

# SAFETY DATA SHEET

according to the OSHA  
Hazard Communication Standard

Version 6.15  
Revision Date 07/14/2026  
Print Date 07/15/2026

## SECTION 1. IDENTIFICATION

### 1.1 Product identifiers

Product name : Manganese(II) acetate tetrahydrate

Product Number : 229776  
Brand : Aldrich  
CAS-No. : 6156-78-1

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

Identified uses : Laboratory chemicals, Synthesis of substances

Restrictions on use : The product is being supplied under the TSCA R&D Exemption (40 CFR Section 720.36). It is the recipient's responsibility to comply with the requirements of the R&D exemption. The product may not be used for a non-exempt commercial purpose under TSCA unless appropriate consent is granted in writing by MilliporeSigma.

### 1.3 Details of the supplier of the safety data sheet

Company : Sigma-Aldrich Inc.  
3050 SPRUCE ST  
ST. LOUIS MO 63103  
UNITED STATES

Telephone : +1 314 771-5765  
Fax : +1 800 325-5052

### 1.4 Emergency telephone number

Emergency Phone # : 800-424-9300 CHEMTREC (USA) +1-703-  
527-3887 CHEMTREC (International) 24  
Hours/day; 7 Days/week

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## SECTION 2. HAZARDS IDENTIFICATION

**GHS classification in accordance with the OSHA Hazard Communication Standard (29 CFR 1910.1200)**

### Hazards for the product as supplied

Specific target organ : Category 2 (Brain)

toxicity - repeated  
exposure (Inhalation)

Short-term (acute)  
aquatic hazard : Category 3

Long-term (chronic)  
aquatic hazard : Category 3

#### Other hazards

None known.

#### GHS label elements

Hazard pictograms :



Signal word : Warning

Hazard statements : H373 May cause damage to organs (Brain) through prolonged or repeated exposure if inhaled.  
H412 Harmful to aquatic life with long lasting effects.

Precautionary statements : **Prevention:**  
P260 Do not breathe dust.  
P273 Avoid release to the environment.  
**Response:**  
P314 Get medical advice/ attention if you feel unwell.  
**Disposal:**  
P501 Dispose of contents/ container to an approved waste disposal plant.

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### SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Substance

CAS-No. : 6156-78-1

#### Components

| Chemical name                                     | CAS No./Unique ID | Concentration (% w/w) | Trade secret |
|---------------------------------------------------|-------------------|-----------------------|--------------|
| Bis(acetic acid) tetrahydrate manganese dihydride | 6156-78-1*        | >= 90 - <= 100        | -            |

\* Indicates that the identifier is a CAS No.

Actual concentration is withheld as a trade secret

Aldrich - 229776

Page 2 of 13

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## SECTION 4. FIRST AID MEASURES

|                                                             |                                                                                                                                        |
|-------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|
| General advice                                              | : Show this safety data sheet to the doctor in attendance.                                                                             |
| If inhaled                                                  | : After inhalation: fresh air. Call in physician.                                                                                      |
| In case of skin contact                                     | : In case of skin contact: Take off immediately all contaminated clothing. Rinse skin with water/ shower.                              |
| In case of eye contact                                      | : After eye contact: rinse out with plenty of water. Remove contact lenses.                                                            |
| If swallowed                                                | : After swallowing: immediately make victim drink water (two glasses at most). Consult a physician.                                    |
| Most important symptoms and effects, both acute and delayed | : The most important known symptoms and effects are described in the labelling (see section 2 GHS label elements) and/or in section 11 |
| Protection of first-aiders                                  | : For personal protection see section 8.                                                                                               |
| Notes to physician                                          | : No data available                                                                                                                    |

