chloride. Sodium oxides.

Hazardous Reactions

Hazardous polymerization does not occur.

11. TOXICOLOGICAL INFORMATION

Acute Toxicity**Product Information**

Product does not present an acute toxicity hazard based on known or supplied information.

| Chemical Name | LD50 Oral | LD50 Dermal | LC50 Inhalation |
|--|--------------------|-----------------------|---------------------------------|
| Copper (II) sulfate pentahydrate (1:1:5) | 300 mg/kg (Rat) | 1000 mg/kg (Rabbit) | None Known |
| Sodium phosphate dibasic | 17 g/kg (Rat) | None Known | None Known |
| Acetic acid | 3310 mg/kg (Rat) | 1060 mg/kg (Rabbit) | 11.4 mg/L (Rat) 1 h |
| Citric acid | 3000 mg/kg (Rat) | None Known | None Known |
| Sodium chloride USP | None Known | 10 g/kg (Rabbit) | 42 g/m ³ (Rat) 1 h |
| Ammonium chloride | 1410 mg/kg (Rat) | None Known | None Known |
| Water | 90 mL/kg (Rat) | None Known | None Known |

Chronic Toxicity**Carcinogenicity**

There are no known carcinogenic chemicals in this product.

| Chemical Name | ACGIH | IARC | NTP | OSHA |
|--|------------|------------|------------|------------|
| Copper (II) sulfate pentahydrate (1:1:5) | None Known | None Known | None Known | None Known |
| Sodium phosphate dibasic | None Known | None Known | None Known | None Known |
| Acetic acid | None Known | None Known | None Known | None Known |
| Citric acid | None Known | None Known | None Known | None Known |
| Sodium chloride USP | None Known | None Known | None Known | None Known |
| Ammonium chloride | None Known | None Known | None Known | None Known |
| Water | None Known | None Known | None Known | None Known |

Endocrine Disruptor Information

| Chemical Name | EU - Endocrine Disruptors Candidate List | EU - Endocrine Disruptors - Evaluated Substances | Japan - Endocrine Disruptor Information |
|--|--|--|---|
| Copper (II) sulfate pentahydrate (1:1:5) | None Known | None Known | None Known |
| Sodium phosphate dibasic | None Known | None Known | None Known |
| Acetic acid | None Known | None Known | None Known |
| Citric acid | None Known | None Known | None Known |
| Sodium chloride USP | None Known | None Known | None Known |
| Ammonium chloride | None Known | None Known | None Known |
| Water | None Known | None Known | None Known |

12. ECOLOGICAL INFORMATION

Ecotoxicity

| Chemical Name | Toxicity to Algae | Toxicity to Fish | Microtox | Daphnia Magna (Water Flea) |
|--|-------------------|--|---|----------------------------|
| Copper (II) sulfate pentahydrate (1:1:5) | None Known | LC50= 0.1 mg/L Oncorhynchus mykiss 96 h | EC50 < 0.25 mg/L 30 min EC50 = 0.25 mg/L 15 min EC50 = 1.3 mg/L 5 min | EC50 = 0.24 mg/L 48 h |
| Sodium phosphate dibasic | None Known | None Known | None Known | None Known |
| Acetic acid | None Known | LC50= 75 mg/L <i>Lepomis macrochirus</i> 96 h LC50= 88 mg/L <i>Pimephales promelas</i> 96 h | EC50 = 8.8 mg/L 15 min EC50 = 8.8 mg/L 25 min EC50 = 8.8 mg/L 5 min | EC50 = 95 mg/L 24 h |
| Citric acid | None Known | LC50= 1516 mg/L <i>Lepomis macrochirus</i> 96 h LC50= 440 mg/L <i>Leuciscus idus</i> 96 h | EC50 = 14 mg/L 15 min | EC50 = 120 mg/L 72 h |
| Sodium chloride USP | None Known | LC50= 12946 mg/L <i>Lepomis macrochirus</i> 96 h LC50= 7650 mg/L <i>Pimephales promelas</i> 96 h LC50= 9675 mg/L <i>Lepomis macrochirus</i> 96 h | None Known | EC50 = 1000 mg/L 48 h |
| Ammonium chloride | None Known | LC50= 209 mg/L <i>Cyprinus carpio</i> 96 h | None Known | EC50 = 202 mg/L 24 h |
| Water | None Known | None Known | None Known | None Known |

Persistence and Degradability No information available.

Bioaccumulation/Accumulation No information available.

| Chemical Name | Log Pow |
|--|---------------|
| Copper (II) sulfate pentahydrate (1:1:5) | None Known |
| Sodium phosphate dibasic | None Known |
| Acetic acid | = -0.31 20 °C |
| Citric acid | -1.72 20 °C |
| Sodium chloride USP | None Known |
| Ammonium chloride | None Known |
| Water | None Known |

13. DISPOSAL CONSIDERATIONS**Waste Disposal Method**

Dispose according to federal, state, and local regulations.

Contaminated Packaging

Dispose of in accordance with local regulations.

| Chemical Name | RCRA - Halogenated Organic Compounds | RCRA - P Series Wastes | RCRA - F Series Wastes | RCRA - K Series Wastes |
|--|--------------------------------------|------------------------|------------------------|------------------------|
| Copper (II) sulfate pentahydrate (1:1:5) - 7758-99-8 | None Known | None Known | None Known | None Known |
| Sodium phosphate dibasic - 7558-79-4 | None Known | None Known | None Known | None Known |
| Acetic acid - 64-19-7 | None Known | None Known | None Known | None Known |
| Citric acid - 77-92-9 | None Known | None Known | None Known | None Known |
| Sodium chloride USP - 7647-14-5 | None Known | None Known | None Known | None Known |
| Ammonium chloride - 12125-02-9 | None Known | None Known | None Known | None Known |
| Water - 7732-18-5 | None Known | None Known | None Known | None Known |

14. TRANSPORT INFORMATIONDOT

Not regulated

IATA

Not regulated

IMDG/IMO

Not regulated

15. REGULATORY INFORMATION

International Inventories

| Component | TSCA | DSL | EINECS/ELINCS | ENCS | IECSC | KECL | PICCS | AICS |
|--|---------|-----|---------------|--------|-------|----------|-------|------|
| Copper (II) sulfate pentahydrate (1:1:5) 7758-99-8 (<0.1) | TSCA | DSL | EINECS/ELINCS | ENCS | X | KECL | X | X |
| Sodium phosphate dibasic 7558-79-4 (<0.5) | Present | X | X | 1-497 | X | KE-12344 | X | X |
| Acetic acid 64-19-7 (1-5) | Present | X | X | 2-688 | X | KE-00013 | X | X |
| Citric acid 77-92-9 (1-5) | Present | X | X | 2-1318 | X | KE-20831 | X | X |
| Sodium chloride USP 7647-14-5 (5-15) | Present | X | X | 1-236 | X | KE-31387 | X | X |
| Ammonium chloride 12125-02-9 (10-20) | Present | X | X | 1-218 | X | KE-01645 | X | X |
| Water 7732-18-5 (to 100%) | Present | X | X | ENCS | X | KE-35400 | X | X |

U.S. Federal Regulations

SARA 313

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product contains a chemical or chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372

| Chemical Name | CAS-No | Weight % | SARA 313 - Threshold Values % |
|--|------------|----------|-------------------------------|
| Copper (II) sulfate pentahydrate (1:1:5) | 7758-99-8 | <0.1 | 1.0 |
| Sodium phosphate dibasic | 7558-79-4 | <0.5 | None Known |
| Acetic acid | 64-19-7 | 1-5 | None Known |
| Citric acid | 77-92-9 | 1-5 | None Known |
| Sodium chloride USP | 7647-14-5 | 5-15 | None Known |
| Ammonium chloride | 12125-02-9 | 10-20 | 1.0 |
| Water | 7732-18-5 | to 100% | None Known |

SARA 311/312 Hazard Categories

| | |
|-----------------------------------|-----|
| Acute Health Hazard | Yes |
| Chronic Health Hazard | No |
| Fire Hazard | No |
| Sudden Release of Pressure Hazard | No |
| Reactive Hazard | No |

Clean Water Act

This product contains the following substances which are regulated pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42).

| Component | CWA - Reportable Quantities | CWA - Toxic Pollutants | CWA - Priority Pollutants | CWA - Hazardous Substances |
|--|-----------------------------|------------------------|---------------------------|----------------------------|
| Copper (II) sulfate pentahydrate (1:1:5) 7758-99-8 (<0.1) | None Known | X | None Known | None Known |
| Sodium phosphate dibasic 7558-79-4 (<0.5) | 5000 lb | None Known | None Known | X |
| Acetic acid 64-19-7 (1-5) | 5000 lb | None Known | None Known | X |
| Citric acid 77-92-9 (1-5) | None Known | None Known | None Known | None Known |
| Sodium chloride USP 7647-14-5 (5-15) | None Known | None Known | None Known | None Known |

MIXED ACID REAGENT

Product Code(s) V-6278

| | | | | |
|---|------------|------------|------------|------------|
| Ammonium chloride 12125-02-9 (10-20) | 5000 lb | None Known | None Known | X |
| Water 7732-18-5 (to 100%) | None Known | None Known | None Known | None Known |

Clean Air Act, Section 112 Hazardous Air Pollutants (HAPs) (see 40 CFR 61)

This product contains the following substances which are listed hazardous air pollutants (HAPS) under Section 112 of the Clean Air Act:

| Chemical Name | CAS-No | Weight % | HAPS data | VOC Chemicals | Class 1 Ozone Depletors | Class 2 Ozone Depletors |
|--|------------|----------|------------|---------------|-------------------------|-------------------------|
| Copper (II) sulfate pentahydrate (1:1:5) | 7758-99-8 | <0.1 | None Known | None Known | None Known | None Known |
| Sodium phosphate dibasic | 7558-79-4 | <0.5 | None Known | None Known | None Known | None Known |
| Acetic acid | 64-19-7 | 1-5 | None Known | Group II | None Known | None Known |
| Citric acid | 77-92-9 | 1-5 | None Known | None Known | None Known | None Known |
| Sodium chloride USP | 7647-14-5 | 5-15 | None Known | None Known | None Known | None Known |
| Ammonium chloride | 12125-02-9 | 10-20 | None Known | None Known | None Known | None Known |
| Water | 7732-18-5 | to 100% | None Known | None Known | None Known | None Known |

CERCLA

| Chemical Name | Hazardous Substances RQs | Extremely Hazardous Substances RQs |
|--|--------------------------|------------------------------------|
| Copper (II) sulfate pentahydrate (1:1:5) | 10 lb | None Known |
| Sodium phosphate dibasic | 5000 lb | None Known |
| Acetic acid | 5000 lb | None Known |
| Citric acid | None Known | None Known |
| Sodium chloride USP | None Known | None Known |
| Ammonium chloride | 5000 lb | None Known |
| Water | None Known | None Known |

U.S. State Regulations**California Proposition 65**

This product does not contain any Proposition 65 chemicals

| Chemical Name | CAS-No | California Prop. 65 |
|--|------------|---------------------|
| Copper (II) sulfate pentahydrate (1:1:5) | 7758-99-8 | None Known |
| Sodium phosphate dibasic | 7558-79-4 | None Known |
| Acetic acid | 64-19-7 | None Known |
| Citric acid | 77-92-9 | None Known |
| Sodium chloride USP | 7647-14-5 | None Known |
| Ammonium chloride | 12125-02-9 | None Known |
| Water | 7732-18-5 | None Known |

U.S. State Right-to-Know Regulations

| Chemical Name | Massachusetts | New Jersey | Pennsylvania | Illinois | Rhode Island |
|--|---------------|------------|--------------|------------|--------------|
| Copper (II) sulfate pentahydrate (1:1:5) | X | X | X | None Known | None Known |
| Sodium phosphate dibasic | X | X | X | None Known | None Known |
| Acetic acid | X | X | X | None Known | X |
| Citric acid | None Known | None Known | None Known | None Known | None Known |
| Sodium chloride USP | None Known | None Known | None Known | None Known | None Known |
| Ammonium chloride | X | X | X | None Known | X |

| | | | | | |
|-------|------------|------------|------------|------------|------------|
| Water | None Known | None Known | None Known | None Known | None Known |
|-------|------------|------------|------------|------------|------------|

International Regulations**Mexico - Grade**



| Chemical Name | Carcinogen Status | Exposure Limits |
|--|-------------------|--|
| Copper (II) sulfate pentahydrate (1:1:5) | None Known | None Known |
| Sodium phosphate dibasic | None Known | None Known |
| Acetic acid | None Known | Mexico: TWA= 25 mg/m ³ Mexico: TWA= 10 ppm |
| Citric acid | None Known | None Known |
| Sodium chloride USP | None Known | None Known |
| Ammonium chloride | None Known | Mexico: TWA= 10 mg/m ³ |
| Water | None Known | None Known |

Canada

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all the information required by the CPR. Information downloaded from <http://ccinfoweb.ccohs.ca/whmis/search.html>

| Component | WHMIS Hazard Class |
|--|---|
| Copper (II) sulfate pentahydrate (1:1:5) 7758-99-8 (<0.1) | 1 % D2B |
| Sodium phosphate dibasic 7558-79-4 (<0.5) | Not determined |
| Acetic acid 64-19-7 (1-5) | 1 % B3 E D2B |
| Citric acid 77-92-9 (1-5) | 1 % E |
| Sodium chloride USP 7647-14-5 (5-15) | Uncontrolled product according to WHMIS classification criteria |
| Ammonium chloride 12125-02-9 (10-20) | 1 % D2B |
| Water 7732-18-5 (to 100%) | Uncontrolled product according to WHMIS classification criteria |

**16. OTHER INFORMATION**

| NFPA | HMIS | PPE | Transport Symbol | | | | | | |
|---|---|---------------|------------------|-----------------|---|------------|---|---|--|
|  | <table><tr><td>Health Hazard</td><td>1</td></tr><tr><td>Physical Hazard</td><td>0</td></tr><tr><td>Reactivity</td><td>0</td></tr></table> | Health Hazard | 1 | Physical Hazard | 0 | Reactivity | 0 |  | |
| Health Hazard | 1 | | | | | | | | |
| Physical Hazard | 0 | | | | | | | | |
| Reactivity | 0 | | | | | | | | |

Prepared By Regulatory Affairs Department

Issuing Date 10/24/2011

Revision Date 31-Oct-2011

Revision Note

Initial Release

Disclaimer

The information provided on this MSDS is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guide for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered as a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other material or in any process, unless specified in the text.

End of MSDS



MATERIAL SAFETY DATA SHEET

Issuing Date 2/9/2012

Revision date 07-23-2013

Revision Number no data available

1. PRODUCT AND COMPANY IDENTIFICATION

| | |
|----------------------------|---|
| Product name | NITRATE REDUCING POWDER |
| Product Code(s) | V-6279 |
| Recommended Use | Test kit reagent. Laboratory chemicals. Industrial (not for food or food contact use). |
| Company | LaMotte Company, Inc. 802 Washington Avenue P.O. Box 329 Chestertown, MD 21620 USA |
| Emergency telephone number | 24 Hour Emergency Number (CHEM-TEL): USA, Canada, Puerto Rico 1-800-255-3924 Outside North American Continent (Call collect) 813-248-0585 |

2. HAZARDS IDENTIFICATION

DANGER

EMERGENCY OVERVIEW

May be fatal if inhaled or swallowed
Harmful if swallowed, inhaled, or absorbed through skin
Irritating to eyes, respiratory system, and skin

Appearance Gray

Physical state powder

Odor Slight

OSHA Regulatory Status Safety information is given for exposure to the reagent as sold and considers exposure to the chemical if user has direct eye and skin contact.

Potential health effects

Principle Routes of Exposure Eye Contact, Inhalation, skin contact, and ingestion.

Acute toxicity

EYES

Irritating to eyes.

skin

Irritating to skin. HARMFUL IF ABSORBED THROUGH SKIN.

Inhalation

Intentional misuse by deliberately concentrating and inhaling contents may be harmful or fatal. MAY BE FATAL IF INHALED. Irritating to respiratory system.

Ingestion

MAY BE FATAL IF SWALLOWED.

Chronic effects

This product contains one or more substances which are classified by IARC as carcinogenic to humans (Group I), probably carcinogenic to humans (Group 2A) or possibly carcinogenic to humans (Group 2B).

