

# SAFETY DATA SHEET

according to the OSHA  
Hazard Communication Standard

Version 6.15  
Revision Date 08/12/2026  
Print Date 08/12/2026

## SECTION 1. IDENTIFICATION

### 1.1 Product identifiers

Product name : Selenium dioxide

Product Number : 200107  
Brand : Aldrich  
Index-No. : 034-002-00-8  
CAS-No. : 7446-08-4

### 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.  
SPRUCE ST 3050  
63103 St. Louis

Telephone : (314) 771-5765  
Telefax: (800) 325-5052

### 1.4 Emergency telephone number

Emergency Phone # : 800 424 9300 (CHEMTREC) 24/7  
+1 703 527 3887 (CHEMTREC) 24/7

## SECTION 2. HAZARDS IDENTIFICATION

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

#### Hazards for the product as supplied

|                                                    |              |
|----------------------------------------------------|--------------|
| Acute toxicity (Oral)                              | : Category 3 |
| Acute toxicity (Inhalation)                        | : Category 3 |
| Specific target organ toxicity - repeated exposure | : Category 2 |
| Short-term (acute) aquatic hazard                  | : Category 1 |
| Long-term (chronic) aquatic hazard                 | : Category 1 |

#### Other hazards

None known.

#### GHS label elements

Hazard pictograms :



Signal word : Danger

Hazard statements : H301 + H331 Toxic if swallowed or if inhaled.  
H373 May cause damage to organs through prolonged or repeated exposure.  
H410 Very toxic to aquatic life with long lasting effects.

Precautionary statements : **Prevention:**  
P260 Do not breathe dust.  
P264 Wash skin thoroughly after handling.  
P270 Do not eat, drink or smoke when using this product.  
P271 Use only outdoors or in a well-ventilated area.  
P273 Avoid release to the environment.  
**Response:**  
P301 + P310 + P330 IF SWALLOWED: Immediately call a POISON CENTER/ doctor. Rinse mouth.  
P304 + P340 + P311 IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER/ doctor.

P314 Get medical advice/ attention if you feel unwell.  
P391 Collect spillage.

**Storage:**

P403 + P233 Store in a well-ventilated place. Keep container tightly closed.  
P405 Store locked up.

**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. : 7446-08-4

**Components**

| Chemical name    | CAS No./Unique ID | Concentration (% w/w) | Trade secret |
|------------------|-------------------|-----------------------|--------------|
| selenium dioxide | 7446-08-4*        | $\geq 90 - \leq 100$  | -            |

\* Indicates that the identifier is a CAS No.

Actual concentration is withheld as a trade secret

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### SECTION 4. FIRST AID MEASURES

- General advice : First aiders need to protect themselves.  
Show this safety data sheet to the doctor in attendance.
- If inhaled : After inhalation: fresh air. Immediately call in physician.  
If breathing stops: immediately apply artificial respiration, if necessary also oxygen.
- In case of skin contact : In case of skin contact: Take off immediately all contaminated clothing. Rinse skin with water/ shower.  
Consult a physician.
- In case of eye contact : After eye contact: rinse out with plenty of water.  
Call in ophthalmologist.  
Remove contact lenses.
- If swallowed : If swallowed: give water to drink (two glasses at most). Seek medical advice immediately. In exceptional cases only, if medical care is not available within one hour, induce vomiting (only in persons who

are wide awake and fully conscious), administer activated charcoal (20 - 40 g in a 10% slurry) and consult a doctor as quickly as possible.

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 : Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Unsuitable extinguishing media : For this substance/mixture no limitations of extinguishing agents are given.

Specific hazards during fire fighting : Not combustible.

Ambient fire may liberate hazardous vapours.

Hazardous combustion products : Selenium/selenium oxides

Specific extinguishing methods : No data available

Further information : Suppress (knock down) gases/vapours/mists with a water spray jet.  
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, : Advice for non-emergency personnel:

|                                               |                                                                                                                                                                                                                                                                                                                            |
|-----------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| protective equipment and emergency procedures | Avoid generation and inhalation of dusts in all circumstances.<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. Observe possible material restrictions (see sections 7 and 10).<br>Take up carefully. Dispose of properly. Clean up affected area.<br>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.<br>Keep in a well-ventilated place.<br>Keep locked up or in an area accessible only to qualified or authorised persons. |
|-------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|