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## SECTION 5. FIREFIGHTING MEASURES

|                                       |                                                                                                           |
|---------------------------------------|-----------------------------------------------------------------------------------------------------------|
| Suitable extinguishing media          | : Water<br>Foam<br>Carbon dioxide (CO <sub>2</sub> )<br>Dry powder                                        |
| Unsuitable extinguishing media        | : For this substance/mixture no limitations of extinguishing agents are given.                            |
| Specific hazards during fire fighting | : Combustible.<br><br>Development of hazardous combustion gases or vapours possible in the event of fire. |
| Hazardous combustion products         | : Carbon oxides<br><br>Manganese/manganese oxides                                                         |

|                                                |                                                                                                                                                                 |
|------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Specific extinguishing methods                 | : No data available                                                                                                                                             |
| Further information                            | : Prevent fire extinguishing water from contaminating surface water or the ground water system.                                                                 |
| Special protective equipment for fire-fighters | : Stay in danger area only with self-contained breathing apparatus. Prevent skin contact by keeping a safe distance or by wearing suitable protective clothing. |

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## SECTION 6. ACCIDENTAL RELEASE MEASURES

|                                                                     |                                                                                                                                                                                                                                                                                                                                 |
|---------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Personal precautions, protective equipment and emergency procedures | : Advice for non-emergency personnel:<br>Avoid inhalation of dusts.<br>Avoid substance contact.<br>Ensure adequate ventilation.<br>Evacuate the danger area, observe emergency procedures, consult an expert.<br>Advice for emergency responders:<br>Wear appropriate personal protective equipment, as indicated in Section 8. |
| Environmental precautions                                           | : Do not let product enter drains.                                                                                                                                                                                                                                                                                              |
| Methods and materials for containment and cleaning up               | : Cover drains. Collect, bind, and pump off spills.<br>Observe possible material restrictions (see sections 7 and 10).<br>Take up dry. Dispose of properly. Clean up affected area. Avoid generation of dusts.                                                                                                                  |

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## SECTION 7. HANDLING AND STORAGE

For precautions see section 2 GHS label elements

|                                           |                                                      |
|-------------------------------------------|------------------------------------------------------|
| Advice on safe handling                   | : Work under hood. Do not inhale substance/mixture.  |
| Further information on storage conditions | : Tightly closed.<br>Dry.                            |
| Storage class                             | : 11, Combustible Solids                             |
| Recommended storage temperature           | : Recommended storage temperature see product label. |

## SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

### Ingredients with workplace control parameters

| Components                                        | CAS-No.   | Value type<br>(Form of exposure)       | Control parameters /<br>Permissible concentration | Basis     |
|---------------------------------------------------|-----------|----------------------------------------|---------------------------------------------------|-----------|
| Bis(acetic acid) tetrahydrate manganese dihydride | 6156-78-1 | C                                      | 5 mg/m <sup>3</sup><br>(Manganese)                | OSHA Z-1  |
|                                                   |           | TWA<br>(Inhalable particulate matter)  | 0.1 mg/m <sup>3</sup><br>(Manganese)              | ACGIH     |
|                                                   |           | TWA<br>(Respirable particulate matter) | 0.02 mg/m <sup>3</sup><br>(Manganese)             | ACGIH     |
|                                                   |           | TWA                                    | 1 mg/m <sup>3</sup><br>(Manganese)                | NIOSH REL |
|                                                   |           | ST                                     | 3 mg/m <sup>3</sup><br>(Manganese)                | NIOSH REL |

**Engineering measures** : No data available

### Personal protective equipment

Respiratory protection : required when dusts are generated.

Our recommendations on filtering respiratory protection are based on the following standards: DIN EN 143, DIN 14387 and other accompanying standards relating to the used respiratory protection system.

Recommended Filter type: : Filter type P2

The entrepreneur has to ensure that maintenance, cleaning and testing of respiratory protective devices are carried out according to the instructions of the producer. These measures have to be properly documented.

Hand protection

Material : Nitrile rubber  
Break through time : 480 min

Aldrich - 229776

Page 5 of 13

|                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|--------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Glove thickness          | : 0.11 mm                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Protective index         | : Full contact                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Manufacturer             | : Dermatril® (KCL 740 / Aldrich Z677272, Size M)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Material                 | : Nitrile rubber                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Break through time       | : 480 min                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Glove thickness          | : 0.11 mm                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Protective index         | : Splash contact                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Manufacturer             | : Dermatril® (KCL 740 / Aldrich Z677272, Size M)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Manufacturer             | : data source: KCL GmbH, D-36124 Eichenzell, phone +49 (0)6659 87300, e-mail sales@kcl.de, test method: EN374                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Remarks                  | : Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.<br>If used in solution, or mixed with other substances, and under conditions which differ from EN 374, contact the supplier of the CE approved gloves. This recommendation is advisory only and must be evaluated by an industrial hygienist and safety officer familiar with the specific situation of anticipated use by our customers. It should not be construed as offering an approval for any specific use scenario. |
| Eye protection           | : Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).<br>Safety glasses                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Skin and body protection | : protective clothing                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Hygiene measures         | : Change contaminated clothing. Preventive skin protection recommended. Wash hands after working with substance.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |

