SILVER FERN CHEMICAL, INC.

Safety Data Sheet

Potassium Permanganate

SECTION 1 - PRODUCT AND COMPANY IDENTIFICATION

1.1 Product identifier

Product Name: Potassium Permanganate

Synonym(s): Potassium permanganate

REACH Registration Number: No data available at this time.

1.2 Relevant identified uses of the substance or mixture and uses advised against

General use: Industrial applications

Uses advised against: None known

1.3 Details of the supplier and of the safety data sheet

Manufacturer/Distributor

Silver Fern Chemical, Inc.
2226 Queen Anne Avenue North
Suite C
Seattle, WA 98109 USA
1-866-282-3384
Website - www.silverfernchemical.com; email address - info@silverfernchemical.com

1.4 Emergency telephone number: INFO-TRAC +1-800-535-5053; Outside USA & Canada +1-352-323-3500

SECTION 2 - HAZARDS IDENTIFICATION

2.1 Classification of substance or mixture

Product definition: Substance

Classification in accordance with 29 CFR 1910 (OSHA HCS) and Regulation EC No. 1272/2008

Oxidizing solid - Category 2 [H272]
Acute toxicity, oral - Category 4 [H302]
Aquatic chronic toxicity - Category 1 [H410]

2.2 Label Elements

Hazard Symbol(s):

GHS03 GHS07 GHS09

Signal Word: Danger

Hazard Statement(s):
H272 - May intensify fire; oxidizer
H302 - Harmful if swallowed
H410 - Toxic to aquatic life with long lasting effects

Precautionary Statements:

[Prevention]
P210 - Keep away from heat and hot surfaces.
P220 - Keep away from combustible and incompatible materials.
P221 - Take any precaution to avoid mixing with reducing agents, combustible materials and organic materials.
P264 - Wash hands and other skin areas exposed to material thoroughly after handling.
P270 - Do not eat, drink or smoke when using this product.
P273 - Avoid release to the environment.

[Response]
P301 + P330 + P312 - IF SWALLOWED: Rinse mouth. Call a POISON CENTER or doctor if you feel unwell.
P370 + P378 - In case of fire: Use water only to extinguish the fire.
P391 - Collect spillage.

[Disposal]
P501 - Dispose of contents and containers in accordance with national and local regulations.

2.3 Hazards not otherwise classified (HNOC) or not covered by GHS

None

SECTION 3 - COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substances

% by Weight	Ingredient	CAS Number	EC Number	Annex Number	GHS Classification
>97.5	Potassium Permanganate	7722-64-7	231-760-3	025-002-00-9	H272, H302, H410

3.2 Mixtures

Not applicable

There are no ingredients present in this product which, within the current knowledge of the supplier and in the concentrations applicable, are classified as hazardous to health or the environment and hence require reporting in this section.

SECTION 4 - FIRST AID MEASURES

4.1 Description of first aid measures

Inhalation: If product dust or fume causes respiratory irritation or distress, move the exposed person to fresh air immediately. If breathing is difficult or irregular, administer oxygen; if respiratory arrest occurs, start artificial respiration by trained personnel. Do not use mouth-to-mouth method if victim inhaled this substance; give artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device. If unconscious, maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband. Immediately contact a doctor, paramedical personnel or Poison Control Center for instructions.

Eyes: Do not rub eyes or keep eyes closed. Immediately flush eyes with large amounts of water or saline solution for at least 30 minutes, occasionally lifting the upper and lower lids. Remove contact lenses, if present and easy to do, after first 2 minutes and continue rinsing. Seek immediate medical advice, preferably from an ophthalmologist.

Skin: Flush skin with large amounts of water while removing contaminated clothing and continue rinsing for at least 15 minutes. Wash contaminated clothing thoroughly before reuse. Discard contaminated shoes. If irritation persists, seek medical attention.

Ingestion: Rinse mouth with water if the victim is conscious. Remove dentures, if present. DO NOT induce vomiting. Give 1 - 2 cupfuls of water to drink if the victim is conscious, alert and able to swallow and is not experiencing respiratory distress. Never give anything by mouth to an unconscious or convulsing person. Do not leave the victim unattended. Seek immediate medical attention or call a Poison Control Center.