3. COMPOSITION/INFORMATION ON INGREDIENTS

| Chemical name | CAS-No | Weight % |
|---|------------|----------|
| N-(1-Naphthyl)ethylenediamine dihydrochloride | 1465-25-4 | <1 |
| Sulfanilamide | 63-74-1 | <2 |
| Cadmium and compounds (as Cd) | 7440-43-9 | 2.68 |
| Manganese sulfate monohydrate | 10034-96-5 | 10 |
| Sodium citrate, dihydrate | 6132-04-3 | 30-40 |
| Ammonium chloride | 12125-02-9 | 45-55 |

4. FIRST AID MEASURES

| | |
|----------------------------|---|
| General advice | Show this safety data sheet to the doctor in attendance. Consult a physician. |
| Eye contact | Rinse thoroughly with plenty of water for at least 15 minutes, lifting lower and upper eyelids. Consult a physician. |
| Skin contact | Wash off immediately with soap and plenty of water for at least 15 minutes while removing all contaminated clothing and shoes. Remove and wash contaminated clothing before re-use. Consult a physician. |
| Inhalation | Move to fresh air. If breathing is difficult, give oxygen. If not breathing, give artificial respiration and contact emergency personnel. Call a physician immediately. |
| Ingestion | Immediate medical attention is required. Do not induce vomiting without medical advice. Drink plenty of water. Clean mouth with water. Never give anything by mouth to an unconscious person. |
| Notes to Physician | See MSDS (material safety data sheet) for additional information. |
| Protection of First-aiders | Use personal protective equipment. See Section 8 for more detail. Do not use mouth-to-mouth method if victim ingested or inhaled the substance; induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. |

5. FIRE-FIGHTING MEASURES

| | |
|---|--|
| Flammable properties | Not flammable. |
| Flash point | Not Applicable |
| Suitable extinguishing media | Dry chemical or CO ₂ . |
| Specific hazards arising from the chemical | Thermal decomposition can lead to release of toxic and corrosive gases/vapors. |
| Protective equipment and precautions for firefighters | As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear. |

| | | | | |
|-------------|-----------------|----------------|-------------|-----------------------------------|
| <u>NFPA</u> | Health hazard 3 | flammability 0 | stability 0 | Physical and Chemical Hazards N/A |
| <u>HMIS</u> | Health hazard 3 | flammability 0 | stability 0 | |

6. ACCIDENTAL RELEASE MEASURES

| | |
|-------------------------|---|
| Personal precautions | Use personal protective equipment. Ensure adequate ventilation. Wear respiratory protection. If you have not donned special protective clothing approved for this material, do not expose yourself to any risk of this material touching you. Evacuate personnel to safe areas. |
| Methods for containment | Sweep up in a manner that does not disperse dust and shovel into suitable containers for disposal. Dike to collect large liquid spills. Do not flush to sewer. |
| Methods for cleaning up | Clean contaminated surface thoroughly. After cleaning, flush away traces with water. |
| OTHER INFORMATION | Ventilate the area. |

7. HANDLING AND STORAGE

| | |
|----------|---|
| Handling | Handle in accordance with good industrial hygiene and safety practice. Prevent contact with skin, eyes, and clothing. Do not ingest. Do not breathe vapors/dust. |
| Storage | Keep containers tightly closed in a dry, cool, and well-ventilated place. Protect from moisture. Do not allow contact with air. Keep away from heat and incompatibles. Keep out of the reach of children. |

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

| Chemical name | ACGIH TLV | OSHA PEL | NIOSH IDLH |
|--|---|--|--|
| N-(1-Naphthyl)ethylenediamine dihydrochloride 1465-25-4 | None known | None known | None known |
| Sulfanilamide 63-74-1 | None known | None known | None known |
| Cadmium and compounds (as Cd) 7440-43-9 | TWA: 0.002 mg/m ³ TWA: 0.01 mg/m ³ | TWA: 0.1 mg/m ³ TWA: 0.2 mg/m ³ TWA: 5 µg/m ³ | IDLH: 9 mg/m ³ |
| Manganese sulfate monohydrate 10034-96-5 | TWA: 0.2 mg/m ³ | None known | IDLH: 500 mg/m ³ TWA: 1 mg/m ³ STEL: 3 mg/m ³ |
| Sodium citrate, dihydrate 6132-04-3 | None known | None known | None known |
| Ammonium chloride 12125-02-9 | = 20 mg/m ³ STEL TWA: 10 mg/m ³ | None known | TWA: 10 mg/m ³ STEL: 20 mg/m ³ |

NIOSH IDLH: Immediately Dangerous to Life or Health

| | |
|-------------------------------|--|
| Engineering Measures | Showers Eyewash stations Ventilation systems. |
| Personal protective equipment | |
| Eye/face Protection | Safety glasses with side-shields. If splashes are likely to occur, wear: Face-shield. Maintain eye wash and quick drench shower facilities in work area. |
| Skin and body protection | Wear protective gloves/clothing. Neoprene and nitrile rubber are recommended materials. |
| Respiratory protection | Use mechanical ventilation (fume hood). When workers are facing concentrations above the exposure limit they must use appropriate certified respirators. |
| Hygiene Measures | Use only with adequate ventilation. Wear suitable gloves and eye/face protection. Avoid contact with skin, eyes and clothing. Wash hands and face before breaks and immediately after handling the product. Handle in accordance with good industrial hygiene and safety practice. |

9. PHYSICAL AND CHEMICAL PROPERTIES

| | | | |
|----------------------------|-------------------|---------------------------------|--------------------------|
| Appearance | Gray | Odor | Slight |
| Physical state | powder | pH | 7 (0.1g/10mL water) |
| Flash point | Not Applicable | Autoignition temperature | no data available |
| Boiling Point/Range | no data available | freezing point | No information available |

| | | | |
|-----------------------|-------------------|-------------------------|----------------|
| solubility | Partly soluble | evaporation rate | Not Applicable |
| Vapor pressure | no data available | | |

10. STABILITY AND REACTIVITY

| | |
|---|--|
| stability | Stable under normal conditions of use and storage. |
| Incompatible Products | Strong acids. Strong oxidizing agents. Strong bases. Finely powdered metals. |
| Conditions to avoid | Exposure to air or moisture over prolonged periods. Excessive heat. Incompatible products. |
| Hazardous decomposition products | Hazardous decomposition products formed under fire conditions - carbon oxides (COx), nitrogen oxides (NOx), sodium oxides, hydrogen chloride gas. Cadmium oxides. Ammonia. |
| Hazardous polymerization | Hazardous polymerization does not occur. |

11. TOXICOLOGICAL INFORMATION

Acute toxicity

| | |
|----------------------------|--|
| Product Information | Harmful if swallowed, inhaled, or absorbed through skin. |
|----------------------------|--|

| Chemical name | LD50 Oral | LD50 Dermal | LC50 Inhalation |
|---|--------------------|-------------|-----------------|
| N-(1-Naphthyl)ethylenediamine dihydrochloride | None known | None known | None known |
| Sulfanilamide | 3900 mg/kg (Rat) | None known | None known |
| Cadmium and compounds (as Cd) | 2330 mg/kg (Rat) | None known | None known |
| Manganese sulfate monohydrate | None known | None known | None known |
| Sodium citrate, dihydrate | None known | None known | None known |
| Ammonium chloride | 1410 mg/kg (Rat) | None known | None known |

Chronic toxicity

| | |
|-------------------------|--|
| Chronic toxicity | This product contains one or more substances which are classified by IARC as carcinogenic to humans (Group I), probably carcinogenic to humans (Group 2A) or possibly carcinogenic to humans (Group 2B). |
|-------------------------|--|

| Chemical name | ACGIH | IARC | NTP | OSHA |
|---|------------|------------|------------|------------|
| N-(1-Naphthyl)ethylenediamine dihydrochloride | None known | None known | None known | None known |
| Sulfanilamide | None known | None known | None known | None known |
| Cadmium and compounds (as Cd) | A2 | Group 1 | Known | X |
| Manganese sulfate monohydrate | None known | None known | None known | None known |
| Sodium citrate, dihydrate | None known | None known | None known | None known |
| Ammonium chloride | None known | None known | None known | None known |

ACGIH: (American Conference of Governmental Industrial Hygienists)

A2 - Suspected Human Carcinogen

IARC: (International Agency for Research on Cancer)

Group 1 - Carcinogenic to Humans

NTP: (National Toxicity Program)

Known - Known Carcinogen

OSHA: (Occupational Safety & Health Administration)
X - Present

Endocrine Disruptor Information

| Chemical name | EU - Endocrine Disruptors Candidate List | EU - Endocrine Disruptors - Evaluated Substances | Japan - Endocrine Disruptor Information |
|---|--|--|---|
| N-(1-Naphthyl)ethylenediamine dihydrochloride | None known | None known | None known |
| Sulfanilamide | None known | None known | None known |
| Cadmium and compounds (as Cd) | None known | None known | None known |
| Manganese sulfate monohydrate | None known | None known | None known |
| Sodium citrate, dihydrate | None known | None known | None known |
| Ammonium chloride | None known | None known | None known |

12. ECOLOGICAL INFORMATION

Ecotoxicity

Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

| Chemical name | Toxicity to Algae | Toxicity to Fish | Microtox | Daphnia Magna (Water Flea) |
|---|----------------------------|---|------------|----------------------------|
| N-(1-Naphthyl)ethylenediamine dihydrochloride | None known | None known | None known | None known |
| Sulfanilamide | None known | None known | None known | None known |
| Cadmium and compounds (as Cd) | None known | LC50= 0.0013 mg/L Oncorhynchus mykiss 96 h | None known | EC50 = 9.9 µg/L 96 h |
| Manganese sulfate monohydrate | None known | None known | None known | None known |
| Sodium citrate, dihydrate | EC50 1800 - 3200 mg/L 96 h | LC50= 18000 mg/L Poecilia reticulata 96 h | None known | None known |
| Ammonium chloride | None known | LC50= 209 mg/L Cyprinus carpio 96 h | None known | EC50 = 202 mg/L 24 h |
| Chemical name | Log Pow | | | |
| N-(1-Naphthyl)ethylenediamine dihydrochloride | None known | | | |
| Sulfanilamide | None known | | | |
| Cadmium and compounds (as Cd) | None known | | | |
| Manganese sulfate monohydrate | None known | | | |
| Sodium citrate, dihydrate | None known | | | |
| Ammonium chloride | None known | | | |

13. DISPOSAL CONSIDERATIONS

Waste Disposal Method

Dispose of in accordance with local regulations. Should not be released into the environment.

Contaminated packaging

Dispose of in accordance with local regulations.

| Chemical name | RCRA - Halogenated Organic Compounds | RCRA - P Series Wastes | RCRA - F Series Wastes | RCRA - K Series Wastes |
|---|--------------------------------------|------------------------|------------------------|------------------------|
| N-(1-Naphthyl)ethylenediamine dihydrochloride - 1465-25-4 | None known | None known | None known | None known |
| Sulfanilamide - 63-74-1 | None known | None known | None known | None known |
| Cadmium and compounds (as Cd) - 7440-43-9 | None known | None known | None known | None known |
| Manganese sulfate monohydrate - 10034-96-5 | None known | None known | None known | None known |

NITRATE REDUCING POWDER

Product Code(s) V-6279

| | | | | |
|--|------------|------------|------------|------------|
| Sodium citrate, dihydrate - 6132-04-3 | None known | None known | None known | None known |
| Ammonium chloride - 12125-02-9 | None known | None known | None known | None known |

14. TRANSPORT INFORMATION**DOT**

Proper shipping name CADMIUM COMPOUNDS
Hazard Class 6.1
UN-No 2570
Packing group III

IATA

UN-No 2570
Proper shipping name CADMIUM COMPOUND
Hazard Class 6.1
Packing group III

IMDG/IMO

Proper shipping name CADMIUM COMPOUNDS
Hazard Class 6.1
UN-No 2570
Packing group III

15. REGULATORY INFORMATION**International Inventories**

| Component | TSCA | DSL | EINECS/ELINCS | ENCS | IECSC | KECL | PICCS | AICS |
|---|---------|-----|---------------|------------------------------|-------|----------|-------|------|
| N-(1-Naphthyl)ethylenediamine dihydrochloride 1465-25-4 (<1) | Present | X | X | ENCS | X | KECL | X | X |
| Sulfanilamide 63-74-1 (<2) | Present | X | X | 3-1913; 3-1973; 3-2179 | X | KE-01188 | X | X |
| Cadmium and compounds (as Cd) 7440-43-9 (2.68) | Present | X | X | ENCS | X | KE-04397 | X | X |
| Manganese sulfate monohydrate 10034-96-5 (10) | TSCA | DSL | EINECS/ELINCS | ENCS | X | KECL | X | X |
| Sodium citrate, dihydrate 6132-04-3 (30-40) | TSCA | DSL | EINECS/ELINCS | ENCS | X | KECL | X | X |
| Ammonium chloride 12125-02-9 (45-55) | Present | X | X | 1-218 | X | KE-01645 | X | X |

U.S. Federal Regulations**SARA 313**

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product contains a chemical or chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372

| Chemical name | CAS-No | Weight % | SARA 313 - Threshold Values % |
|---|-----------|----------|-------------------------------|
| N-(1-Naphthyl)ethylenediamine dihydrochloride | 1465-25-4 | <1 | None known |
| Sulfanilamide | 63-74-1 | <2 | None known |

NITRATE REDUCING POWDER

Product Code(s) V-6279

| | | | |
|-------------------------------|------------|-------|------------|
| Cadmium and compounds (as Cd) | 7440-43-9 | 2.68 | 0.1 |
| Manganese sulfate monohydrate | 10034-96-5 | 10 | 1.0 |
| Sodium citrate, dihydrate | 6132-04-3 | 30-40 | None known |
| Ammonium chloride | 12125-02-9 | 45-55 | 1.0 |

SARA 311/312 Hazard Categories

| | |
|-----------------------------------|-----|
| Acute health hazard | yes |
| Chronic Health Hazard | yes |
| Fire hazard | No |
| Sudden release of pressure hazard | No |
| Reactive Hazard | No |

Clean Water Act

This product contains the following substances which are regulated pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42).

| Component | CWA - Reportable Quantities | CWA - Toxic Pollutants | CWA - Priority Pollutants | CWA - Hazardous Substances |
|---|-----------------------------|------------------------|---------------------------|----------------------------|
| N-(1-Naphthyl)ethylenediamine dihydrochloride 1465-25-4 (<1) | None known | None known | None known | None known |
| Sulfanilamide 63-74-1 (<2) | None known | None known | None known | None known |
| Cadmium and compounds (as Cd) 7440-43-9 (2.68) | None known | X | X | None known |
| Manganese sulfate monohydrate 10034-96-5 (10) | None known | None known | None known | None known |
| Sodium citrate, dihydrate 6132-04-3 (30-40) | None known | None known | None known | None known |
| Ammonium chloride 12125-02-9 (45-55) | 5000 lb | None known | None known | X |

Clean Air Act, Section 112 Hazardous Air Pollutants (HAPs) (see 40 CFR 61)

| Chemical name | CAS-No | Weight % | HAPS data | VOC Chemicals | Class 1 Ozone Depleters | Class 2 Ozone Depleters |
|---|------------|----------|--|---------------|-------------------------|-------------------------|
| N-(1-Naphthyl)ethylenediamine dihydrochloride | 1465-25-4 | <1 | None known | None known | None known | None known |
| Sulfanilamide | 63-74-1 | <2 | None known | None known | None known | None known |
| Cadmium and compounds (as Cd) | 7440-43-9 | 2.68 | Present (includes any unique chemical substance that contains Cadmium as part of its infrastructure) | None known | None known | None known |
| Manganese sulfate monohydrate | 10034-96-5 | 10 | Present (includes any unique chemical substance that contains Manganese as part of its infrastructure) | None known | None known | None known |
| Sodium citrate, dihydrate | 6132-04-3 | 30-40 | None known | None known | None known | None known |
| Ammonium chloride | 12125-02-9 | 45-55 | None known | None known | None known | None known |

CERCLA

| Chemical name | Hazardous Substances RQs | Extremely Hazardous Substances RQs |
|---|--------------------------|------------------------------------|
| N-(1-Naphthyl)ethylenediamine dihydrochloride | None known | None known |
| Sulfanilamide | None known | None known |
| Cadmium and compounds (as Cd) | 10 lb | None known |
| Manganese sulfate monohydrate | None known | None known |
| Sodium citrate, dihydrate | None known | None known |
| Ammonium chloride | 5000 lb | None known |

U.S. State Regulations**California Proposition 65**

WARNING! This product contains a chemical known to the State of California to cause cancer WARNING! This product contains a chemical known to the State of California to cause birth defects or other reproductive harm

| Chemical name | CAS-No | California Prop. 65 |
|---|------------|--|
| N-(1-Naphthyl)ethylenediamine dihydrochloride | 1465-25-4 | None known |
| Sulfanilamide | 63-74-1 | None known |
| Cadmium and compounds (as Cd) | 7440-43-9 | Carcinogen Developmental Male Reproductive |
| Manganese sulfate monohydrate | 10034-96-5 | None known |
| Sodium citrate, dihydrate | 6132-04-3 | None known |
| Ammonium chloride | 12125-02-9 | None known |

| Chemical name | Massachusetts | New Jersey | Pennsylvania | Illinois | Rhode Island |
|---|---------------|------------|--------------|------------|--------------|
| N-(1-Naphthyl)ethylenediamine dihydrochloride | None known | None known | None known | None known | None known |
| Sulfanilamide | None known | None known | None known | None known | None known |
| Cadmium and compounds (as Cd) | X | X | X | X | X |
| Manganese sulfate monohydrate | None known | X | X | X | None known |
| Sodium citrate, dihydrate | None known | None known | None known | None known | None known |
| Ammonium chloride | X | X | X | None known | X |