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## SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

|                 |                     |
|-----------------|---------------------|
| Appearance      | : crystalline       |
| Colour          | : light red         |
| Odour           | : No data available |
| Odour Threshold | : No data available |

|                                                     |                                                                                           |
|-----------------------------------------------------|-------------------------------------------------------------------------------------------|
| pH                                                  | : No data available                                                                       |
| Melting point/ range                                | : > 572 °F / > 300 °C<br>Method: lit.                                                     |
| Boiling point/boiling range                         | : 572 °F / 300 °C<br>Method: OECD Test Guideline 103<br>decomposition below boiling point |
| Flash point                                         | : Not applicable                                                                          |
| Evaporation rate                                    | : No data available                                                                       |
| Flammability (solid, gas)                           | : No data available                                                                       |
| Flammability (liquids)                              | : No data available                                                                       |
| Burning rate                                        | : No data available                                                                       |
| Upper explosion limit /<br>Upper flammability limit | : No data available                                                                       |
| Lower explosion limit /<br>Lower flammability limit | : No data available                                                                       |
| Vapour pressure                                     | : < 1 hPa (77 °F / 25 °C)<br>Method: OECD Test Guideline 104                              |
| Relative vapour density                             | : No data available                                                                       |
| Relative density                                    | : No data available                                                                       |
| Density                                             | : 1.589 g/cm <sup>3</sup> (77 °F / 25 °C)<br>Method: lit.                                 |
| Solubility(ies)<br>Water solubility                 | : ca. 233 g/l (77 °F / 25 °C)                                                             |
| Partition coefficient: n-<br>octanol/water          | : No data available                                                                       |
| Autoignition temperature                            | : No data available                                                                       |
| Decomposition<br>temperature                        | : No data available                                                                       |
| Viscosity, dynamic                                  | : No data available                                                                       |
| Viscosity, kinematic                                | : No data available                                                                       |
| Flow time                                           | : No data available                                                                       |

|                          |                     |
|--------------------------|---------------------|
| Explosive properties     | : No data available |
| Oxidizing properties     | : none              |
| Molecular weight         | : 245.09 g/mol      |
| Particle characteristics |                     |
| Particle size            | : No data available |

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## SECTION 10. STABILITY AND REACTIVITY

|                                    |                                                                                                                                                                                             |
|------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Reactivity                         | : The following applies in general to flammable organic substances and mixtures: in correspondingly fine distribution, when whirled up a dust explosion potential may generally be assumed. |
| Chemical stability                 | : The product is chemically stable under standard ambient conditions (room temperature) .                                                                                                   |
| Possibility of hazardous reactions | : Violent reactions possible with:<br>Strong oxidizing agents                                                                                                                               |
| Conditions to avoid                | : no information available                                                                                                                                                                  |
| Incompatible materials             | : No data available                                                                                                                                                                         |
| Hazardous decomposition products   | : In the event of fire: see section 5                                                                                                                                                       |

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## SECTION 11. TOXICOLOGICAL INFORMATION

### 11.1 Information on toxicological effects

#### Acute toxicity

LD50 Oral - Rat - male - 3,730 mg/kg  
(OECD Test Guideline 401)  
Inhalation: No data available  
Dermal: No data available

#### Skin corrosion/irritation

No data available

#### Serious eye damage/eye irritation

No data available

#### Respiratory or skin sensitization

No data available

#### Germ cell mutagenicity

No data available

#### Carcinogenicity

IARC: No component of this product present at levels greater than or equal to 0.1% is

Aldrich - 229776

Page 8 of 13

identified as probable, possible or confirmed human carcinogen by IARC.