4.2 Most important symptoms and effects, both acute and delayed

Potential health symptoms and effects

Eyes: Causes serious eye irritation with redness, swelling, pain, tearing, blurred vision and possible burns. May cause chemical conjunctivitis and corneal damage. May cause mechanical irritation of the cornea.

Skin: May cause skin irritation, rash and possible burns. May cause cold clammy skin with cyanosis or pale color. May cause brown stains on skin and possible hardening of the outer skin layer. Prolonged skin contact may cause burns. May be harmful if absorbed through the skin.

Inhalation: Inhalation of dust or fume causes irritation of the respiratory tract with sore throat, cough, shortness of breath and chest tightness. May cause difficulty breathing, lung edema, headache, nausea, dizziness, methemoglobinemia and cyanosis. May be harmful if inhaled.

Ingestion: Harmful if swallowed. Causes irritation of the digestive tract with salivation, nausea, vomiting, abdominal pain and diarrhea. May cause severe and permanent damage including perforation of the digestive tract. May cause liver and kidney damage. May cause central nervous system effects. May form methemoglobin, which in sufficient concentration causes cyanosis. In high doses, manganese may increase anemia by interfering with iron absorption. Manganese in general is a central nervous system poison, and potassium permanganate has also been reported to have this property.

Chronic: Prolonged or repeated skin contact may cause defatting of the skin and dermatitis. May cause methemoglobinemia, characterized by chocolate-brown colored blood, headache, weakness, dizziness, labored breathing, cyanosis (bluish skin due to deficient oxygenated blood), rapid heart rate, unconsciousness and possible death. Chronic inhalation, skin absorption or ingestion of potassium permanganate can cause damage to the liver and kidneys. Chronic manganese toxicity through inhalation may result in "manganism", which is a disease of the central nervous system involving psychic and neurological disorders. Effects may be delayed. Potassium permanganate may cause reproductive effects.

4.3 Indication of any immediate medical attention and special treatment needed

Advice to Doctor and Hospital Personnel

Product is a corrosive material. Use of gastric lavage or emesis is contraindicated. Possible perforation of stomach or esophagus should be investigated. Ingestion causes severe swelling, severe damage to the delicate tissue and danger of perforation. Methemoglobinemia may also occur. Effects may be delayed.

SECTION 5 - FIRE FIGHTING MEASURES

5.1 Extinguishable media

Suitable methods of extinction: Use water only for extinguishing fires.

Unsuitable methods of extinction: Do not use extinguishing media such as dry chemical, carbon dioxide, Halon or foams.

5.2 Special hazards arising from the substance or mixture

Oxidizer! Approach fire from upwind to avoid hazardous vapors and toxic decomposition products. This substance is not combustible; however, it is an oxidizer and its heat of reaction with reducing agents or combustible materials may cause ignition. Releases oxygen upon decomposition, which enhances combustion.

Closed containers may explode due to the buildup of pressure when exposed to extreme heat. During emergency conditions overexposure to decomposition products may cause a health hazard. Symptoms may not be immediately apparent or may be delayed. Obtain medical attention.

Explosion hazards: Contact with combustible, organic or oxidizable materials may cause extremely violent combustion and explosion.

5.3 Advice for firefighters

Full protective equipment including self-contained breathing apparatus should be used. Water may be used to cool closed containers to prevent pressure buildup and possible autoignition or explosion when exposed to extreme heat. If possible, firefighters should control runoff water to prevent environmental contamination.

SECTION 6 - ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

Evacuate non-essential personnel. Avoid dust generation and accumulation. Do not inhale dust. Ventilate the area. Wear appropriate protective clothing and equipment designated in Section 8. Remove all sources of ignition.

6.2 Environmental precautions

Avoid dispersal of spilled material or runoff and prevent contact with soil and entry into drains, sewers or waterways.