International Regulations**Mexico - Grade**

| Chemical name | Carcinogen Status | Exposure Limits |
|---|-------------------|--------------------------------------|
| N-(1-Naphthyl)ethylenediamine dihydrochloride | None known | None known |
| Sulfanilamide | None known | None known |
| Cadmium and compounds (as Cd) | A2 | Mexico: TWA= 0.002 mg/m ³ |
| Manganese sulfate monohydrate | None known | Mexico: TWA= 0.2 mg/m ³ |
| Sodium citrate, dihydrate | None known | None known |
| Ammonium chloride | None known | Mexico: TWA= 10 mg/m ³ |

CANADA

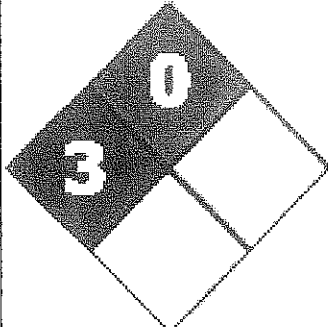


This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all the information required by the CPR

| Component | WHMIS Hazard Class |
|---|---|
| N-(1-Naphthyl)ethylenediamine dihydrochloride 1465-25-4 (<1) | Not Determined |
| Sulfanilamide 63-74-1 (<2) | Not Determined |
| Cadmium and compounds (as Cd) 7440-43-9 (2.68) | 0.1 % D1A D2A |
| Manganese sulfate monohydrate 10034-96-5 (10) | 1 % D2B |
| Sodium citrate, dihydrate 6132-04-3 (30-40) | Uncontrolled product according to WHMIS classification criteria |
| Ammonium chloride 12125-02-9 (45-55) | 1 % D2B |



| Chemical name | NPRI |
|-------------------------------|------|
| Cadmium and compounds (as Cd) | X |

16. OTHER INFORMATION

| NFPA | HMIS | PPE | Transport Symbol | | | | | | |
|---|---|---------------|------------------|-------------|---|------------|---|---|---|
|  | <table><tr><td>Health Hazard</td><td>3</td></tr><tr><td>Fire Hazard</td><td>0</td></tr><tr><td>Reactivity</td><td>0</td></tr></table> | Health Hazard | 3 | Fire Hazard | 0 | Reactivity | 0 |  |  |
| Health Hazard | 3 | | | | | | | | |
| Fire Hazard | 0 | | | | | | | | |
| Reactivity | 0 | | | | | | | | |

Prepared by Regulatory Affairs Department
Issuing Date 2/9/2012
Revision date 23-Jul-2013
Revision note (M)SDS sections updated. 16.
Disclaimer

The information provided on this MSDS is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guide for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered as a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other material or in any process, unless specified in the text.

End of MSDS



Issuing Date 2/25/2010

Revision Number 0

1. PRODUCT AND COMPANY IDENTIFICATION

Product Name Potassium TPB Solution

Product Code(s) 3825

Synonyms none

Recommended Use Laboratory chemicals. Industrial (not for food or food contact use).

Company LaMotte Company, Inc.
802 Washington Avenue
P.O. Box 329
Chestertown, MD 21620
USA

Emergency Telephone Number 24 Hour Emergency Number (CHEM-TEL):
USA, Canada, Puerto Rico 1-800-255-3924
Outside North American Continent (Call collect) 813-248-0585

2. HAZARDS IDENTIFICATION

| Emergency Overview | | |
|-----------------------------------|-----------------------|-----------|
| May cause skin and eye irritation | | |
| Harmful if swallowed | | |
| Appearance Clear, Colorless | Physical State Liquid | Odor None |

OSHA Regulatory Status This product is an article which contains a chemical substance. Safety information is given for exposure to the article as sold, but considers exposure to the chemical if user has direct eye and skin contact with the chemical.

Potential Health Effects

Principle Routes of Exposure Ingestion, and, Skin contact

Acute Toxicity

Eyes May cause irritation.

Skin May cause irritation.

Inhalation Not an expected route of exposure.

Ingestion Harmful if swallowed.

Chronic Effects**3. COMPOSITION/INFORMATION ON INGREDIENTS**

| Chemical Name | CAS-No | Weight % |
|----------------------------------|-----------|----------|
| Sodium borate | 1303-96-4 | 2 |
| Borate(1-), tetraphenyl-, sodium | 143-66-8 | 2.5 |
| Water | 7732-18-5 | to 100% |

4. FIRST AID MEASURES

| | |
|-----------------------------------|---|
| General Advice | Do not get in eyes, on skin, or on clothing. |
| Eye Contact | Rinse thoroughly with plenty of water for at least 15 minutes, lifting lower and upper eyelids. Consult a physician. |
| Skin Contact | Wash off immediately with soap and plenty of water. If skin irritation persists, call a physician. |
| Inhalation | Not expected. |
| Ingestion | Drink plenty of water. Clean mouth with water. Never give anything by mouth to an unconscious person. Consult a physician. |
| Notes to Physician | Treat symptomatically. |
| Protection of First-aiders | Use personal protective equipment. See Section 8 for more detail. Do not use mouth-to-mouth method if victim ingested or inhaled the substance; induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. |

5. FIRE-FIGHTING MEASURES

Suitable Extinguishing Media

Water spray, dry chemical, carbon dioxide (CO₂), or foam.

Explosion Data

Protective Equipment and Precautions for Firefighters

Wear self-contained breathing apparatus and protective suit.

NFPA

Health Hazard 1

Flammability 0

Stability 0

Physical and Chemical Hazards -

6. ACCIDENTAL RELEASE MEASURES

Personal Precautions

Refer to Section 8.

Methods for Cleaning Up

Use personal protective equipment. Use a non-combustible material like vermiculite, sand or earth to soak up the product and place into a container for later disposal. After cleaning, flush away traces with water.

7. HANDLING AND STORAGE

Handling

Handle in accordance with good industrial hygiene and safety practice. Prevent contact with skin, eyes and clothing. Do not ingest. Do not eat, drink or smoke when using this product.

Storage

Keep containers tightly closed in a dry, cool and well-ventilated place. Keep out of the reach of children.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

| Chemical Name | ACGIH TLV | OSHA PEL | NIOSH IDLH |
|--|--|------------------|--------------------------|
| Sodium borate 1303-96-4 | = 6 mg/m ³ STEL TWA: 2 mg/m ³ | None Established | TWA: 5 mg/m ³ |
| Borate(1-), tetraphenyl-, sodium 143-66-8 | None Established | None Established | None Established |
| Water 7732-18-5 | None Established | None Established | None Established |

Personal Protective Equipment

Eye/Face Protection

Safety glasses with side-shields. Goggles.

Skin and Body Protection Wear protective gloves/clothing.
Respiratory Protection Maintain adequate ventilation.

Hygiene Measures Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and immediately after handling the product. Do not eat, drink or smoke when using this product.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance Clear Colorless Odor None
Physical State Liquid pH 9
Boiling Point/Range 100 °C

Vapor Pressure <17 mmHg @ 20°C

10. STABILITY AND REACTIVITY

Stability Stable under normal conditions.
Incompatible Products Acids. Strong oxidizing agents.
Conditions to Avoid Heat, flames and sparks. Exposure to light.
Hazardous Decomposition Products Carbon oxides. Boron oxides.
Hazardous Reactions None under normal processing.
Hazardous Polymerization Hazardous polymerization does not occur.

11. TOXICOLOGICAL INFORMATION

Acute Toxicity

| Chemical Name | LD50 Oral | LD50 Dermal | LC50 Inhalation |
|----------------------------------|--------------------|-----------------------|------------------|
| Sodium borate | 2660 mg/kg (Rat) | 2000 mg/kg (Rabbit) | None Established |
| Borate(1-), tetraphenyl-, sodium | 288 mg/kg (Rat) | None Established | None Established |
| Water | 90 mL/kg (Rat) | None Established | None Established |

Chronic Toxicity

| Chemical Name | ACGIH | IARC | NTP | OSHA |
|----------------------------------|------------------|------------------|------------------|------------------|
| Sodium borate | None Established | None Established | None Established | None Established |
| Borate(1-), tetraphenyl-, sodium | None Established | None Established | None Established | None Established |
| Water | None Established | None Established | None Established | None Established |

| Chemical Name | EU - Endocrine Disruptors Candidate List | EU - Endocrine Disruptors - Evaluated Substances | Japan - Endocrine Disruptor Information |
|----------------------------------|--|--|---|
| Sodium borate | None Established | None Established | None Established |
| Borate(1-), tetraphenyl-, sodium | None Established | None Established | None Established |
| Water | None Established | None Established | None Established |

12. ECOLOGICAL INFORMATION

Ecotoxicity

| Chemical Name | Toxicity to Algae | Toxicity to Fish | Microtox | Daphnia Magna (Water Flea) |
|----------------------------------|----------------------|-------------------------------------|------------------|----------------------------|
| Sodium borate | EC50 = 158 mg/L 96 h | LC50= 340 mg/L Limanda limanda 96 h | None Established | None Established |
| Borate(1-), tetraphenyl-, sodium | None Established | None Established | None Established | None Established |
| Water | None Established | None Established | None Established | None Established |

| Chemical Name | Log Pow |
|----------------------------------|------------------|
| Sodium borate | None Established |
| Borate(1-), tetraphenyl-, sodium | None Established |
| Water | None Established |

13. DISPOSAL CONSIDERATIONS**Waste Disposal Method**

Can be disposed as waste water, when in compliance with local regulations. This material, as supplied, is not a hazardous waste according to state and Federal regulations (40 CFR 261). This material could become a hazardous waste if it is mixed with or otherwise comes in contact with a hazardous waste, if chemical additions are made to this material, or if the material is processed or otherwise altered. Consult 40 CFR 261 to determine whether the altered material is a hazardous waste pursuant to Federal regulations, and the applicable state requirements for the specific area of disposal. Consult the appropriate state, regional, or local regulations for additional requirements.

| Chemical Name |
|---|
| Sodium borate - 1303-96-4 |
| Borate(1-), tetraphenyl-, sodium - 143-66-8 |
| Water - 7732-18-5 |

| Chemical Name | RCRA - Halogenated Organic Compounds | RCRA - P Series Wastes | RCRA - F Series Wastes | RCRA - K Series Wastes |
|---|--------------------------------------|------------------------|------------------------|------------------------|
| Sodium borate - 1303-96-4 | None Established | None Established | None Established | None Established |
| Borate(1-), tetraphenyl-, sodium - 143-66-8 | None Established | None Established | None Established | None Established |
| Water - 7732-18-5 | None Established | None Established | None Established | None Established |

| Chemical Name | California Hazardous Waste Status |
|---------------|-----------------------------------|
| Sodium borate | Toxic |

14. TRANSPORT INFORMATION

DOT Not regulated

IATA Not regulated

IMDG/IMO Not regulated

15. REGULATORY INFORMATION**International Inventories**

| Component | TSCA | DSL | EINECS/ELINCS | ENCS | IECSC | KECL | PICCS | AICS |
|---|---------|-----|---------------|--------|-------|----------|-------|------|
| Sodium borate 1303-96-4 (2) | Present | X | EINECS/ELINCS | ENCS | X | KE-03483 | X | X |
| Borate(1-), tetraphenyl-, sodium 143-66-8 (2.5) | Present | X | X | 3-2553 | X | KE-31629 | X | X |

| | | | | | | | | |
|------------------------------|---------|---|---|------|---|----------|---|---|
| Water 7732-18-5 (to 100%) | Present | X | X | ENCS | X | KE-35400 | X | X |
|------------------------------|---------|---|---|------|---|----------|---|---|

U.S. Federal Regulations

SARA 313

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product does not contain any chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372.

| Chemical Name | CAS-No | Weight % | SARA 313 - Threshold Values % |
|----------------------------------|-----------|----------|-------------------------------|
| Sodium borate | 1303-96-4 | 2 | None Established |
| Borate(1-), tetraphenyl-, sodium | 143-66-8 | 2.5 | None Established |
| Water | 7732-18-5 | to 100% | None Established |

SARA 311/312 Hazard Categories

| | |
|-----------------------------------|-----|
| Acute Health Hazard | Yes |
| Chronic Health Hazard | No |
| Fire Hazard | No |
| Sudden Release of Pressure Hazard | No |
| Reactive Hazard | No |

Clean Water Act

| Component | CWA - Reportable Quantities | CWA - Toxic Pollutants | CWA - Priority Pollutants | CWA - Hazardous Substances |
|--|-----------------------------|------------------------|---------------------------|----------------------------|
| Sodium borate 1303-96-4 (2) | None Established | None Established | None Established | None Established |
| Borate(1-), tetraphenyl-, sodium 143-66-8 (2.5) | None Established | None Established | None Established | None Established |
| Water 7732-18-5 (to 100%) | None Established | None Established | None Established | None Established |

| Chemical Name | CAS-No | Weight % | HAPS data | VOC Chemicals | Class 1 Ozone Depleters | Class 2 Ozone Depleters |
|----------------------------------|-----------|----------|------------------|------------------|-------------------------|-------------------------|
| Sodium borate | 1303-96-4 | 2 | None Established | None Established | None Established | None Established |
| Borate(1-), tetraphenyl-, sodium | 143-66-8 | 2.5 | None Established | None Established | None Established | None Established |
| Water | 7732-18-5 | to 100% | None Established | None Established | None Established | None Established |

CERCLA

| Chemical Name | Hazardous Substances RQs | Extremely Hazardous Substances RQs |
|----------------------------------|--------------------------|------------------------------------|
| Sodium borate | None Established | None Established |
| Borate(1-), tetraphenyl-, sodium | None Established | None Established |
| Water | None Established | None Established |

U.S. State Regulations

| Chemical Name | CAS-No | California Prop. 65 |
|----------------------------------|-----------|---------------------|
| Sodium borate | 1303-96-4 | None Established |
| Borate(1-), tetraphenyl-, sodium | 143-66-8 | None Established |
| Water | 7732-18-5 | None Established |

| Chemical Name | Massachusetts | New Jersey | Pennsylvania | Illinois | Rhode Island |
|----------------------------------|------------------|------------------|------------------|------------------|------------------|
| Sodium borate | X | X | X | None Established | X |
| Borate(1-), tetraphenyl-, sodium | None Established | None Established | None Established | None Established | None Established |
| Water | None Established | None Established | None Established | None Established | None Established |

International Regulations

Mexico - Grade

No information available.

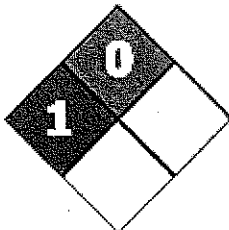

| Chemical Name | Carcinogen Status | Exposure Limits |
|----------------------------------|-------------------|----------------------------------|
| Sodium borate | None Established | Mexico: TWA= 5 mg/m ³ |
| Borate(1-), tetraphenyl-, sodium | None Established | None Established |
| Water | None Established | None Established |

Canada

WHMIS Hazard Class

To be determined

16. OTHER INFORMATION

| NFPA | HMIS | PPE | Transport Symbol | | | | | | |
|---|---|---------------|------------------|-------------|---|------------|---|---|---------------|
|  | <table><tr><td>Health Hazard</td><td>1</td></tr><tr><td>Env. Hazard</td><td>0</td></tr><tr><td>Reactivity</td><td>0</td></tr></table> | Health Hazard | 1 | Env. Hazard | 0 | Reactivity | 0 |  | Not regulated |
| Health Hazard | 1 | | | | | | | | |
| Env. Hazard | 0 | | | | | | | | |
| Reactivity | 0 | | | | | | | | |

Prepared By

Regulatory Affairs Department

Issuing Date

2/25/2010

Revision Date

Revision Note

Initial Release.

Disclaimer

The information provided on this MSDS is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guide for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered as a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other material or in any process, unless specified in the text.

End of MSDS



Issuing Date 8/17/2012

Revision Number 0

1. PRODUCT AND COMPANY IDENTIFICATION

Product Name SODIUM HYDROXIDE REAGENT WITH METAL INHIBITOR

Product Code(s) 4259

Recommended Use Test kit reagent. Industrial (not for food or food contact use). Laboratory chemicals.

Company LaMotte Company, Inc.
802 Washington Avenue
P.O. Box 329
Chestertown, MD 21620
USA

Emergency Telephone Number 24 Hour Emergency Number (CHEM-TEL):
USA, Canada, Puerto Rico 1-800-255-3924
Outside North American Continent (Call collect) 813-248-0585

2. HAZARDS IDENTIFICATION**DANGER!****Emergency Overview**

Corrosive

Causes burns to any area of contact

Risk of serious damage to eyes

Harmful if swallowed

Appearance Clear, colorless**Physical State** Liquid**Odor** Odorless

OSHA Regulatory Status This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Potential Health Effects**Principle Routes of Exposure**

Eye contact, Skin contact, Ingestion, Inhalation.