NTP: No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

OSHA: No component of this product present at levels greater than or equal to 0.1% is on OSHA's list of regulated carcinogens.

#### **Reproductive toxicity**

No data available

#### **Specific target organ toxicity - single exposure**

No data available

#### **Specific target organ toxicity - repeated exposure**

Inhalation - May cause damage to organs through prolonged or repeated exposure.

- Brain

#### **Aspiration hazard**

No data available

### **11.2 Additional Information**

RTECS: AI5775000

Men exposed to manganese dusts showed a decrease in fertility. Chronic manganese poisoning primarily involves the central nervous system. Early symptoms include languor, sleepiness and weakness in the legs. A stolid mask-like appearance of the face, emotional disturbances such as uncontrollable laughter and a spastic gait with tendency to fall in walking are findings in more advanced cases. High incidence of pneumonia has been found in workers exposed to the dust or fume of some manganese compounds., To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

Stomach - Irregularities - Based on Human Evidence

Stomach - Irregularities - Based on Human Evidence

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## **SECTION 12. ECOLOGICAL INFORMATION**

### **Ecotoxicity**

#### **Components:**

#### **Bis(acetic acid) tetrahydrate manganese dihydride:**

Toxicity to fish : LC50 (Fish): 3,230 mg/l  
Exposure time: 96 h  
Remarks: Read-across (Analogy)

Toxicity to daphnia and : LC50 (Daphnia magna (Water flea)): 220.5 mg/l  
other aquatic : Exposure time: 96 h  
invertebrates : Remarks: Read-across (Analogy)

Toxicity to algae/aquatic : NOEC (Desmodesmus subspicatus (green algae)): 1  
plants : mg/l

Aldrich - 229776

Page 9 of 13

Exposure time: 72 h  
Test Type: static test  
Analytical monitoring: yes  
Method: OECD Test Guideline 201  
GLP: yes  
Remarks: The value is given in analogy to the following substances:  
The value is given in analogy to the following substances: Manganese Sulfate Monohydrate

ErC50 (Desmodesmus subspicatus (green algae)): 61 mg/l

Exposure time: 72 h  
Test Type: static test  
Analytical monitoring: yes  
Method: OECD Test Guideline 201  
GLP: yes  
Remarks: The value is given in analogy to the following substances:  
The value is given in analogy to the following substances: Manganese Sulfate Monohydrate

### **Ecotoxicology Assessment**

Acute aquatic toxicity : Harmful to aquatic life.

Chronic aquatic toxicity : Harmful to aquatic life with long lasting effects.

### **Persistence and degradability**

No data available

### **Bioaccumulative potential**

No data available

### **Mobility in soil**

No data available

### **Other adverse effects**

### **Components:**

### **Bis(acetic acid) tetrahydrate manganese dihydride:**

Additional ecological information : Ecotoxicity effects  
We have no quantitative data concerning the ecological effects of this product.  
Further information on ecology  
No ecological problems are to be expected when the product is handled and used with due care and attention.

### **Endocrine disrupting properties**

No data available

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## SECTION 13. DISPOSAL CONSIDERATIONS

### Disposal methods

Waste from residues : Waste material must be disposed of in accordance with the national and local regulations. Leave chemicals in original containers. No mixing with other waste. Handle uncleaned containers like the product itself.

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## SECTION 14. TRANSPORT INFORMATION

### International Regulations

#### IATA-DGR

Not regulated as a dangerous good

#### IMDG-Code

Not regulated as a dangerous good

#### Transport in bulk according to IMO instruments

Not applicable for product as supplied.

### National Regulations

#### 49 CFR

Not regulated as a dangerous good

Poison Inhalation Hazard : No

### Special precautions for user

Remarks : Not classified as dangerous in the meaning of transport regulations.

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## SECTION 15. REGULATORY INFORMATION

### CERCLA Reportable Quantity

This material does not contain any components with a CERCLA RQ.

### SARA 304 Extremely Hazardous Substances Reportable Quantity

This material does not contain any components with a section 304 EHS RQ.

### SARA 302 Extremely Hazardous Substances Threshold Planning Quantity

This material does not contain any components with a section 302 EHS TPQ.