|               |                                                                                                     |
|---------------|-----------------------------------------------------------------------------------------------------|
| Storage class | : 6.1C, Combustible, acute toxic Cat.3 / toxic compounds or compounds which causing chronic effects |
|---------------|-----------------------------------------------------------------------------------------------------|

|                                 |                                                                   |
|---------------------------------|-------------------------------------------------------------------|
| Recommended storage temperature | : Recommended storage temperature if relevant, see product label. |
|---------------------------------|-------------------------------------------------------------------|

|                                          |               |
|------------------------------------------|---------------|
| Further information on storage stability | : hygroscopic |
|------------------------------------------|---------------|

|                    |                                             |
|--------------------|---------------------------------------------|
| Packaging material | : Suitable material: Amber Glass Bottle/Jar |
|--------------------|---------------------------------------------|

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## SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

### Ingredients with workplace control parameters

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| Components       | CAS-No.   | Value type<br>(Form of exposure) | Control parameters / Permissible concentration | Basis     |
|------------------|-----------|----------------------------------|------------------------------------------------|-----------|
| selenium dioxide | 7446-08-4 | TWA                              | 0.2 mg/m <sup>3</sup> (selenium)               | OSHA Z-1  |
|                  |           | TWA                              | 0.2 mg/m <sup>3</sup> (selenium)               | ACGIH     |
|                  |           | TWA                              | 0.2 mg/m <sup>3</sup> (selenium)               | 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 P3

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  
Glove thickness : 0.11 mm  
Protective index : Full contact  
Manufacturer : KCL 741 Dermatril® L

Material : Nitrile rubber  
Break through time : 480 min  
Glove thickness : 0.11 mm  
Protective index : Splash contact  
Manufacturer : KCL 741 Dermatril® L

Remarks : This recommendation applies only to the product stated in the safety data sheet, supplied by us and for the designated use. When dissolving in or mixing with other substances and under conditions deviating from those stated in EN 16523-1 please contact the

supplier of CE-approved gloves (e.g. KCL GmbH, D-36124 Eichenzell, Internet: [www.kcl.de](http://www.kcl.de)).

- Eye protection : Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).  
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 : solid
- Colour : No data available
- Odour : No data available
- Odour Threshold : No data available  
pH : No data available
- Melting point/ range : 599 °F / 315 °C
- Boiling point/boiling range : No data available
- Flash point : Not applicable
- Evaporation rate : No data available
- Burning rate : No data available
- Upper explosion limit /  
Upper flammability limit : No data available
- Lower explosion limit /  
Lower flammability limit : No data available
- Vapour pressure : 1 hPa (315 °F / 157 °C)
- Relative vapour density : No data available
- Relative density : No data available
- Density : 3.950 g/cm<sup>3</sup>

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|                                           |                     |
|-------------------------------------------|---------------------|
| Water solubility                          | : No data available |
| Partition coefficient: n-octanol/water    | : No data available |
| Autoignition temperature                  | : No data available |
| Decomposition 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                      | : No data available |
| Molecular weight                          | : 110.96 g/mol      |
| Particle characteristics<br>Particle size | : No data available |

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## SECTION 10. STABILITY AND REACTIVITY

|                                    |                                                                                            |
|------------------------------------|--------------------------------------------------------------------------------------------|
| Reactivity                         | : No data available                                                                        |
| Chemical stability                 | : The product is chemically stable under standard ambient conditions (room temperature) .  |
| Possibility of hazardous reactions | : Exothermic reaction with:<br>Oxidizing agents<br>Reducing agents<br>hydrides<br>nitrides |
| Conditions to avoid                | : Avoid moisture.<br><br>no information available                                          |
| Incompatible materials             | : No data available                                                                        |
| Hazardous decomposition products   | : For Hazardous combustion 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 - 68.1 mg/kg

Remarks: Behavioral:Somnolence (general depressed activity).

Behavioral:Convulsions or effect on seizure threshold.

LC50 Inhalation - 4 h - 0.51 mg/l - dust/mist

Dermal: No data available

No data available

#### Skin corrosion/irritation

Remarks: No data available

#### Serious eye damage/eye irritation

Remarks: 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 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

No data available

#### Specific target organ toxicity - single exposure

No data available

#### Specific target organ toxicity - repeated exposure

May cause damage to organs through prolonged or repeated exposure.