Acute Toxicity**Eyes**

Causes burns. Risk of serious damage to eyes.

Skin

Causes burns. Symptoms can include redness, itching, and pain.

Inhalation

Irritating to mucous membranes. Depending on exposure, the effects from inhalation of corrosive mists can vary from mild irritation to serious damage to respiratory tract.

Ingestion

Harmful if swallowed. Can burn mouth, throat, stomach, and GI tract. Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea.

Chronic Effects

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

Aggravated Medical Conditions

Hypersensitivity may occur in those with preexisting skin disorders. Respiratory disorders. Preexisting eye disorders.

3. COMPOSITION/INFORMATION ON INGREDIENTS

| Chemical Name | CAS-No | Weight % |
|---------------------------------|-----------|----------|
| Magnesium chloride, hexahydrate | 7791-18-6 | <0.1 |
| Sodium hydroxide | 1310-73-2 | 4-6 |
| Triethanolamine | 102-71-6 | 4-6 |
| Water | 7732-18-5 | to 100% |

4. FIRST AID MEASURES

| | |
|-----------------------------------|---|
| General Advice | Do not get in eyes, on skin, or on clothing. Show this safety data sheet to the doctor in attendance. |
| Eye Contact | Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Immediate medical attention is required. |
| Skin Contact | Wash off immediately with soap and plenty of water for at least 15 minutes while removing all contaminated clothing and shoes. Call a physician immediately. |
| Inhalation | Move to fresh air. If breathing is difficult, give oxygen. If not breathing, give artificial respiration and contact emergency personnel. Call a physician immediately. |
| Ingestion | DO NOT INDUCE VOMITING. Drink plenty of water. Never give anything by mouth to an unconscious person. Call a physician immediately. |
| Protection of First-aiders | Use personal protective equipment. See Section 8 for more detail. Do not use mouth-to-mouth method if victim ingested or inhaled the substance; induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. |

5. FIRE-FIGHTING MEASURES

| | | | | |
|-------------------------------------|------------------------|--|--------------------|--|
| Flammable Properties | | Not a fire hazard. | | |
| Flash Point | | 179°C (354°F) OC for Triethanolamine | | |
| Suitable Extinguishing Media | | Water spray, dry chemical, carbon dioxide (CO ₂), or foam. | | |
| Explosion Data | | | | |
| NFPA | Health Hazard 3 | Flammability 0 | Stability 0 | Physical and Chemical Hazards - |
| HMIS | Health Hazard 3 | Flammability 0 | Stability 2 | |

6. ACCIDENTAL RELEASE MEASURES

| | |
|--------------------------------|--|
| Personal Precautions | Refer to Section 8. Use personal protective equipment. Avoid contact with skin, eyes and inhalation of vapors. |
| Methods for Cleaning Up | Neutralize spills with acid such as acetic, hydrochloric or sulfuric, absorb with vermiculite or other inert substance, and package in a suitable container for disposal. Keep in suitable and closed containers for disposal. After cleaning, flush away traces with water. |

7. HANDLING AND STORAGE

| | |
|-----------------|---|
| Handling | Handle in accordance with good industrial hygiene and safety practice. Prevent contact with skin, eyes, and clothing. Do not ingest. Do not eat, drink, or smoke when using this product. |
|-----------------|---|

Storage

Keep containers tightly closed in a dry, cool, and well-ventilated place. Separate from acids. Keep away from heat, sparks and open flame. - No smoking. Do not store with aluminum or magnesium. Avoid contact with copper or copper alloy. Keep from freezing. Keep out of the reach of children.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

| Chemical Name | ACGIH TLV | OSHA PEL | NIOSH IDLH |
|--|--------------------------|--------------------------|--|
| Magnesium chloride, hexahydrate 7791-18-6 | None Known | None Known | None Known |
| Sodium hydroxide 1310-73-2 | None Known | TWA: 2 mg/m ³ | IDLH: 10 mg/m ³ Ceiling: 2 mg/m ³ |
| Triethanolamine 102-71-6 | TWA: 5 mg/m ³ | None Known | None Known |
| Water 7732-18-5 | None Known | None Known | None Known |

Engineering Measures

Showers
Eyewash stations
Ventilation systems.

Personal Protective Equipment**Eye/Face Protection**

Safety glasses with side-shields. If splashes are likely to occur, wear: Face-shield.

Skin and Body Protection

Incidental contact/splash protection: Wear protective gloves/clothing. Repeated or prolonged contact: Chemical resistant protective sleeves.

Respiratory Protection

When workers are facing concentrations above the exposure limit they must use appropriate certified respirators.

Hygiene Measures

Handle in accordance with good industrial hygiene and safety practice. Do not eat, drink or smoke when using this product. Wash hands before breaks and immediately after handling the product.

9. PHYSICAL AND CHEMICAL PROPERTIES

| | | | |
|---------------------|---|--------------------------|--------------------------------------|
| Appearance | Clear, colorless | Odor | Odorless |
| Physical State | Liquid | pH | 14 |
| Flash Point | 179°C (354°F) OC for Triethanolamine | Autoignition Temperature | 315°C (599°F) for Triethanolamine |
| Boiling Point/Range | No information available | | |

Vapor Pressure

No information available

Vapor Density

No information available

10. STABILITY AND REACTIVITY

Stability

Stable under normal conditions of use and storage.

Incompatible Products

Strong acids. Strong oxidizing agents. Contact with metals (aluminum, zinc, tin) may release hydrogen gas. Aluminium. Magnesium powder. Copper. Copper alloys.

Conditions to Avoid

Excessive heat. Incompatible products.

Hazardous Decomposition Products Carbon oxides (COx). Nitrogen oxides (NOx).**Hazardous Polymerization**

Hazardous polymerization does not occur.

11. TOXICOLOGICAL INFORMATION

Acute Toxicity

| Chemical Name | LD50 Oral | LD50 Dermal | LC50 Inhalation |
|---------------------------------|--------------------|-----------------------|-----------------|
| Magnesium chloride, hexahydrate | 8100 mg/kg (Rat) | None Known | None Known |
| Sodium hydroxide | None Known | 1350 mg/kg (Rabbit) | None Known |
| Triethanolamine | 4190 mg/kg (Rat) | 2000 mg/kg (Rabbit) | None Known |
| Water | 90 mL/kg (Rat) | None Known | None Known |

Chronic Toxicity**Chronic Toxicity**

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

| Chemical Name | ACGIH | IARC | NTP | OSHA |
|---------------------------------|------------|------------|------------|------------|
| Magnesium chloride, hexahydrate | None Known | None Known | None Known | None Known |
| Sodium hydroxide | None Known | None Known | None Known | None Known |
| Triethanolamine | None Known | Group 3 | None Known | None Known |
| Water | None Known | None Known | None Known | None Known |

IARC: (International Agency for Research on Cancer)

Group 3 - Not classifiable as to its carcinogenicity to humans

Endocrine Disruptor Information

| Chemical Name | EU - Endocrine Disruptors Candidate List | EU - Endocrine Disruptors - Evaluated Substances | Japan - Endocrine Disruptor Information |
|---------------------------------|--|--|---|
| Magnesium chloride, hexahydrate | None Known | None Known | None Known |
| Sodium hydroxide | None Known | None Known | None Known |
| Triethanolamine | None Known | None Known | None Known |
| Water | None Known | None Known | None Known |

12. ECOLOGICAL INFORMATION**Ecotoxicity**

Large amounts will affect pH and harm aquatic organisms.

| Chemical Name | Toxicity to Algae | Toxicity to Fish | Microtox | Daphnia Magna (Water Flea) |
|---------------------------------|--|--|--------------------------|----------------------------|
| Magnesium chloride, hexahydrate | None Known | None Known | None Known | None Known |
| Sodium hydroxide | None Known | LC50= 45.4 mg/L Oncorhynchus mykiss 96 h | None Known | None Known |
| Triethanolamine | EC50 = 169 mg/L 96 h EC50 = 216 mg/L 72 h | LC50 450 - 1000 mg/L Lepomis macrochirus 96 h LC50= 11800 mg/L Pimephales promelas 96 h | EC50 > 10000 mg/L 30 min | EC50 = 1386 mg/L 24 h |
| Water | None Known | None Known | None Known | None Known |

Persistence and Degradability

No information available.

| Chemical Name | Log Pow |
|---------------------------------|------------|
| Magnesium chloride, hexahydrate | None Known |
| Sodium hydroxide | None Known |
| Triethanolamine | = -2.53 |
| Water | None Known |

13. DISPOSAL CONSIDERATIONS**Waste Disposal Method**

Dispose of in accordance with local regulations.

| Chemical Name | RCRA - Halogenated Organic Compounds | RCRA - P Series Wastes | RCRA - F Series Wastes | RCRA - K Series Wastes |
|---|--------------------------------------|------------------------|------------------------|------------------------|
| Magnesium chloride, hexahydrate - 7791-18-6 | None Known | None Known | None Known | None Known |
| Sodium hydroxide - 1310-73-2 | None Known | None Known | None Known | None Known |
| Triethanolamine - 102-71-6 | None Known | None Known | None Known | None Known |
| Water - 7732-18-5 | None Known | None Known | None Known | None Known |

14. TRANSPORT INFORMATION

DOT

| | |
|--------------------------|---------------------------|
| Proper Shipping Name | SODIUM HYDROXIDE SOLUTION |
| Hazard Class | 8 |
| UN-No | 1824 |
| Packing Group | II |
| Reportable Quantity (RQ) | 1000 |

IATA

| | |
|----------------------|---------------------------|
| UN-No | 1824 |
| Proper Shipping Name | SODIUM HYDROXIDE SOLUTION |
| Hazard Class | 8 |
| Packing Group | II |

IMDG/IMO

| | |
|----------------------|---------------------------|
| Proper Shipping Name | SODIUM HYDROXIDE SOLUTION |
| Hazard Class | 8 |
| UN-No | 1824 |
| Packing Group | II |

15. REGULATORY INFORMATION

International Inventories

| Component | TSCA | DSL | EINECS/ELINCS | ENCS | IECSC | KECL | PICCS | AICS |
|---|---------|-----|---------------|---------------|-------|----------|-------|------|
| Magnesium chloride, hexahydrate 7791-18-6 (<0.1) | TSCA | DSL | EINECS/ELINCS | 1-233 | X | KECL | X | X |
| Sodium hydroxide 1310-73-2 (4-6) | Present | X | X | 1-410; 2-1972 | X | KE-31487 | X | X |
| Triethanolamine 102-71-6 (4-6) | Present | X | X | 2-308 | X | KE-25940 | X | X |
| Water 7732-18-5 (to 100%) | Present | X | X | ENCS | X | KE-35400 | X | X |

U.S. Federal Regulations

SARA 313

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product does not contain any chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372.

| Chemical Name | CAS-No | Weight % | SARA 313 - Threshold Values % |
|---------------------------------|-----------|----------|-------------------------------|
| Magnesium chloride, hexahydrate | 7791-18-6 | <0.1 | None Known |
| Sodium hydroxide | 1310-73-2 | 4-6 | None Known |
| Triethanolamine | 102-71-6 | 4-6 | None Known |
| Water | 7732-18-5 | to 100% | None Known |

SARA 311/312 Hazard Categories

Acute Health Hazard

Yes

| | |
|-----------------------------------|----|
| Chronic Health Hazard | No |
| Fire Hazard | No |
| Sudden Release of Pressure Hazard | No |
| Reactive Hazard | No |

Clean Water Act

| Component | CWA - Reportable Quantities | CWA - Toxic Pollutants | CWA - Priority Pollutants | CWA - Hazardous Substances |
|---|-----------------------------|------------------------|---------------------------|----------------------------|
| Magnesium chloride, hexahydrate 7791-18-6 (<0.1) | None Known | None Known | None Known | None Known |
| Sodium hydroxide 1310-73-2 (4-6) | None Known | None Known | None Known | None Known |
| Triethanolamine 102-71-6 (4-6) | None Known | None Known | None Known | None Known |
| Water 7732-18-5 (to 100%) | None Known | None Known | None Known | None Known |

Clean Air Act, Section 112 Hazardous Air Pollutants (HAPs) (see 40 CFR 61)

This product contains the following substances which are listed hazardous air pollutants (HAPS) under Section 112 of the Clean Air Act.:

| Chemical Name | CAS-No | Weight % | HAPS data | VOC Chemicals | Class 1 Ozone Depletors | Class 2 Ozone Depletors |
|---------------------------------|-----------|----------|------------|---------------|-------------------------|-------------------------|
| Magnesium chloride, hexahydrate | 7791-18-6 | <0.1 | None Known | None Known | None Known | None Known |
| Sodium hydroxide | 1310-73-2 | 4-6 | None Known | None Known | None Known | None Known |
| Triethanolamine | 102-71-6 | 4-6 | None Known | Group I | None Known | None Known |
| Water | 7732-18-5 | to 100% | None Known | None Known | None Known | None Known |

CERCLA

| Chemical Name | Hazardous Substances RQs | Extremely Hazardous Substances RQs |
|---------------------------------|--------------------------|------------------------------------|
| Magnesium chloride, hexahydrate | None Known | None Known |
| Sodium hydroxide | 1000 lb | None Known |
| Triethanolamine | None Known | None Known |
| Water | None Known | None Known |

U.S. State Regulations**California Proposition 65**

This product does not contain any Proposition 65 chemicals

| Chemical Name | CAS-No | California Prop. 65 |
|---------------------------------|-----------|---------------------|
| Magnesium chloride, hexahydrate | 7791-18-6 | None Known |
| Sodium hydroxide | 1310-73-2 | None Known |
| Triethanolamine | 102-71-6 | None Known |
| Water | 7732-18-5 | None Known |

U.S. State Right-to-Know Regulations

| Chemical Name | Massachusetts | New Jersey | Pennsylvania | Illinois | Rhode Island |
|---------------------------------|---------------|------------|--------------|------------|--------------|
| Magnesium chloride, hexahydrate | None Known | None Known | None Known | None Known | None Known |
| Sodium hydroxide | X | X | X | None Known | X |
| Triethanolamine | X | None Known | X | None Known | X |
| Water | None Known | None Known | None Known | None Known | None Known |

International Regulations**Mexico - Grade**

| Chemical Name | Carcinogen Status | Exposure Limits |
|---------------------------------|-------------------|-----------------|
| Magnesium chloride, hexahydrate | None Known | None Known |

| | | |
|------------------|------------|------------|
| Sodium hydroxide | None Known | None Known |
| Triethanolamine | None Known | None Known |
| Water | None Known | None Known |

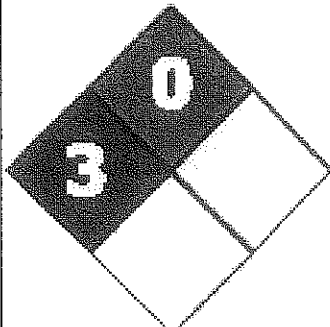

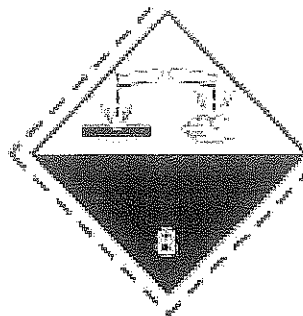
Canada

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all the information required by the CPR

| Component | WHMIS Hazard Class |
|---|--|
| Magnesium chloride, hexahydrate 7791-18-6 (<0.1) | Uncontrolled product according to WHMIS classification criteria |
| Sodium hydroxide 1310-73-2 (4-6) | 1 % E |
| Triethanolamine 102-71-6 (4-6) | 1 % Uncontrolled product according to WHMIS classification criteria |
| Water 7732-18-5 (to 100%) | Uncontrolled product according to WHMIS classification criteria |



16. OTHER INFORMATION

| NFPA | HMIS | PPE | Transport Symbol | | | | | | |
|--|---|---------------|------------------|-------------|---|------------|---|--|--|
|  | <table><tr><td>Health Hazard</td><td>3</td></tr><tr><td>Env. Hazard</td><td>0</td></tr><tr><td>Reactivity</td><td>2</td></tr></table> | Health Hazard | 3 | Env. Hazard | 0 | Reactivity | 2 |  |  |
| Health Hazard | 3 | | | | | | | | |
| Env. Hazard | 0 | | | | | | | | |
| Reactivity | 2 | | | | | | | | |

Prepared By
Issuing Date
Revision Date
Revision Note
Disclaimer

Regulatory Affairs Department
8/17/2012
-
Update to Format.

The information provided on this MSDS is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guide for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered as a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other material or in any process, unless specified in the text.