6.3 Methods and materials for containment and cleaning up

Clean up spills immediately. Cover drains and contain spill. Minimize dust generation during clean-up. Carefully collect material and place it into an approved container(s) for proper disposal. DO NOT use combustible materials such as paper towels or straw brooms to clean up spills. Do not save material for reclamation. Observe possible material restrictions (Sections 7.2 and 10.5). Do not allow material or runoff from rinsing contaminated areas to enter floor drains or storm drains and ditches which lead to waterways. Dispose of via a licensed waste disposal contractor.

6.4 Reference to other sections

For indications about waste treatment, see Section 13.

SECTION 7 - HANDLING AND STORAGE

7.1 Precautions for safe handling

Wear all appropriate personal protective equipment specified in Section 8. Minimize dust generation. Do not get in eyes on skin or clothing. Do not breathe dust. If normal use of material presents a respiratory hazard, use only adequate ventilation or wear an appropriate respirator.

Advice on protection against fire and explosion

Avoid contact with combustible, organic or oxidizable materials.

7.2 Conditions for safe storage, including any incompatibilities

Store in dry, cool and well-ventilated areas, away from combustible and incompatible materials (see Section 10.5), food and drink. Keep away from acids and reducing agents. Keep away from heat and ignition sources. Avoid storage on wood floors. Do not store near alkaline substances. Transfer only to approved containers having correct labeling. Keep containers tightly closed when not in use. Protect containers against physical damage. Containers that have been opened must be carefully resealed and kept upright to prevent spillage. Containers are hazardous when empty as they contain product residues. Use appropriate containment to avoid environmental contamination. Ventilate closed areas. Do not take internally. Keep out of reach of children.

7.3 Specific end uses

Apart from the uses mentioned in Section 1.2, no other specific uses are stipulated.

SECTION 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 Control parameters

Contains no substances with occupational exposure limits.

8.2 Exposure controls

Engineering measures: Technical measures and appropriate working operations should be given priority over the use of personal protective equipment. Use adequate ventilation. Local exhaust is preferable.

Individual protection measures: Wear protective clothing to prevent repeated or prolonged contact with product. Protective clothing needs to be selected specifically for the workplace, depending on concentrations and quantities of hazardous substances handled. The chemical resistance of the protective equipment should be enquired at the representative supplier.

Hygiene measures: Facilities storing or using this material should be equipped with an eyewash station and safety shower. Change contaminated clothing. Preventive skin protection is recommended. Wash hands thoroughly after use, before eating, drinking, smoking or using the lavatory.

Eye/face protection: Wear safety glasses with unperforated side shields or protective splash goggles during use.

Hand Protection: Wear gloves recommended by glove supplier for protection against materials in Section 3. Gloves should be impermeable to chemicals and oil. Breakthrough time of selected gloves must be greater than the intended use period.

Skin protection: Wear protective clothing. Wear protective boots if the situation requires.

Respiratory protection: Always use an approved dust mask when dusts are generated. Where risk assessment shows air-purifying respirators are appropriate use a full-faced respirator with multi-purpose combination (US) or type ABEK (EN 14387) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU). Follow OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149.

Environmental exposure controls: Do not empty into drains.

PPE must not be considered a long-term solution to exposure control. PPE usage must be accompanied by employer programs to properly select, maintain, clean fit and use. Consult a competent industrial hygiene resource to determine hazard potential and/or the PPE manufacturers to ensure adequate protection.

SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES

9.1 Information on basic physical and chemical properties

Appearance	Dark purple solid
Odor	Odorless
Odor Threshold	No data available
Molecular Weight	158.03 g/mol
Chemical Formula	$KMnO_4$
pH	No data available
Freezing/Melting Point, Range	240 °C (<464 °F)
Initial Boiling Point	No data available
Evaporation Rate	No data available
Flammability (solid, gas)	Non-flammable
Flash Point	No data available
Autoignition Temperature	No data available
Decomposition Temperature	240 °C (<464 °F)
Lower Explosive Limit (LEL)	No data available
Upper Explosive Limit (UEL)	No data available
Vapor Pressure	No data available
Vapor Density	5.4 (Air = 1)
Relative Density	2.7 g/cc @ 20°C
Viscosity	No data available
Solubility in Water	No data available
Partition Coefficient: n-octanol/water	Not applicable
Oxidizing Properties	The substance is classified as oxidizing with the category 2.
Explosive Properties	Not applicable
Volatiles by Weight @ 21 ºC	0%

9.2 Other data

No data available

SECTION 10 - STABILITY AND REACTIVITY

10.1 Reactivity

Oxidizing agent

10.2 Chemical stability

Stable under recommended storage conditions.