**SARA 311/312 Hazards** : Chronic Health Hazard

**SARA 313** : The following components are subject to reporting levels established by SARA Title III, Section 313:

Bis(acetic acid) 6156-78-1       $\geq 90 - \leq 100 \%$   
tetrahydrate  
manganese  
dihydride

## US State Regulations

### Massachusetts Right To Know

No components are subject to the Massachusetts Right to Know Act.

### Pennsylvania Right To Know

Bis(acetic acid) tetrahydrate manganese dihydride      6156-78-1

### Maine Chemicals of High Concern

Product does not contain any listed chemicals

### Vermont Chemicals of High Concern

Product does not contain any listed chemicals

### Washington Chemicals of High Concern

Product does not contain any listed chemicals

### The components of this product are reported in the following inventories:

US TSCA                                      : All substances listed as active on the TSCA inventory

### TSCA list

No substances are subject to a Significant New Use Rule.

No substances are subject to TSCA 12(b) export notification requirements.

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## SECTION 16. OTHER INFORMATION

### Full text of other abbreviations

ACGIH                                      : USA. ACGIH Threshold Limit Values (TLV)  
NIOSH REL                                : USA. NIOSH Recommended Exposure Limits  
OSHA Z-1                                 : USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants  
ACGIH / TWA                             : 8-hour, time-weighted average  
NIOSH REL / TWA                        : Time-weighted average concentration for up to a 10-hour workday during a 40-hour workweek  
NIOSH REL / ST                         : STEL - 15-minute TWA exposure that should not be exceeded at any time during a workday  
OSHA Z-1 / C                             : Ceiling

AIIC - Australian Inventory of Industrial Chemicals; ASTM - American Society for the Testing of Materials; bw - Body weight; CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DOT - Department of Transportation; DSL - Domestic Substances List (Canada); ECx - Concentration associated with x% response; EHS - Extremely Hazardous Substance; ELx - Loading rate associated with x% response;

EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; ERG - Emergency Response Guide; GHS - Globally Harmonised System; GLP - Good Laboratory Practice; HMIS - Hazardous Materials Identification System; IARC - International Agency for Research on Cancer; IATA - International Air Transport Association; IBC - International Code for the Construction and Equipment of Ships carrying Dangerous Chemicals in Bulk; IC50 - Half maximal inhibitory concentration; ICAO - International Civil Aviation Organization; IECSC - Inventory of Existing Chemical Substances in China; IMDG - International Maritime Dangerous Goods; IMO - International Maritime Organisation; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardisation; KECI - Korea Existing Chemicals Inventory; LC50 - Lethal Concentration to 50 % of a test population; LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose); MARPOL - International Convention for the Prevention of Pollution from Ships; MSHA - Mine Safety and Health Administration; n.o.s. - Not Otherwise Specified; NFPA - National Fire Protection Association; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NTP - National Toxicology Program; NZIoC - New Zealand Inventory of Chemicals; OECD - Organisation for Economic Co-operation and Development; OPPTS - Office of Chemical Safety and Pollution Prevention; PBT - Persistent, Bioaccumulative and Toxic substance; PICCS - Philippines Inventory of Chemicals and Chemical Substances; (Q)SAR - (Quantitative) Structure Activity Relationship; RCRA - Resource Conservation and Recovery Act; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; RQ - Reportable Quantity; SADT - Self-Accelerating Decomposition Temperature; SARA - Superfund Amendments and Reauthorization Act; SDS - Safety Data Sheet; TCSI - Taiwan Chemical Substance Inventory; TECI - Thailand Existing Chemicals Inventory; TSCA - Toxic Substances Control Act (United States); UN - United Nations; UNRTDG - United Nations Recommendations on the Transport of Dangerous Goods; vPvB - Very Persistent and Very Bioaccumulative

The information is believed to be correct but is not exhaustive and will be used solely as a guideline, which is based on current knowledge of the chemical substance or mixture and is applicable to appropriate safety precautions for the product. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Corporation and its Affiliates shall not be held liable for any damage resulting from handling or from contact with the above product. See [www.sigma-aldrich.com](http://www.sigma-aldrich.com) and/or the reverse side of invoice or packing slip for additional terms and conditions of sale.

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