End of MSDS



Issuing Date 2/25/2010

Revision Number 0

1. PRODUCT AND COMPANY IDENTIFICATION

Product Name Special NF Phosphorus Extracting Solution

Product Code(s) 6362

Recommended Use Laboratory chemicals. Industrial (not for food or food contact use).

Company LaMotte Company, Inc.
802 Washington Avenue
P.O. Box 329
Chestertown, MD 21620
USA

Emergency Telephone Number 24 Hour Emergency Number (CHEM-TEL):
USA, Canada, Puerto Rico 1-800-255-3924
Outside North American Continent (Call collect) 813-248-0585

2. HAZARDS IDENTIFICATION**Emergency Overview**

May cause skin and eye irritation

Harmful if swallowed

Appearance Clear, Colorless**Physical State** Liquid**Odor** None**OSHA Regulatory Status**

This product is an article which contains a chemical substance. Safety information is given for exposure to the article as sold, but considers exposure to the chemical if user has direct eye and skin contact with the chemical.

Potential Health Effects**Principle Routes of Exposure**

Ingestion, and, Skin contact

Acute Toxicity**Eyes**

May cause irritation.

Skin

May cause irritation.

Inhalation

May cause irritation of respiratory tract.

Ingestion

Harmful if swallowed.

Chronic Effects**3. COMPOSITION/INFORMATION ON INGREDIENTS**

| Chemical Name | CAS-No | Weight % |
|-------------------|------------|----------|
| Ammonium fluoride | 12125-01-8 | 1.7 |
| Hydrochloric acid | 7647-01-0 | 1.4 |
| Water | 7732-18-5 | to 100% |

4. FIRST AID MEASURES**General Advice**

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

| | |
|-----------------------------------|---|
| Eye Contact | Rinse thoroughly with plenty of water for at least 15 minutes, lifting lower and upper eyelids. Consult a physician. |
| Skin Contact | Wash off immediately with soap and plenty of water removing all contaminated clothes and shoes. If skin irritation persists, call a physician. |
| Inhalation | Move to fresh air. If breathing is difficult, give oxygen. |
| Ingestion | Rinse mouth with water and afterwards drink plenty of water or milk. Consult a physician. Never give anything by mouth to an unconscious person. |
| Notes to Physician | Treat symptomatically. See MSDS (material safety data sheet) for additional information. |
| Protection of First-aiders | Use personal protective equipment. See Section 8 for more detail. Do not use mouth-to-mouth method if victim ingested or inhaled the substance; induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. |

5. FIRE-FIGHTING MEASURES

| | |
|-------------------------------------|---|
| Flash Point | N/A |
| Suitable Extinguishing Media | Water spray, dry chemical, carbon dioxide (CO ₂), or foam. |
| Explosion Data | |
| NFPA | Health Hazard 1 Flammability 0 Stability 0 Physical and Chemical Hazards - |

6. ACCIDENTAL RELEASE MEASURES

| | |
|--------------------------------|---|
| Personal Precautions | Refer to Section 8. |
| Methods for Cleaning Up | Use personal protective equipment. Use a non-combustible material like vermiculite, sand or earth to soak up the product and place into a container for later disposal. After cleaning, flush away traces with water. |

7. HANDLING AND STORAGE

| | |
|-----------------|---|
| Handling | Handle in accordance with good industrial hygiene and safety practice. Prevent contact with skin, eyes and clothing. Do not ingest. Do not eat, drink or smoke when using this product. |
| Storage | Keep containers tightly closed in a dry, cool and well-ventilated place. Keep out of the reach of children. |

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

| Chemical Name | ACGIH TLV | OSHA PEL | NIOSH IDLH |
|---------------------------------|----------------------------|----------------------------|--|
| Ammonium fluoride 12125-01-8 | TWA: 2.5 mg/m ³ | TWA: 2.5 mg/m ³ | TWA: 2.5 mg/m ³ |
| Hydrochloric acid 7647-01-0 | None Established | None Established | IDLH: 50 ppm Ceiling: 7 mg/m ³ Ceiling: 5 ppm |
| Water 7732-18-5 | None Established | None Established | None Established |

Personal Protective Equipment

| | |
|---------------------------------|-----------------------------------|
| Eye/Face Protection | Safety glasses with side-shields. |
| Skin and Body Protection | Wear protective gloves/clothing. |
| Respiratory Protection | Maintain adequate ventilation. |

Hygiene Measures

Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and immediately after handling the product. Do not eat, drink or smoke when using this product.

9. PHYSICAL AND CHEMICAL PROPERTIES

| | | | |
|----------------|-----------------|---------------------|--------|
| Appearance | Clear Colorless | Odor | None |
| Physical State | Liquid | pH | 2 |
| Flash Point | N/A | Boiling Point/Range | 100 °C |

| | | | |
|----------------|-------------------|---------------|-------------|
| Vapor Pressure | No data available | Vapor Density | <1(Air = 1) |
|----------------|-------------------|---------------|-------------|

10. STABILITY AND REACTIVITY

| | |
|----------------------------------|--|
| Stability | Stable under normal conditions. |
| Incompatible Products | Alkalis, Metals. |
| Conditions to Avoid | None known. |
| Hazardous Decomposition Products | Hydrogen chloride, Hydrogen fluoride. |
| Hazardous Reactions | None under normal processing. |
| Hazardous Polymerization | Hazardous polymerization does not occur. |

11. TOXICOLOGICAL INFORMATION

Acute Toxicity

| | |
|---------------------|------------------------------------|
| Product Information | Harmful if swallowed. |
| Irritation | May cause skin and eye irritation. |

| Chemical Name | LD50 Oral | LD50 Dermal | LC50 Inhalation |
|-------------------|-------------------|-----------------------|----------------------|
| Ammonium fluoride | None Established | None Established | None Established |
| Hydrochloric acid | 700 mg/kg (Rat) | 5010 mg/kg (Rabbit) | 3124 ppm (Rat) 1 h |
| Water | 90 mL/kg (Rat) | None Established | None Established |

Chronic Toxicity

| Chemical Name | ACGIH | IARC | NTP | OSHA |
|-------------------|------------------|------------------|------------------|------------------|
| Ammonium fluoride | None Established | None Established | None Established | None Established |
| Hydrochloric acid | None Established | None Established | None Established | None Established |
| Water | None Established | None Established | None Established | None Established |

| Chemical Name | EU - Endocrine Disruptors Candidate List | EU - Endocrine Disruptors - Evaluated Substances | Japan - Endocrine Disruptor Information |
|-------------------|--|--|---|
| Ammonium fluoride | None Established | None Established | None Established |
| Hydrochloric acid | None Established | None Established | None Established |
| Water | None Established | None Established | None Established |

12. ECOLOGICAL INFORMATION**Ecotoxicity**

| Chemical Name | Toxicity to Algae | Toxicity to Fish | Microtox | Daphnia Magna (Water Flea) |
|-------------------|-------------------|--|------------------|----------------------------|
| Ammonium fluoride | None Established | LC50= 364.0 mg/L Pimephales promelas 96 h | None Established | None Established |
| Hydrochloric acid | None Established | LC50= 282 mg/L Gambusia affinis 96 h | None Established | None Established |
| Water | None Established | None Established | None Established | None Established |

| Chemical Name | Log Pow |
|-------------------|------------------|
| Ammonium fluoride | None Established |
| Hydrochloric acid | None Established |
| Water | None Established |

13. DISPOSAL CONSIDERATIONS**Waste Disposal Method**

This material, as supplied, is not a hazardous waste according to state and Federal regulations (40 CFR 261). This material could become a hazardous waste if it is mixed with or otherwise comes in contact with a hazardous waste, if chemical additions are made to this material, or if the material is processed or otherwise altered. Consult 40 CFR 261 to determine whether the altered material is a hazardous waste pursuant to Federal regulations, and the applicable state requirements for the specific area of disposal. Consult the appropriate state, regional, or local regulations for additional requirements. When in compliance with local regulations; neutralize reagent (to pH 6-7) with dilute base (NaOH/soda ash/slaked lime), then rinse to drain with excess water. .

| Chemical Name |
|--------------------------------|
| Ammonium fluoride - 12125-01-8 |
| Hydrochloric acid - 7647-01-0 |
| Water - 7732-18-5 |

| Chemical Name | RCRA - Halogenated Organic Compounds | RCRA - P Series Wastes | RCRA - F Series Wastes | RCRA - K Series Wastes |
|--------------------------------|--------------------------------------|------------------------|------------------------|------------------------|
| Ammonium fluoride - 12125-01-8 | None Established | None Established | None Established | None Established |
| Hydrochloric acid - 7647-01-0 | None Established | None Established | None Established | None Established |
| Water - 7732-18-5 | None Established | None Established | None Established | None Established |

| Chemical Name | California Hazardous Waste Status |
|-------------------|-----------------------------------|
| Ammonium fluoride | Toxic; Corrosive |
| Hydrochloric acid | Toxic; Corrosive; Reactive |

14. TRANSPORT INFORMATION

DOT Not regulated

IATA Not regulated

IMDG/IMO Not regulated

15. REGULATORY INFORMATION**International Inventories**

| Component | TSCA | DSL | EINECS/ELINCS | ENCS | IECSC | KECL | PICCS | AICS |
|---|---------|-----|---------------|--------------------|-------|---------------|-------|------|
| Ammonium fluoride 12125-01-8 (1.7) | Present | X | X | 1-14; 1-310; 1-311 | X | KE-01665 | X | X |
| Hydrochloric acid 7647-01-0 (1.4) | T | X | X | X | X | KE-20189 X | X | X |
| Water 7732-18-5 (to 100%) | Present | X | X | ENCS | X | KE-35400 | X | X |

U.S. Federal Regulations

SARA 313

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product does not contain any chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372.

| Chemical Name | CAS-No | Weight % | SARA 313 - Threshold Values % |
|-------------------|------------|----------|-------------------------------|
| Ammonium fluoride | 12125-01-8 | 1.7 | 1.0 |
| Hydrochloric acid | 7647-01-0 | 1.4 | 1.0 |
| Water | 7732-18-5 | to 100% | None Established |

SARA 311/312 Hazard Categories

| | |
|-----------------------------------|-----|
| Acute Health Hazard | Yes |
| Chronic Health Hazard | No |
| Fire Hazard | No |
| Sudden Release of Pressure Hazard | No |
| Reactive Hazard | No |

Clean Water Act

| Component | CWA - Reportable Quantities | CWA - Toxic Pollutants | CWA - Priority Pollutants | CWA - Hazardous Substances |
|---|-----------------------------|------------------------|---------------------------|----------------------------|
| Ammonium fluoride 12125-01-8 (1.7) | 100 lb | None Established | None Established | X |
| Hydrochloric acid 7647-01-0 (1.4) | 5000 lb | None Established | None Established | X |
| Water 7732-18-5 (to 100%) | None Established | None Established | None Established | None Established |

| Chemical Name | CAS-No | Weight % | HAPS data | VOC Chemicals | Class 1 Ozone Depletors | Class 2 Ozone Depletors |
|-------------------|------------|----------|------------------|------------------|-------------------------|-------------------------|
| Ammonium fluoride | 12125-01-8 | 1.7 | None Established | None Established | None Established | None Established |
| Hydrochloric acid | 7647-01-0 | 1.4 | Present | None Established | None Established | None Established |
| Water | 7732-18-5 | to 100% | None Established | None Established | None Established | None Established |

CERCLA

| Chemical Name | Hazardous Substances RQs | Extremely Hazardous Substances RQs |
|-------------------|--------------------------|------------------------------------|
| Ammonium fluoride | 100 lb | None Established |
| Hydrochloric acid | 5000 lb | 5000 lb |
| Water | None Established | None Established |

U.S. State Regulations

| Chemical Name | CAS-No | California Prop. 65 |
|-------------------|------------|---------------------|
| Ammonium fluoride | 12125-01-8 | None Established |
| Hydrochloric acid | 7647-01-0 | None Established |
| Water | 7732-18-5 | None Established |

| Chemical Name | Massachusetts | New Jersey | Pennsylvania | Illinois | Rhode Island |
|-------------------|---------------|------------|--------------|------------------|--------------|
| Ammonium fluoride | X | X | X | None Established | X |
| Hydrochloric acid | X | X | X | X | X |

| | | | | | |
|-------|------------------|------------------|------------------|------------------|------------------|
| Water | None Established | None Established | None Established | None Established | None Established |
|-------|------------------|------------------|------------------|------------------|------------------|

International Regulations

Mexico - Grade

No information available.

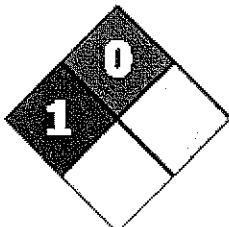

| Chemical Name | Carcinogen Status | Exposure Limits |
|-------------------|-------------------|------------------|
| Ammonium fluoride | None Established | None Established |
| Hydrochloric acid | None Established | None Established |
| Water | None Established | None Established |

Canada

WHMIS Hazard Class

Non-controlled

16. OTHER INFORMATION

| NFPA | HMIS | PPE | Transport Symbol | | | | | | |
|--|--|---------------|------------------|--------------|---|------------|---|---|---------------|
|  | <table><tr><td>Health Hazard</td><td>1</td></tr><tr><td>Flammability</td><td>0</td></tr><tr><td>Reactivity</td><td>0</td></tr></table> | Health Hazard | 1 | Flammability | 0 | Reactivity | 0 |  | Not regulated |
| Health Hazard | 1 | | | | | | | | |
| Flammability | 0 | | | | | | | | |
| Reactivity | 0 | | | | | | | | |

Prepared By Regulatory Affairs Department

Issuing Date 2/25/2010

Revision Date

Revision Note Initial Release.

Disclaimer

The information provided on this MSDS is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guide for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered as a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other material or in any process, unless specified in the text.

End of MSDS

**MSDS**

P.O. Box 329 - 802 Washington Avenue Chestertown, MD 21620 - USA

MATERIAL SAFETY DATA SHEET

TELEPHONE # FOR INFORMATION 410 778-3100

24 HOUR EMERGENCY NUMBER (CHEM-TEL): USA, Canada, Puerto Rico 800-255-3924;

Outside North American Continent 813-248-0585 (call Collect)

1. Product Identification

Product Code: V-6277

Product Description: Sulfate Reagent

Manufactured By: LaMotte Company

802 Washington Avenue

Chestertown, MD 21620

2. Composition/Information On Ingredients

| Hazard | CAS#/Name | % | PEL | TLV |
|--------|---|----|----------------------|----------------------|
| Yes | 10326-27-9 Barium Chloride dihydrate | 36 | 0.5 mg/cubic m as Ba | 0.5 mg/cubic m as Ba |
| Yes | 5949-29-1 Citric Acid, Monohydrate | 60 | N/E | N/E |
| Yes | 9000-01-5 Gum Arabic | 4 | N/E | N/E |

3. Hazards Overview

Primary Route Of Entry: Skin Ingestion Inhalation

Toxic by inhalation or ingestion. May be fatal if swallowed. Abdominal pain and vomiting.

HMIS Hazard

Scale: 4 = Extreme, 3 = High, 2 = Moderate, 1 = Slight, 0 = Least

Health: 3 Flammability: 0 Reactivity: 1

Carcinogenicity: None:

Other Health Related Comments:

Poison! Danger! Toxic by inhalation or ingestion. See Section 11, Toxicity.

Product Code: V-6277

Product Description: Sulfate Reagent

4. First Aid Measures

Eye Contact: Flush with water for 15 minutes. Consult a physician.

Skin Contact: Immediately flush with water. Remove affected clothing and wash skin thoroughly with soap and water.

Ingestion: Induce vomiting immediately. Call a physician immediately.

Inhalation: Remove to fresh air.

5. Fire Fighting Measures

Flash Point (Method Used): N/A

LEL: N/A

UEL: N/A

Extinguishing Media: Not a fire hazard

Special Fire Fighting Procedures: N/A

Unusual Fire & Explosion Hazard: N/A

6. Accidental Release Measures

Wear gloves and eye protection. Avoid breathing dust. Sweep up, containerize, & hold for hazardous waste disposal or treat as described in Section 13.

7. Handling & Storage

Store in cool, dry, ventilated area away from heat and moisture. Keep container tightly closed in secure "poison" area--out of reach of children. No eating or smoking when handling.

Product Code: V-6277

Product Description: Sulfate Reagent

8. Exposure Controls/Personal Protection

Ventilation

Normal

Protection When Handling

Eye Protection Gloves Lab coat

Work/Hygenic Practices: Avoid inhalation of dust or contact, eyes & skin. Wash thoroughly with soap & water after handling.