10.3 Possibility of hazardous reactions

Contact with combustible, organic or oxidizable materials may cause combustion.

Hazardous polymerization will not occur.

10.4 Conditions to avoid

Heat, flames, sources of ignition and contact with incompatible and combustible materials. Avoid dust generation and accumulation.

10.5 Incompatible materials

Reducing agents, flammable and combustible materials, organic compounds, powdered metal, alcohols, arsenites, bromides, iodides, phosphorus, sulfuric acid, hydrogen peroxide, ferrous salts, peroxides

10.6 Hazardous decomposition products

Thermal decomposition products include oxides of potassium, oxides of manganese, irritating and toxic fumes and gases.

SECTION 11 - TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute Oral Toxicity

LD_{50}, rat - 2,000 mg/kg

Acute inhalation toxicity

No data available

Acute dermal toxicity

No data available

Skin irritation
May cause skin irritation and possible burns.

Eye irritation
Causes serious eye irritation and possible eye damage.

Sensitization
No data available

Genotoxicity in vitro
No data available

Mutagenicity
No data available

Specific organ toxicity - single exposure
No data available

Specific organ toxicity - repeated exposure
No data available

Aspiration hazard
No data available

11.2 Further information

Potassium permanganate (CAS #7722-64-7) is not listed as a carcinogen by IARC, ACGIH, NTP or OSHA.

No conclusive data is available regarding the mutagenicity or teratogenicity of this product, nor is there any available data that indicates it causes adverse developmental or fertility effects. Some laboratory tests have resulted in mutagenic effects. Potassium permanganate may cause reproductive effects.

Handle in accordance with good industrial hygiene and safety practice.

SECTION 12 - ECOLOGICAL INFORMATION

12.1 Toxicity

This substance is toxic to aquatic life with long lasting effects.

Acute and prolonged toxicity to fish: LC_{50} - Oncorhynchus mykiss (Rainbow trout), 96 h: 0.267 - 0.442 mg/l, mortality
LC_{50} - Lepomis macrochirus (Bluegill), 96 h: 0.713 - 0.959 mg/l, mortality

12.2 Persistence and degradability

Inorganic substances are not biodegradable. Methods for the determination of biodegradability are not applicable to inorganic substances.

12.3 Bioaccumulation potential

Product is not expected to bioaccumulate.

12.4 Mobility in soil

No data available

12.5 Results of PBT and vPvB assessment

No data available

12.6 Other adverse effects

Additional ecological information
Do not allow material to run into surface waters, wastewater or soil.

An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.

SECTION 13 - DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods

Methods of disposal: The generation of waste should be avoided or minimized whenever possible. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe way. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Avoid dispersal of spilt material and runoff and contact with soil, waterways, drains and sewers.

RCRA P-Series: No listing

RCRA U-Series: No listing

SECTION 14 - TRANSPORT INFORMATION

Note: Transportation information provided is for reference only. Customer is urged to consult 49 CFR 100 - 177, IMDG, IATA, EC, United Nations TDG and WHMIS (Canada) TDG information manuals for detailed regulations and exceptions covering specific container sizes, packaging materials and methods of shipping.

US DOT (Domestic Ground Transportation)

Proper Shipping Name:	Potassium Permanganate
Hazard Class:	5.1
UN/NA:	UN1490
Packing Group:	II
NAERG:	Guide #140
Packaging Authorization:	Non-Bulk: 49 CFR 173.212; Bulk: 173.240
Packaging Exceptions:	49 CFR 173.152

IMO/IMDG (Water Transportation)

Proper Shipping Name:	Potassium Permanganate
Hazard Class:	5.1
UN/NA:	UN1490
Packing Group:	II
Marine Pollutant:	No
EMS Number:	F-H, S-Q

ICAO/IATA (Air Transportation)

Proper Shipping Name:	Potassium Permanganate
Hazard Class:	5.1
UN/NA:	UN1490
Packing Group:	II
Quantity Limitations:	49 CFR 173.27 and 175.75 - Cargo Aircraft Only: 25 kg; Passenger Aircraft: 5 kg

RID/ADR (Rail Transportation)

Proper Shipping Name:	Potassium Permanganate
Hazard Class:	5.1
UN/NA:	UN1490
Packing Group:	II

SECTION 15 - REGULATORY INFORMATION

15.1 Safety, health and environmental regulations/legislation specific for substance or mixture

U. S. Federal Regulations

OSHA Hazard Communication Standard: This material is classified as hazardous in accordance with OSHA 29 CFR 1910-1200.

OSHA Process Safety Management Standard: This product is not regulated under OSHA PSM Standard 29 CFR 1910.119.

EPA Risk Management Planning Standard: This product is not regulated under EPA RMP Standard (RMP) 40 CFR Part 68.

EPA Federal Insecticide, Fungicide and Rodenticide Act: This product is not a registered Pesticide under the FIFRA, 40 CFR Part 150.

Toxic Substance Control Act (TSCA) Inventory: Potassium Permanganate (CAS #7722-64-7) is listed on the TSCA Inventory. It is not subject to TSCA 12(b) Export Notification.

Drug Enforcement Administration (DEA) List 2, Essential Chemicals (21 CFR 1310.02(b) and 1310.4(f)(2) and Chemical Code Number
Potassium Permanganate (CAS #7722-64-7), DEA code #6579

Drug Enforcement Administration (DEA) List s1 & 2, Exempt Chemical Mixtures (21 CFR 1310.12(c)) and Code Number
Permanganate (CAS #7722-64-7): exemption - 15% by weight in mixtures

Department of Homeland Security (DHS) Chemical Facility Anti-Terrorism Standards (CFATS) Chemicals
Potassium Permanganate (CAS #7722-64-7)

Superfund Amendments and Reauthorization Act (SARA)

SARA Section 311/312 Hazard Categories: Acute Health Hazard, Chronic Health Hazard

SARA 313 Information: Potassium Permanganate (CAS #7722-64-7) is subject to reporting requirements of Section 313 of the Emergency Planning and Community Right-to Know Act of 1986.

SARA 302/304 Extremely Hazardous Substance: No components of the product exceed the threshold (de minimis) reporting levels established by of these sections of Title III of SARA.

SARA 302/304 Emergency Planning & Notification: No components of the product exceed the threshold (de minimis) reporting levels established by of these sections of Title III of SARA.

Comprehensive Response Compensation and Liability Act (CERCLA): This product contains the following CERCLA reportable substance:
Potassium Permanganate (CAS #7722-64-7): RQ = 45.5 kg (100 lb)

Clean Air Act (CAA)
This product does not contain any chemicals that are listed as Hazardous Air Pollutants (HAPs) designated in CAA Section 112 (b).
This product does not contain any Class 1 Ozone depletors.
This product does not contain any Class 2 Ozone depletors.

Clean Water Act (CWA)
Potassium permanganate (CAS #7722-64-7) is listed as a Hazardous Substance 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.

U.S. State Regulations

California Prop 65, Safe Drinking Water and Toxic Enforcement Act of 1986
Potassium Permanganate (CAS #7722-64-7) is not known to the State of California to cause cancer, birth defects or other reproductive harm.

Other U.S. State Inventories

Potassium Permanganate (CAS #7722-64-7) is listed on the following State Hazardous Substance Inventories, Right-to-Know lists and/or Air Quality/Air Pollutants lists: CA, DE, MA, NJ, PA, RI.

Canada

WHMIS Hazard Symbol and Classification

 C - Oxidizing material

 E - Corrosive

Canadian National Pollutant Release Inventory (NPRI): None of the chemicals in this product are listed on the NPRI.