9. Physical & Chemical Properties

| | | | |
|----------------------|------------------------|-----------------|---------|
| Appearance: | White Powder | Vapor Density: | N/A |
| Solubility In Water: | Soluble | Vapor Pressure: | N/A |
| Odor: | None | Boiling Point: | N/A |
| pH: | 3 (0.1g in 10mL water) | Melting Point: | Unknown |

10. Stability & Reactivity

| | |
|---------------------------------------|----------------------------|
| Stable: | Yes |
| Conditions To Avoid: | N/A |
| Incompatibility (Materials To Avoid): | Strong oxidizing materials |
| Hazardous Decomposition Products: | HCl, COx |

11. Toxicological Information

Barium Chloride: Toxic Dose, Oral human LD₅₀: 11.4 mg/kg. Highly toxic by ingestion! Estimated lethal dose in humans is 1 gram. Investigated as a tumorigen. Acacia powder may cause allergic skin or respiratory reaction (hives, eczema; asthma, coughing)

Target Organs: Central Nervous System Heart Skin

Product Code: V-6277

Product Description: Sulfate Reagent

12. Ecological Information

Barium Chloride is expected to significantly bioaccumulate in the environment.

13. Disposal Considerations

Do NOT flush barium chloride to sewers and watercourses. Lab treatment methods to convert the chloride to the sulfate by dissolving in water and adding sulfuric acid are slow & inefficient. Direct disposal of reagent as a hazardous waste is recommend

14. Transportation Information

Proper Shipping Name:

DOT: BARIUM COMPOUNDS, N.O.S.
(BARIUM CHLORIDE)

IATA: BARIUM COMPOUNDS, N.O.S.
(BARIUM CHLORIDE)

Hazard Class/Div:

DOT: 6.1

IATA: 6.1

UN: 1564

Packing Group: III

15. Regulatory Information

Chemical Inventory Status

| Hazard | Ingredient | USA TSCA | Europe EC | --- Canada --- DSL NDSL | | Australia | Japan |
|--------|---|-------------|--------------|----------------------------|----|-----------|-------|
| Yes | 10361-37-2 Barium Chloride anhydrous | Yes | Yes | Yes | No | Yes | Yes |
| Yes | 77-92-9 Citric Acid, Anhydrous | Yes | Yes | Yes | No | Yes | Yes |
| Yes | 9000-01-5 Gum Arabic (Acacia) | Yes | Yes | Yes | No | Yes | No |

Product Code: V-6277

Product Description: Sulfate Reagent

Federal, State, & International Regulations

| Ingredient | --- SARA 302 --- | | ----- SARA 313 ----- | | CERCLA | RCRA 261.33 | TSCA 8(D) |
|---|------------------|-----|----------------------|-------------------|--------|----------------|--------------|
| | RQ | TPQ | Listed | Chemical Category | | | |
| 10361-37-2 Barium Chloride anhydrous | No | No | No | Barium comp. | No | No | No |
| 77-92-9 Citric Acid, Anhydrous | No | No | No | No | No | No | No |
| 9000-01-5 Gum Arabic (Acacia) | No | No | No | No | No | No | No |

Product Code: V-6277

Product Description: Sulfate Reagent

| Ingredient | --- SARA 311/312 --- | | | | | ----- Australia ----- | | This MSDS Is WHMIS Compliant |
|---|----------------------|---------|------|----------|------------|-----------------------|--------------------|---------------------------------|
| | Acute | Chronic | Fire | Pressure | Reactivity | Hazchem Code | Poison Schedule | |
| 10361-37-2 Barium Chloride anhydrous | Yes | No | No | No | No | 2Z | S6 | |
| 77-92-9 Citric Acid, Anhydrous | Yes | No | No | No | No | None Allocated | None Allocated | |
| 9000-01-5 Gum Arabic (Acacia) | Yes | No | Yes | No | No | None Allocated | None Allocated | |
| product V-6277 as a whole | Yes | No | No | No | No | 2Z | S6 | Yes |

16. Other Information

No eating or smoking when handling.

Prepared By: IP, Regulatory Affairs Department

Revised: 4/1/2008



MSDS

P.O. Box 329 - 802 Washington Avenue Chestertown, MD 21620 - USA

TELEPHONE # FOR INFORMATION 410 778-3100

24 HOUR EMERGENCY NUMBER (CHEM-TEL): USA, Canada, Puerto Rico 800-255-3924;

MATERIAL SAFETY DATA SHEET

Outside North American Continent 813-248-6585 (call Collect)

1. Product Identification

Product Code: 5941

Product Description: Tricon Flocculating Solution

Manufactured By: LaMotte Company

802 Washington Avenue

Chestertown, MD 21620

2. Composition/Information On Ingredients

| Hazard | CAS#/Name | % | PEL | TLV |
|--------|--------------------------------------|---------|------------------|------------------|
| No | 9003-05-8 Nonionic Polyacrylamide | <0.1 | None Established | None Established |
| No | 7732-18-5 Water | to 100% | None Established | None Established |

3. Hazards Overview

Primary Route Of Entry:

N/A

HMIS Hazard

Scale: 4 = Extreme, 3 = High, 2 = Moderate, 1 = Slight, 0 = Least

Health: 0

Flammability: 0

Reactivity: 0

Carcinogenicity: None:

Other Health Related Comments:

Product Code: 5941

Product Description: Tricon Flocculating Solution

4. First Aid Measures

Eye Contact: Flush thoroughly with water for 15 minutes, lifting eyelids occasionally. If irritation develops consult physician.

Skin Contact: Flush thoroughly with water. Wash skin with soap. If irritation develops, consult physician.

Ingestion: Drink several glasses of water. Consult physician.

Inhalation: Remove to fresh air.

5. Fire Fighting Measures

Flash Point (Method Used): N/A

LEL: N/A

UEL: N/A

Extinguishing Media: Not a fire hazard

Special Fire Fighting Procedures: N/A

Unusual Fire & Explosion Hazard: N/A

6. Accidental Release Measures

Absorb spill on inert material, containerize and hold for sanitary disposal. Dispose according to federal, state, and local regulations. If permitted, flush to drain with excess water.

7. Handling & Storage

Store in cool, dry, area.

8. Exposure Controls/Personal Protection

Ventilation

Normal

Protection When Handling

N/A

Work/Hygenic Practices:

9. Physical & Chemical Properties

Appearance: Clear Colorless Liquid
Solubility In Water: Soluble
Odor: None
pH: 6

Vapor Density: Unknown
Vapor Pressure: <17 mm Hg @ 20° C
Boiling Point: ca. 100° C
Melting Point: N/A

10. Stability & Reactivity

Stable: Yes
Conditions To Avoid: N/A
Incompatibility (Materials To Avoid): N/A
Hazardous Decomposition Products: N/A

11. Toxicological Information

Target Organs: N/A

Product Code: 5941

Product Description: Tricon Flocculating Solution

12. Ecological Information

Information not available.

13. Disposal Considerations

Dispose according to federal, state, and local regulations.

15. Regulatory Information

Chemical Inventory Status

| Hazard | Ingredient | USA TSCA | Europe EC | --- Canada --- DSL NDSL | | Australia | Japan |
|--------|-------------------------------------|-------------|--------------|----------------------------|----|-----------|-------|
| No | 9003-05-8 Polyacrylamide polymer | Yes | Yes | Yes | No | Yes | Yes |
| No | 7732-18-5 Distilled Water | Yes | Yes | Yes | No | Yes | Yes |

Federal, State, & International Regulations

| Ingredient | --- SARA 302 --- | | ----- SARA 313 ----- | | CERCLA | RCRA 261.33 | TSCA 8(D) |
|-------------------------------------|------------------|-----|----------------------|-------------------|--------|----------------|--------------|
| | RQ | TPQ | Listed | Chemical Category | | | |
| 9003-05-8 Polyacrylamide polymer | No | No | No | No | No | No | No |
| 7732-18-5 Distilled Water | No | No | No | No | No | No | No |

Product Code: 5941

Product Description: Tricon Flocculating Solution

| Ingredient | --- SARA 311/312 --- | | | | | ----- Australia ----- | | This MSDS Is WHMIS Compliant |
|-------------------------------------|----------------------|---------|------|----------|------------|-----------------------|--------------------|---------------------------------|
| | Acute | Chronic | Fire | Pressure | Reactivity | Hazchem Code | Poison Schedule | |
| 9003-05-8 Polyacrylamide polymer | No | No | No | No | No | None Allocated | None Allocated | |
| 7732-18-5 Distilled Water | No | No | No | No | No | None Allocated | None Allocated | |
| product 5941 as a whole | No | No | No | No | No | None Allocated | None Allocated | Yes |

16. Other Information

Keep out of the reach of children.

Prepared By: Regulatory Affairs Department

Revised: 9/4/2009



Issuing Date 12/28/2010

Revision Number 0

1. PRODUCT AND COMPANY IDENTIFICATION

Product Name VM Phosphate Reagent

Product Code(s) 4410

Recommended Use Laboratory chemicals. Industrial (not for food or food contact use). Test kit reagent.

Company LaMotte Company, Inc.
802 Washington Avenue
P.O. Box 329
Chestertown, MD 21620
USA

Emergency Telephone Number 24 Hour Emergency Number (CHEM-TEL):
USA, Canada, Puerto Rico 1-800-255-3924
Outside North American Continent (Call collect) 813-248-0585

2. HAZARDS IDENTIFICATION**DANGER! POISON!****Emergency Overview**

Corrosive

Liquid and mist cause severe burns to all body tissue

Inhalation may cause coughing, chest pains, damage to lungs. Ingestion may be fatal

Reacts with water, bases, and other materials

May be fatal if inhaled, absorbed through skin, or swallowed

Appearance Clear yellow solution**Physical State** Liquid**Odor** Odorless

OSHA Regulatory Status This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200). Safety information is given for exposure to the reagent as sold and considers exposure to the chemical if user has direct eye and skin contact.

Potential Health Effects

Principle Routes of Exposure Inhalation, skin contact, and ingestion

Acute Toxicity**Eyes**

Corrosive to the eyes and may cause severe damage including blindness.

Skin

Corrosive. Can cause redness, pain, and severe skin burns. Harmful if absorbed through skin.

Inhalation

May be fatal if inhaled. Corrosive to nose, throat and respiratory tract. Inhalation of corrosive mist may cause coughing, choking, headache, dizziness, and weakness for several hours. Pulmonary edema may occur with tightness in the chest, shortness of breath, bluish skin, decreased blood pressure, and increased heart rate.

Ingestion

Corrosive. Can cause immediate pain and burning in the mouth, throat, esophagus and GI tract. May cause nausea, vomiting, and diarrhea, and in severe cases death. May be fatal if swallowed.

Chronic Effects

Chronic exposure to corrosive mists or vapors may cause erosion of the teeth. Chronic exposure to mists containing sulfuric acid is a cancer hazard.

Aggravated Medical Conditions

Hypersensitivity may occur in those with preexisting skin disorders. Respiratory disorders. Preexisting eye disorders. Those with impaired liver or kidney function may be more susceptible to the effects of this substance.

3. COMPOSITION/INFORMATION ON INGREDIENTS

| Chemical Name | CAS-No | Weight % |
|------------------------|------------|----------|
| Sulfuric acid | 7664-93-9 | 18 |
| Hexaammonium molybdate | 12027-67-7 | <2.0 |
| Ammonium vanadate | 7803-55-6 | <0.1 |
| Water | 7732-18-5 | to 100% |

4. FIRST AID MEASURES

| | |
|-----------------------------------|--|
| Eye Contact | Immediately flush eyes with gentle stream of water for at least 15 minutes, occasionally lifting upper and lower eyelids. Call a physician immediately. |
| Skin Contact | Wash off immediately with soap and plenty of water for at least 15 minutes while removing all contaminated clothing and shoes. Remove and wash contaminated clothing before re-use. Excess acid on skin can be neutralized with a 2% solution of sodium bicarbonate in water.. Call a physician immediately. |
| Inhalation | Move to fresh air. If breathing is difficult, give oxygen. If not breathing, give artificial respiration and contact emergency personnel. Call a physician immediately. |
| Ingestion | DO NOT INDUCE VOMITING. Drink large quantity of water. Call a physician immediately. Never give anything by mouth to an unconscious person. |
| Protection of First-aiders | Use personal protective equipment. See Section 8 for more detail. Do not use mouth-to-mouth method if victim ingested or inhaled the substance; induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. |

5. FIRE-FIGHTING MEASURES

| | |
|-------------------------------------|--|
| Flammable Properties | Reacts with organic materials and may cause ignition of finely divided materials on contact. |
| Flash Point | Not applicable |
| Suitable Extinguishing Media | Dry chemical or CO ₂ . DO NOT USE WATER. |

Explosion Data**Specific Hazards Arising from the Chemical**

Contact with metals may evolve flammable hydrogen gas. React vigorously with water.

| | | | | |
|-------------|------------------------|-----------------------|--------------------|--|
| NFPA | Health Hazard 3 | Flammability 0 | Stability 2 | Physical and Chemical Hazards W |
|-------------|------------------------|-----------------------|--------------------|--|

6. ACCIDENTAL RELEASE MEASURES

| | |
|--------------------------------|---|
| Personal Precautions | Ensure adequate ventilation. Avoid contact with skin, eyes and inhalation of vapors. Use personal protective equipment. Refer to Section 8. |
| Methods for Cleaning Up | Neutralize spills with bicarbonate, soda ash, or calcium hydroxide and place slurry into a suitable container for disposal. Ammonium metavanadate is a toxic EPA-regulated waste (code P119). |

7. HANDLING AND STORAGE

| | |
|----------|--|
| Handling | Handle in accordance with good industrial hygiene and safety practice. Prevent contact with skin, eyes, and clothing. Do not ingest. Do not eat, drink, or smoke when using this product. |
| Storage | Keep containers tightly closed in a dry, cool, and well-ventilated place. Keep away from incompatible materials such as cyanides or sulfides.. Store away from strong bases or metals. Do not store near combustible materials. Keep out of the reach of children. |

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

| Chemical Name | ACGIH TLV | OSHA PEL | NIOSH IDLH |
|--------------------------------------|---|---|--|
| Sulfuric acid 7664-93-9 | TWA: 0.2 mg/m ³ | TWA: 1 mg/m ³ | IDLH: 15 mg/m ³ TWA: 1 mg/m ³ |
| Hexaammonium molybdate 12027-67-7 | TWA: 3 mg/m ³ TWA: 10 mg/m ³ TWA: 0.5 mg/m ³ | TWA: 5 mg/m ³ TWA: 15 mg/m ³ | IDLH: 1000 mg/m ³ |
| Ammonium vanadate 7803-55-6 | None Known | None Known | Ceiling: 0.05 mg/m ³ |
| Water 7732-18-5 | None Known | None Known | None Known |

Engineering Measures Ensure adequate ventilation, especially in confined areas.

Personal Protective Equipment

Eye/Face Protection

Safety glasses with side-shields. If splashes are likely to occur, wear:. Face-shield. Maintain eye wash and quick drench shower facilities in work area.

Skin and Body Protection

Wear protective gloves/clothing.

Respiratory Protection

When workers are facing concentrations above the exposure limit they must use appropriate certified respirators.

Hygiene Measures

Handle in accordance with good industrial hygiene and safety practice. Do not eat, drink or smoke when using this product. Wash hands before breaks and immediately after handling the product.