European Economic Community

WGK, Germany (Water danger/protection): 3

Global Chemical Inventory Lists

Country	Inventory Name	Inventory Listing*
Canada:	Domestic Substance List (DSL)	Yes
Canada:	Non-Domestic Substance List (NDSL)	No
Europe:	Inventory of New and Existing Chemicals (EINECS)	Yes
United States:	Toxic Substance Control Act (TSCA)	Yes
Australia:	Australian Inventory of Chemical Substances (AICS)	Yes
New Zealand:	New Zealand Inventory of Chemicals (NZIoC)	Yes
China:	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Japan:	Inventory of Existing and New Chemical Substances (ENCS)	Yes
Korea:	Existing Chemicals List (ECL)	Yes
Philippines:	Philippines Inventory of Chemicals and Chemical Substances (PICCS)	Yes

*Yes - All components of this product are in compliance with the inventory requirements administered by the governing country.
No - One or more components of this product are not on the inventory or are exempt from listing.

15.2 Chemical safety assessment

For this product a chemical safety assessment was not carried out.

SECTION 16 - OTHER INFORMATION

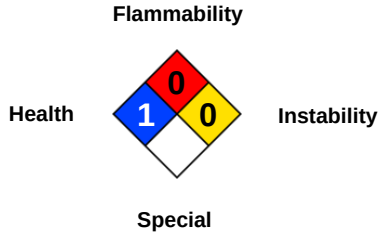
Hazardous Material Information System (HMIS)

Health	2
Flammability	0
Physical Hazard	0
Personal Protection	F

HMIS Hazard Rating Legend
0 = Minimal 1 = Slight 2 = Moderate 3 = Serious
4 = Severe * = Chronic Health Hazard

NFPA Hazard Rating Legend
0 = Insignificant 1 = Slight 2 = Moderate
3 = High 4 = Extreme

National Fire Protection Association (NFPA)



Abbreviation Key

ACGIH	American Conference of Governmental Industrial Hygienists
ADR	Accord Dangereux Routier (European regulations concerning the international transport of dangerous goods by road)
CAS	Chemical Abstract Services
CFR	Code of Federal Regulations
DOT	Department of Transportation
EMS Guide	Emergency Response Procedures for Ships Carrying Dangerous Goods
EPA	Environmental Protection Agency
ERG	Emergency Response Guide Book
FDA	Food and DrugAdministration
GHS	Globally Harmonized System of Classification and Labelling of Chemicals (GHS)
HCS	Hazard Communication Standard
IARC	International Agency for Research on Cancer
IATA	International Air Transport Association half maximal
ICAO	International Civil Aviation Organization
IDLH	Immediately Dangerous to Life and Health
IMDG	International Maritime Dangerous Goods
IMO	International Maritime Organization
mppcf	Millions of Particles Per Cubic Foot
NA	North America
NAERG	North American Emergency Response Guide Book
NIOSH	National Institute for Occupational Safety
NTP	National Toxicology Program

OSHA	Occupational Safety and Health Administration
PBT	Persistent, Bioaccumulating and Toxic
PEL	Permissible exposure limit
PMCC	Pensky-Martens Closed Cup
ppm	Parts Per Million
RCRA	Resource Conservation and Recovery Act
RID	Dangerous Goods by Rail
RQ	Reportable Quantity
TCC/Tag	Tagliabue Closed Cup
TLV	Threshold Limit Value
TSCA	Toxic Substance Control Act
TWA	Time-weighted Average
UN	United Nations
VOC	Volatile Organic Compounds
vPvB	Very Persistent and Very Bioaccumulating
WHMIS	Workplace Hazardous Materials Information System

DISCLAIMER OF RESPONSIBILITY

The information on this SDS was obtained from sources which we believe are reliable. However, the information is provided without any warranty, expressed or implied, regarding its correctness. Some information presented and conclusions drawn herein are from sources other than direct test data on the substance itself. The conditions or methods of handling, storage, use and disposal of the product are beyond our control and may be beyond our knowledge. For this and other reasons, we do not assume damage or expense arising out of or in any way responsibility and expressly disclaim liability for loss, connected with handling, storage, use, or disposal of this product. If the product is used as a component in another product, this SDS information may not be applicable.

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