9. PHYSICAL AND CHEMICAL PROPERTIES

| | | | |
|----------------|-----------------------|---------------------|-------------------|
| Appearance | Clear yellow solution | Odor | Odorless |
| Physical State | Liquid | pH | <1 |
| Flash Point | Not applicable | Boiling Point/Range | No data available |
| Solubility | Soluble | Vapor Pressure | No data available |
| Vapor Density | >1 (air = 1) | | |

10. STABILITY AND REACTIVITY

| | |
|----------------------------------|---|
| Stability | Stable under normal conditions of use and storage. |
| Incompatible Products | Water. Strong bases. Metals. Combustible materials. Cyanides. Sulfides. Formaldehyde. |
| Conditions to Avoid | Excessive heat. Incompatible products. Moisture. |
| Hazardous Decomposition Products | Hydrogen gas. Sulfur oxides. |
| Hazardous Reactions | Reacts violently with water. Contact with metals may evolve flammable hydrogen gas. |
| Hazardous Polymerization | Hazardous polymerization does not occur. |

11. TOXICOLOGICAL INFORMATION

Acute Toxicity

| Chemical Name | LD50 Oral | LD50 Dermal | LC50 Inhalation |
|------------------------|--------------------|-------------|------------------------------------|
| Sulfuric acid | 2140 mg/kg (Rat) | None Known | 510 mg/m ³ (Rat) 2 h |
| Hexaammonium molybdate | None Known | None Known | None Known |
| Ammonium vanadate | 58.1 mg/kg (Rat) | None Known | 7800 µg/m ³ (Rat) 4 h |
| Water | 90 mL/kg (Rat) | None Known | None Known |

Chronic Toxicity**Chronic Toxicity**

Chronic exposure to corrosive mists or vapors may cause erosion of the teeth. Chronic exposure to mists containing sulfuric acid is a cancer hazard.

| Chemical Name | ACGIH | IARC | NTP | OSHA |
|------------------------|------------|------------|------------|------------|
| Sulfuric acid | A2 | Group 1 | Known | X |
| Hexaammonium molybdate | A3 | None Known | None Known | None Known |
| Ammonium vanadate | None Known | None Known | None Known | None Known |
| Water | None Known | None Known | None Known | None Known |

ACGIH: (American Conference of Governmental Industrial Hygienists)

A2 - Suspected Human Carcinogen

A3 - Animal Carcinogen

IARC: (International Agency for Research on Cancer)

Group 1 - Carcinogenic to Humans

NTP: (National Toxicity Program)

Known - Known Carcinogen

OSHA: (Occupational Safety & Health Administration)

X - Present

| Chemical Name | EU - Endocrine Disruptors Candidate List | EU - Endocrine Disruptors - Evaluated Substances | Japan - Endocrine Disruptor Information |
|------------------------|--|--|---|
| Sulfuric acid | None Known | None Known | None Known |
| Hexaammonium molybdate | None Known | None Known | None Known |
| Ammonium vanadate | None Known | None Known | None Known |
| Water | None Known | None Known | None Known |

12. ECOLOGICAL INFORMATION**Ecotoxicity**

The material may be toxic to aquatic life.

| Chemical Name | Toxicity to Algae | Toxicity to Fish | Microtox | Daphnia Magna (Water Flea) |
|------------------------|-------------------|--|------------|----------------------------|
| Sulfuric acid | None Known | LC50> 500 mg/L Brachydanio rerio 96 h | None Known | EC50 = 29 mg/L 24 h |
| Hexaammonium molybdate | None Known | None Known | None Known | None Known |
| Ammonium vanadate | None Known | None Known | None Known | None Known |
| Water | None Known | None Known | None Known | None Known |

Bioaccumulation/Accumulation

When released into the soil, this material may leach into ground water. When released into the air, this material may be removed from the atmosphere to a moderate extent by wet or dry deposition.

| Chemical Name | Log Pow |
|------------------------|------------|
| Sulfuric acid | None Known |
| Hexaammonium molybdate | None Known |
| Ammonium vanadate | None Known |
| Water | None Known |

13. DISPOSAL CONSIDERATIONS**Waste Disposal Method**

Dispose of in accordance with local regulations. Should not be released into the environment.

| Chemical Name |
|-------------------------------------|
| Sulfuric acid - 7664-93-9 |
| Hexaammonium molybdate - 12027-67-7 |
| Ammonium vanadate - 7803-55-6 |
| Water - 7732-18-5 |

| Chemical Name | RCRA - Halogenated Organic Compounds | RCRA - P Series Wastes | RCRA - F Series Wastes | RCRA - K Series Wastes |
|-------------------------------------|--------------------------------------|------------------------|------------------------|------------------------|
| Sulfuric acid - 7664-93-9 | None Known | None Known | None Known | None Known |
| Hexaammonium molybdate - 12027-67-7 | None Known | None Known | None Known | None Known |
| Ammonium vanadate - 7803-55-6 | None Known | P119 | None Known | None Known |
| Water - 7732-18-5 | None Known | None Known | None Known | None Known |

14. TRANSPORT INFORMATION**DOT**

Proper Shipping Name SULFURIC ACID (with <51% ACID)
Hazard Class 8
UN-No 2796
Packing Group II
Reportable Quantity (RQ) 1000

IATA

UN-No 2796
Proper Shipping Name SULPHURIC ACID (with <51% ACID)
Hazard Class 8
Packing Group II

IMDG/IMO

Proper Shipping Name SULFURIC ACID (with <51% acid)
Hazard Class 8
UN-No 2796
Packing Group II

15. REGULATORY INFORMATION**International Inventories**

| Component | TSCA | DSL | EINECS/ELINCS | ENCS | IECSC | KECL | PICCS | AICS |
|--|---------|-----|---------------|--------------|-------|----------|-------|------|
| Sulfuric acid 7664-93-9 (18) | Present | X | X | 1-430; 1-724 | X | KE-32570 | X | X |
| Hexaammonium molybdate 12027-67-7 (<2.0) | Present | X | X | 1-389 | X | KE-18391 | X | X |
| Ammonium vanadate 7803-55-6 (<0.1) | Present | X | X | 1-407 | X | KE-01756 | X | X |
| Water 7732-18-5 (to 100%) | Present | X | X | ENCS | X | KE-35400 | X | X |

U.S. Federal Regulations**SARA 313**

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product contains a chemical or chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372:

| Chemical Name | CAS-No | Weight % | SARA 313 - Threshold Values % |
|------------------------|------------|----------|-------------------------------|
| Sulfuric acid | 7664-93-9 | 18 | 1.0 |
| Hexaammonium molybdate | 12027-67-7 | <2.0 | None Known |
| Ammonium vanadate | 7803-55-6 | <0.1 | 1.0 |
| Water | 7732-18-5 | to 100% | None Known |

SARA 311/312 Hazard Categories

| | |
|-----------------------------------|-----|
| Acute Health Hazard | Yes |
| Chronic Health Hazard | Yes |
| Fire Hazard | No |
| Sudden Release of Pressure Hazard | No |
| Reactive Hazard | Yes |

Clean Water Act

This product contains the following substances which are regulated pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42).

| Component | CWA - Reportable Quantities | CWA - Toxic Pollutants | CWA - Priority Pollutants | CWA - Hazardous Substances |
|---|-----------------------------|------------------------|---------------------------|----------------------------|
| Sulfuric acid 7664-93-9 (18) | 1000 lb | None Known | None Known | X |
| Hexaammonium molybdate 12027-67-7 (<2.0) | None Known | None Known | None Known | None Known |
| Ammonium vanadate 7803-55-6 (<0.1) | None Known | None Known | None Known | None Known |
| Water 7732-18-5 (to 100%) | None Known | None Known | None Known | None Known |

| Chemical Name | CAS-No | Weight % | HAPS data | VOC Chemicals | Class 1 Ozone Depletors | Class 2 Ozone Depletors |
|------------------------|------------|----------|------------|---------------|-------------------------|-------------------------|
| Sulfuric acid | 7664-93-9 | 18 | None Known | None Known | None Known | None Known |
| Hexaammonium molybdate | 12027-67-7 | <2.0 | None Known | None Known | None Known | None Known |
| Ammonium vanadate | 7803-55-6 | <0.1 | None Known | None Known | None Known | None Known |
| Water | 7732-18-5 | to 100% | None Known | None Known | None Known | None Known |

CERCLA

| Chemical Name | Hazardous Substances RQs | Extremely Hazardous Substances RQs |
|------------------------|--------------------------|------------------------------------|
| Sulfuric acid | 1000 lb | 1000 lb |
| Hexaammonium molybdate | None Known | None Known |
| Ammonium vanadate | 1000 lb | None Known |
| Water | None Known | None Known |

U.S. State Regulations**California Proposition 65**

Warning! California Proposition 65 has classified "strong inorganic acid mists containing sulfuric acid" as a chemical known to the State of California to cause cancer. This classification applies only to "mists" containing sulfuric acid and not to sulfuric acid or sulfuric acid solutions, as is this solution.

| Chemical Name | CAS-No | California Prop. 65 |
|------------------------|------------|---------------------|
| Sulfuric acid | 7664-93-9 | Carcinogen |
| Hexaammonium molybdate | 12027-67-7 | None Known |
| Ammonium vanadate | 7803-55-6 | None Known |

| | | |
|-------|-----------|------------|
| Water | 7732-18-5 | None Known |
|-------|-----------|------------|

| Chemical Name | Massachusetts | New Jersey | Pennsylvania | Illinois | Rhode Island |
|------------------------|---------------|------------|--------------|------------|--------------|
| Sulfuric acid | X | X | X | X | X |
| Hexaammonium molybdate | None Known | None Known | None Known | None Known | None Known |
| Ammonium vanadate | X | X | X | None Known | None Known |
| Water | None Known | None Known | None Known | None Known | None Known |

International Regulations

Mexico - Grade

| Chemical Name | Carcinogen Status | Exposure Limits |
|------------------------|-------------------|---|
| Sulfuric acid | A2 | Mexico: TWA= 1 mg/m ³ |
| Hexaammonium molybdate | None Known | Mexico: TWA= 10 mg/m ³ Mexico: TWA= 5 mg/m ³ |
| Ammonium vanadate | None Known | None Known |
| Water | None Known | None Known |

Canada

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

WHMIS Hazard Class

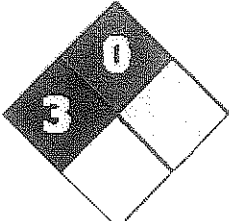

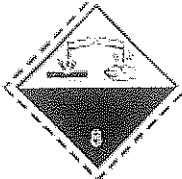
E Corrosive material

D1A Very toxic materials



| Chemical Name | NPRI |
|---------------|------|
| Sulfuric acid | X |

16. OTHER INFORMATION

| NFPA | HMIS | PPE | Transport Symbol | | | | | | |
|---|--|---------------|------------------|--------------|---|------------|---|--|---|
|  | <table><tr><td>Health Hazard</td><td>3</td></tr><tr><td>Flammability</td><td>0</td></tr><tr><td>Reactivity</td><td>2</td></tr></table> | Health Hazard | 3 | Flammability | 0 | Reactivity | 2 |  |  |
| Health Hazard | 3 | | | | | | | | |
| Flammability | 0 | | | | | | | | |
| Reactivity | 2 | | | | | | | | |

Prepared By

Regulatory Affairs Department

Issuing Date

12/28/2010

Revision Date**Revision Note**

Initial Release.

Disclaimer

The information provided on this MSDS is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guide for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered as a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other material or in any process, unless specified in the text.

End of MSDS



Issuing Date 9/13/2011

Revision Number 0

1. PRODUCT AND COMPANY IDENTIFICATION

Product Name WIDE RANGE INDICATOR

Product Code(s) 2218

Synonyms none

Recommended Use Test kit reagent. Industrial (not for food or food contact use). Laboratory chemicals.

Company LaMotte Company, Inc.
802 Washington Avenue
P.O. Box 329
Chestertown, MD 21620
USA

Emergency Telephone Number 24 Hour Emergency Number (CHEM-TEL):
USA, Canada, Puerto Rico 1-800-255-3924
Outside North American Continent (Call collect) 813-248-0585

2. HAZARDS IDENTIFICATION**POISON! DANGER!****Emergency Overview**

Flammable liquid and vapor
Harmful by inhalation, in contact with skin and if swallowed
May be fatal or cause blindness if swallowed
Affects central nervous system
May cause skin and eye irritation

Appearance Dark green**Physical State** Liquid**Odor** Alcohol**Potential Health Effects****Principle Routes of Exposure**

Skin contact, Ingestion, and, Inhalation.

Acute Toxicity**Eyes**

May cause irritation.

Skin

Irritating to skin. Prolonged skin contact may defat the skin and produce dermatitis.

Inhalation

May cause irritation of respiratory tract. May cause central nervous system depression with nausea, headache, dizziness, vomiting, and incoordination.

Ingestion

May cause drowsiness and dizziness. May be fatal or cause blindness if swallowed. May cause central nervous system depression.

Chronic Effects

Ethanol has been shown to be a reproductive toxin only when consumed as an alcoholic beverage. Prolonged skin contact may cause skin irritation and/or dermatitis.

Environmental Hazard

Harmful to aquatic organisms.

3. COMPOSITION/INFORMATION ON INGREDIENTS

| Chemical Name | CAS-No | Weight % |
|---------------------|-----------|----------|
| Methyl red | 493-52-7 | <0.05 |
| Bromothymol blue | 76-59-5 | <0.05 |
| Thymol blue | 76-61-9 | <0.05 |
| Phenolphthalein | 77-09-8 | <0.05 |
| Potassium hydroxide | 1310-58-3 | <0.1 |
| 2,4-Dinitrophenol | 51-28-5 | 0.05 |
| Methyl alcohol | 67-56-1 | 2 |
| Ethyl alcohol | 64-17-5 | 52 |
| Water | 7732-18-5 | to 100% |

WARNING! This product contains chemicals known to the State of California to cause cancer and birth defects or other reproductive harm.

4. FIRST AID MEASURES

| | |
|-----------------------------------|--|
| General Advice | Do not get in eyes, on skin, or on clothing. Consult a physician. |
| Eye Contact | Rinse thoroughly with plenty of water for at least 15 minutes, lifting lower and upper eyelids. Consult a physician. |
| Skin Contact | Wash off immediately with plenty of water for at least 15 minutes. Consult a physician. |
| Inhalation | Move to fresh air. If breathing is difficult, give oxygen. If not breathing, give artificial respiration and contact emergency personnel. Call a physician immediately. |
| Ingestion | Drink 1 or 2 glasses of water. Do not induce vomiting without medical advice. Call a physician immediately. |
| Protection of First-aiders | Use personal protective equipment. Do not use mouth-to-mouth method if victim ingested or inhaled the substance; induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. |

5. FIRE-FIGHTING MEASURES

| | |
|-------------------------------------|---|
| Flammable Properties | Flammable. |
| Flash Point | ca. 23°C (70°F) CC |
| Suitable Extinguishing Media | Water spray, dry chemical, carbon dioxide (CO ₂), or foam. |
| Explosion Data | |
| NFPA | Health Hazard 2 Flammability 3 Stability 0 Physical and Chemical Hazards - |
| HMIS | Health Hazard 2 Flammability 3 Stability 0 |

6. ACCIDENTAL RELEASE MEASURES

| | |
|--------------------------------|--|
| Personal Precautions | Refer to Section 8. Ensure adequate ventilation. Remove all sources of ignition. |
| Methods for Containment | Absorb spill with inert material (e.g. dry sand or earth), then place in a chemical waste container. Dispose according to federal, state, and local regulations. |
| Methods for Cleaning Up | After cleaning, flush away traces with water. |

7. HANDLING AND STORAGE

Handling Handle in accordance with good industrial hygiene and safety practice. Prevent contact with skin, eyes, and clothing. Do not ingest. Do not eat, drink, or smoke when using this product.

Storage Keep containers tightly closed in a dry, cool, and well-ventilated place. Keep away from heat and sources of ignition. Do not store near combustible materials. Keep out of the reach of children.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

| Chemical Name | ACGIH TLV | OSHA PEL | NIOSH IDLH |
|----------------------------------|---------------|--|--|
| Methyl red 493-52-7 | None Known | None Known | None Known |
| Bromothymol blue 76-59-5 | None Known | None Known | None Known |
| Thymol blue 76-61-9 | None Known | None Known | None Known |
| Phenolphthalein 77-09-8 | None Known | None Known | None Known |
| Potassium hydroxide 1310-58-3 | None Known | None Known | Ceiling: 2 mg/m ³ |
| 2,4-Dinitrophenol 51-28-5 | None Known | None Known | None Known |
| Methyl alcohol 67-56-1 | 250 | TWA: 200 ppm TWA: 260 mg/m ³ | IDLH: 6000 ppm TWA: 200 ppm TWA: 260 mg/m ³ STEL: 250 ppm STEL: 325 mg/m ³ |
| Ethyl alcohol 64-17-5 | TWA: 1000 ppm | TWA: 1000 ppm TWA: 1900 mg/m ³ | IDLH: 3300 ppm TWA: 1000 ppm TWA: 1900 mg/m ³ |
| Water 7732-18-5 | None Known | None Known | None Known |

Personal Protective Equipment

Eye/Face Protection

Safety glasses with side-shields.

Skin and Body Protection

Wear protective gloves/clothing. Nitrile rubber. Gloves & Lab Coat.

Respiratory Protection

Use only with adequate ventilation.

Hygiene Measures

Do not eat, drink or smoke when using this product.

9. PHYSICAL AND CHEMICAL PROPERTIES

| | | | |
|----------------|--------------------|---------------------|--|
| Appearance | Dark green | Odor | Alcohol |
| Physical State | Liquid | pH | Not applicable |
| Flash Point | ca. 23°C (70°F) CC | Boiling Point/Range | 78.5°C (173.3°F) for SDA (3A) Ethyl Alcohol |

Explosion Limits

Upper

19% Ethanol

Lower

3.3% Ethanol

Vapor Pressure

48 mmHg @ 20 °C for SDA (3A) Vapor Density
Ethyl Alcohol

1.6 @ 20°C (Air=1) for SDA
(3A) Ethyl Alcohol

10. STABILITY AND REACTIVITY

Stability

Stable under normal conditions of use and storage.

Incompatible Products Nitric acid. Strong oxidizing agents.

Conditions to Avoid Heat, flames and sparks.

Hazardous Decomposition Products Carbon oxides (COx).

Hazardous Polymerization Hazardous polymerization does not occur.

11. TOXICOLOGICAL INFORMATION

Acute Toxicity

| Chemical Name | LD50 Oral | LD50 Dermal | LC50 Inhalation |
|---------------------|--------------------|------------------------|--|
| Methyl red | None Known | None Known | None Known |
| Bromothymol blue | None Known | None Known | None Known |
| Thymol blue | None Known | None Known | None Known |
| Phenolphthalein | None Known | None Known | None Known |
| Potassium hydroxide | 214 mg/kg (Rat) | None Known | 85 mg/L Gambusia affinis 24 hr |
| 2,4-Dinitrophenol | 30 mg/kg (Rat) | None Known | None Known |
| Methyl alcohol | 5628 mg/kg (Rat) | 15800 mg/kg (Rabbit) | 64000 ppm (Rat) 4 h 83.2 mg/L (Rat) 4 h |
| Ethyl alcohol | 1501 mg/kg (Rat) | None Known | 124.7 mg/L (Rat) 4 h |
| Water | 90 mL/kg (Rat) | None Known | None Known |

Chronic Toxicity

Chronic Toxicity Ethanol has been shown to be a reproductive toxin only when consumed as an alcoholic beverage. Prolonged skin contact may cause skin irritation and/or dermatitis.

Carcinogenicity The table below indicates whether each agency has listed any ingredient as a carcinogen.

| Chemical Name | ACGIH | IARC | NTP | OSHA |
|---------------------|------------|------------|------------------------|------------|
| Methyl red | None Known | None Known | None Known | None Known |
| Bromothymol blue | None Known | None Known | None Known | None Known |
| Thymol blue | None Known | None Known | None Known | None Known |
| Phenolphthalein | None Known | Group 2B | Reasonably Anticipated | X |
| Potassium hydroxide | None Known | None Known | None Known | None Known |
| 2,4-Dinitrophenol | None Known | None Known | None Known | None Known |
| Methyl alcohol | None Known | None Known | None Known | None Known |
| Ethyl alcohol | None Known | None Known | Known | None Known |
| Water | None Known | None Known | None Known | None Known |

IARC: (International Agency for Research on Cancer)

Group 2B - Possibly Carcinogenic to Humans

NTP: (National Toxicity Program)

Known - Known Carcinogen

Reasonably Anticipated - Reasonably Anticipated to be a Human Carcinogen

OSHA: (Occupational Safety & Health Administration)

X - Present

Endocrine Disruptor Information

| Chemical Name | EU - Endocrine Disruptors Candidate List | EU - Endocrine Disruptors - Evaluated Substances | Japan - Endocrine Disruptor Information |
|------------------|--|--|---|
| Methyl red | None Known | None Known | None Known |
| Bromothymol blue | None Known | None Known | None Known |
| Thymol blue | None Known | None Known | None Known |
| Phenolphthalein | Group III Chemical | None Known | None Known |

| | | | |
|---------------------|------------|------------|------------|
| Potassium hydroxide | None Known | None Known | None Known |
| 2,4-Dinitrophenol | None Known | None Known | None Known |
| Methyl alcohol | None Known | None Known | None Known |
| Ethyl alcohol | None Known | None Known | None Known |
| Water | None Known | None Known | None Known |

12. ECOLOGICAL INFORMATION

Ecotoxicity

| Chemical Name | Toxicity to Algae | Toxicity to Fish | Microtox | Daphnia Magna (Water Flea) |
|---------------------|-------------------|---|---|---|
| Methyl red | None Known | None Known | None Known | None Known |
| Bromothymol blue | None Known | None Known | None Known | None Known |
| Thymol blue | None Known | None Known | None Known | None Known |
| Phenolphthalein | None Known | None Known | None Known | None Known |
| Potassium hydroxide | None Known | None Known | None Known | None Known |
| 2,4-Dinitrophenol | None Known | LC50= 6.58 mg/L Pimephales promelas 96 h | None Known | None Known |
| Methyl alcohol | None Known | LC50 13500 - 17600 mg/L Lepomis macrochirus 96 h LC50 18 - 20 mL/L Oncorhynchus mykiss 96 h LC50 19500 - 20700 mg/L Oncorhynchus mykiss 96 h LC50= 28200 mg/L Pimephales promelas 96 h LC50> 100 mg/L Pimephales promelas 96 h | EC50 = 39000 mg/L 25 min EC50 = 40000 mg/L 15 min EC50 = 43000 mg/L 5 min | None Known |
| Ethyl alcohol | None Known | LC50= 12900 mg/L Oncorhynchus mykiss 96 h LC50= 14.2 mg/L Pimephales promelas 96 h | EC50 = 34634 mg/L 30 min EC50 = 35470 mg/L 5 min | EC50 = 10800 mg/L 24 h EC50 = 9268 mg/L 48 h |
| Water | None Known | None Known | None Known | None Known |

Persistence and Degradability

Ethanol: When released into the soil, this material is expected to leach into groundwater. When released into the soil, this material is expected to quickly evaporate. When released into water, this material may evaporate to a moderate extent. When released into the air, this material is expected to be readily degraded by reaction with photochemically produced hydroxyl radicals. When released into the air, this material is expected to be readily removed from the atmosphere by dry and wet deposition. When released into the air, this material is expected to have a half-life between 1 and 10 days.

| Chemical Name | Log Pow |
|---------------------|------------------|
| Methyl red | None Known |
| Bromothymol blue | None Known |
| Thymol blue | None Known |
| Phenolphthalein | None Known |
| Potassium hydroxide | = 0.65 = 0.83 |
| 2,4-Dinitrophenol | = 1.54 |
| Methyl alcohol | = -0.77 |
| Ethyl alcohol | = -0.32 |
| Water | None Known |

13. DISPOSAL CONSIDERATIONS

Waste Disposal Method

Dispose of in accordance with local regulations.

| Chemical Name | RCRA - Halogenated Organic Compounds | RCRA - P Series Wastes | RCRA - F Series Wastes | RCRA - K Series Wastes |
|---------------------------------|--------------------------------------|------------------------|------------------------|------------------------|
| Methyl red - 493-52-7 | None Known | None Known | None Known | None Known |
| Bromothymol blue - 76-59-5 | None Known | None Known | None Known | None Known |
| Thymol blue - 76-61-9 | None Known | None Known | None Known | None Known |
| Phenolphthalein - 77-09-8 | None Known | None Known | None Known | None Known |
| Potassium hydroxide - 1310-58-3 | None Known | None Known | None Known | None Known |
| 2,4-Dinitrophenol - 51-28-5 | None Known | P048 | None Known | None Known |
| Methyl alcohol - 67-56-1 | None Known | None Known | None Known | None Known |
| Ethyl alcohol - 64-17-5 | None Known | None Known | None Known | None Known |
| Water - 7732-18-5 | None Known | None Known | None Known | None Known |

| Chemical Name | California Hazardous Waste Status |
|---------------|-----------------------------------|
| Ethyl alcohol | Toxic; Ignitable |

14. TRANSPORT INFORMATION

DOT

Proper Shipping Name ETHANOL SOLUTION (Ethyl Alcohol Solution)
 Hazard Class 3
 UN-No 1170
 Packing Group II

IATA

UN-No 1170
 Proper Shipping Name ETHANOL SOLUTION (Ethyl Alcohol Solution)
 Hazard Class 3
 Packing Group II

IMDG/IMO

Proper Shipping Name ETHANOL SOLUTION (Ethyl Alcohol Solution)
 Hazard Class 3
 UN-No 1170
 Packing Group II

15. REGULATORY INFORMATION

International Inventories

| Component | TSCA | DSL | EINECS/ELINCS | ENCS | IECSC | KECL | PICCS | AICS |
|---|---------|-----|---------------|---------|-------|----------|-------|------|
| Methyl red 493-52-7 (<0.05) | Present | X | X | 5-243 | X | KE-06693 | X | X |
| Bromothymol blue 76-59-5 (<0.05) | Present | X | X | ENCS | X | KE-02744 | X | X |
| Thymol blue 76-61-9 (<0.05) | Present | X | X | ENCS | X | KECL | X | X |
| Phenolphthalein 77-09-8 (<0.05) | Present | X | X | 9-1152 | X | KE-03234 | X | X |
| Potassium hydroxide 1310-58-3 (<0.1) | Present | X | X | 1-369 | X | KE-29139 | X | X |
| 2,4-Dinitrophenol 51-28-5 (0.05) | Present | X | X | 3-797 | X | KE-11946 | X | X |
| Methyl alcohol 67-56-1 (2) | Present | X | X | (2)-201 | X | KECL | X | X |
| Ethyl alcohol 64-17-5 (52) | Present | X | X | 2-202 | X | KE-13217 | X | X |

| | | | | | | | | |
|--------------------------------|---------|---|---|------|---|----------|---|---|
| Water 7732-18-5 (to 100%) | Present | X | X | ENCS | X | KE-35400 | X | X |
|--------------------------------|---------|---|---|------|---|----------|---|---|

U.S. Federal Regulations**SARA 313**

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product contains a chemical or chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372

| Chemical Name | CAS-No | Weight % | SARA 313 - Threshold Values % |
|---------------------|-----------|----------|-------------------------------|
| Methyl red | 493-52-7 | <0.05 | None Known |
| Bromothymol blue | 76-59-5 | <0.05 | None Known |
| Thymol blue | 76-61-9 | <0.05 | None Known |
| Phenolphthalein | 77-09-8 | <0.05 | None Known |
| Potassium hydroxide | 1310-58-3 | <0.1 | None Known |
| 2,4-Dinitrophenol | 51-28-5 | 0.05 | 1.0 |
| Methyl alcohol | 67-56-1 | 2 | 1.0 |
| Ethyl alcohol | 64-17-5 | 52 | None Known |
| Water | 7732-18-5 | to 100% | None Known |

SARA 311/312 Hazard Categories

| | |
|-----------------------------------|-----|
| Acute Health Hazard | Yes |
| Chronic Health Hazard | Yes |
| Fire Hazard | Yes |
| Sudden Release of Pressure Hazard | No |
| Reactive Hazard | No |

Clean Water Act

This product contains the following substances which are regulated pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42).

| Component | CWA - Reportable Quantities | CWA - Toxic Pollutants | CWA - Priority Pollutants | CWA - Hazardous Substances |
|---|-----------------------------|------------------------|---------------------------|----------------------------|
| Methyl red 493-52-7 (<0.05) | None Known | None Known | None Known | None Known |
| Bromothymol blue 76-59-5 (<0.05) | None Known | None Known | None Known | None Known |
| Thymol blue 76-61-9 (<0.05) | None Known | None Known | None Known | None Known |
| Phenolphthalein 77-09-8 (<0.05) | None Known | None Known | None Known | None Known |
| Potassium hydroxide 1310-58-3 (<0.1) | 1000 lb | None Known | None Known | X |
| 2,4-Dinitrophenol 51-28-5 (0.05) | None Known | X | X | X |
| Methyl alcohol 67-56-1 (2) | None Known | None Known | None Known | None Known |
| Ethyl alcohol 64-17-5 (52) | None Known | None Known | None Known | None Known |
| Water 7732-18-5 (to 100%) | None Known | None Known | None Known | None Known |

Clean Air Act, Section 112 Hazardous Air Pollutants (HAPs) (see 40 CFR 61)

This product contains the following HAPs:

| Chemical Name | CAS-No | Weight % | HAPS data | VOC Chemicals | Class 1 Ozone Depletors | Class 2 Ozone Depletors |
|------------------|----------|----------|------------|---------------|-------------------------|-------------------------|
| Methyl red | 493-52-7 | <0.05 | None Known | None Known | None Known | None Known |
| Bromothymol blue | 76-59-5 | <0.05 | None Known | None Known | None Known | None Known |
| Thymol blue | 76-61-9 | <0.05 | None Known | None Known | None Known | None Known |
| Phenolphthalein | 77-09-8 | <0.05 | None Known | Group III | None Known | None Known |

| | | | | | | |
|---------------------|-----------|---------|------------|------------|------------|------------|
| Potassium hydroxide | 1310-58-3 | <0.1 | None Known | None Known | None Known | None Known |
| 2,4-Dinitrophenol | 51-28-5 | 0.05 | Present | Group III | None Known | None Known |
| Methyl alcohol | 67-56-1 | 2 | Present | Group IV | None Known | None Known |
| Ethyl alcohol | 64-17-5 | 52 | None Known | None Known | None Known | None Known |
| Water | 7732-18-5 | to 100% | None Known | None Known | None Known | None Known |

CERCLA

| Chemical Name | Hazardous Substances RQs | Extremely Hazardous Substances RQs |
|---------------------|--------------------------|------------------------------------|
| Methyl red | None Known | None Known |
| Bromothymol blue | None Known | None Known |
| Thymol blue | None Known | None Known |
| Phenolphthalein | None Known | None Known |
| Potassium hydroxide | 1000 lb | None Known |
| 2,4-Dinitrophenol | 10 lb | None Known |
| Methyl alcohol | 5000 lb | None Known |
| Ethyl alcohol | None Known | None Known |
| Water | None Known | None Known |

U.S. State Regulations**California Proposition 65**

WARNING! This product contains chemicals know to the State of California to cause cancer and birth defects or other reproductive harm Ethyl alcohol is only considered a Proposition 65 developmental hazard when it is ingested as an alcoholic beverage

| Chemical Name | CAS-No | California Prop. 65 |
|---------------------|-----------|---------------------|
| Methyl red | 493-52-7 | None Known |
| Bromothymol blue | 76-59-5 | None Known |
| Thymol blue | 76-61-9 | None Known |
| Phenolphthalein | 77-09-8 | Carcinogen |
| Potassium hydroxide | 1310-58-3 | None Known |
| 2,4-Dinitrophenol | 51-28-5 | None Known |
| Methyl alcohol | 67-56-1 | Developmental |
| Ethyl alcohol | 64-17-5 | Carcinogen |
| Water | 7732-18-5 | None Known |

U.S. State Right-to-Know Regulations

| Chemical Name | Massachusetts | New Jersey | Pennsylvania | Illinois | Rhode Island |
|---------------------|---------------|------------|--------------|------------|--------------|
| Methyl red | None Known | None Known | None Known | None Known | None Known |
| Bromothymol blue | None Known | None Known | None Known | None Known | None Known |
| Thymol blue | None Known | None Known | None Known | None Known | None Known |
| Phenolphthalein | None Known | None Known | None Known | None Known | None Known |
| Potassium hydroxide | X | X | X | None Known | X |
| 2,4-Dinitrophenol | X | X | X | X | None Known |
| Methyl alcohol | X | X | X | X | X |
| Ethyl alcohol | X | X | X | None Known | X |
| Water | None Known | None Known | None Known | None Known | None Known |

International Regulations**Mexico - Grade**

| Chemical Name | Carcinogen Status | Exposure Limits |
|------------------|-------------------|-----------------|
| Methyl red | None Known | None Known |
| Bromothymol blue | None Known | None Known |
| Thymol blue | None Known | None Known |

| | | |
|---------------------|------------|--|
| Phenolphthalein | None Known | None Known |
| Potassium hydroxide | None Known | None Known |
| 2,4-Dinitrophenol | None Known | None Known |
| Methyl alcohol | None Known | Mexico: TWA 200 ppm Mexico: TWA 260 mg/m ³ |
| Ethyl alcohol | None Known | Mexico: TWA= 1000 ppm Mexico: TWA= 1900 mg/m ³ |
| Water | None Known | None Known |

Canada

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the MSDS contains all the information required by the CPR




| Component | WHMIS Hazard Class |
|---|---|
| Methyl red 493-52-7 (<0.05) | Uncontrolled product according to WHMIS classification criteria |
| Bromothymol blue 76-59-5 (<0.05) | Uncontrolled product according to WHMIS classification criteria |
| Thymol blue 76-61-9 (<0.05) | Not determined |
| Phenolphthalein 77-09-8 (<0.05) | Not determined |
| Potassium hydroxide 1310-58-3 (<0.1) | 1 % D1B E |
| 2,4-Dinitrophenol 51-28-5 (0.05) | 0.1 % |
| Methyl alcohol 67-56-1 (2) | 1 % B2 D1B D2A D2B |
| Ethyl alcohol 64-17-5 (52) | 0.1 % B2 D2B |
| Water 7732-18-5 (to 100%) | Uncontrolled product according to WHMIS classification criteria |



| Chemical Name | NPRI |
|----------------|------|
| Methyl alcohol | X |

Legend
X - Listed

16. OTHER INFORMATION

| NFPA | HMIS | PPE | Transport Symbol | | | | | | |
|---|---|--------|------------------|--------------|---|------------|---|---|---|
|  | <table><tr><td>HEALTH</td><td>2</td></tr><tr><td>FLAMMABILITY</td><td>3</td></tr><tr><td>REACTIVITY</td><td>0</td></tr></table> | HEALTH | 2 | FLAMMABILITY | 3 | REACTIVITY | 0 |  |  |
| HEALTH | 2 | | | | | | | | |
| FLAMMABILITY | 3 | | | | | | | | |
| REACTIVITY | 0 | | | | | | | | |

Prepared By
Issuing Date

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Disclaimer

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End of MSDS