#### Aspiration hazard

No data available

### 11.2 Additional Information

RTECS: VS8575000

Material is extremely destructive to tissue of the mucous membranes and upper respiratory tract, eyes, and skin., Cough, Shortness of breath, Headache, Nausea

Stomach - Irregularities - Based on Human Evidence

Stomach - Irregularities - Based on Human Evidence

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## SECTION 12. ECOLOGICAL INFORMATION

### Ecotoxicity

#### Components:

##### **selenium dioxide:**

Toxicity to fish : LC50 (Pimephales promelas (fathead minnow)): 2.9 mg/l  
Exposure time: 96.0 h

LC50 : 0.1 mg/l  
Exposure time: 96 h

Toxicity to algae/aquatic plants : EC50 (Scenedesmus acutus): 0.1 mg/l  
Exposure time: 3 d  
Test Type: Growth inhibition

LOEC (Pseudokirchneriella subcapitata): 24.63 mg/l  
Exposure time: 6 d  
Test Type: Growth inhibition

### Persistence and degradability

#### Components:

##### **selenium dioxide:**

Biodegradability : Remarks: No data available

### Bioaccumulative potential

#### Components:

##### **selenium dioxide:**

Bioaccumulation : Remarks: No data available

### Mobility in soil

#### Components:

##### **selenium dioxide:**

Stability in soil : Remarks: No data available

### Other adverse effects

#### Product:

Ozone-Depletion Potential : Regulation: 40 CFR Protection of Environment; Part 82 Protection of Stratospheric Ozone - CAA Section 602 Class I Substances  
Remarks: This product neither contains, nor was manufactured with a Class I or Class II ODS as

### 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

UN/ID No. : UN 3283  
Proper shipping name : Selenium compound, solid, n.o.s.  
(selenium dioxide)  
Class : 6.1  
Packing group : III  
Labels : Division 6.1 - Toxic substances  
Packing instruction (cargo aircraft) : 677  
Packing instruction (passenger aircraft) : 670

#### IMDG-Code

UN number : UN 3283  
Proper shipping name : SELENIUM COMPOUND, SOLID, N.O.S.  
(selenium dioxide)  
Class : 6.1  
Packing group : III  
Labels : 6.1  
EmS Code : F-A, S-A  
Marine pollutant : yes

### Transport in bulk according to IMO instruments

Not applicable for product as supplied.

### National Regulations

#### 49 CFR

UN/ID/NA number : UN 3283  
Proper shipping name : Selenium compound, solid, n.o.s.  
(selenium dioxide)  
Class : 6.1

Packing group : III  
 Labels : Division 6.1 - Toxic substances  
 ERG Code : 151  
 Marine pollutant : no  
 Poison Inhalation Hazard : No

### Special precautions for user

The transport classification(s) provided herein are for informational purposes only, and solely based upon the properties of the unpackaged material as it is described within this Safety Data Sheet. Transportation classifications may vary by mode of transportation, package sizes, and variations in regional or country regulations.

## SECTION 15. REGULATORY INFORMATION

### CERCLA Reportable Quantity

| Components       | CAS-No.   | Component RQ (lbs) | Calculated product RQ (lbs) |
|------------------|-----------|--------------------|-----------------------------|
| selenium dioxide | 7446-08-4 | 10                 | 10                          |

### 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** : Acute Health Hazard  
 Chronic Health Hazard

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

|                  |           |                  |
|------------------|-----------|------------------|
| selenium dioxide | 7446-08-4 | >= 90 - <= 100 % |
|------------------|-----------|------------------|

### Clean Air Act

This product neither contains, nor was manufactured with a Class I or Class II ODS as defined by the U.S. Clean Air Act Section 602 (40 CFR 82, Subpt. A, App.A + B). The following chemical(s) are listed as HAP under the U.S. Clean Air Act, Section 112 (40 CFR 61):

|                  |           |                  |
|------------------|-----------|------------------|
| selenium dioxide | 7446-08-4 | >= 90 - <= 100 % |
|------------------|-----------|------------------|

This product does not contain any chemicals listed under the U.S. Clean Air Act Section 112(r) for Accidental Release Prevention (40 CFR 68.130, Subpart F).

This product does not contain any chemicals listed under the U.S. Clean Air Act Section 111 SOCM I Intermediate or Final VOC's (40 CFR 60.489).

### Clean Water Act

The following Hazardous Substances are listed under the U.S. Clean Water Act, Section 311, Table 116.4A:

|                  |           |                  |
|------------------|-----------|------------------|
| selenium dioxide | 7446-08-4 | >= 90 - <= 100 % |
|------------------|-----------|------------------|

The following Hazardous Chemicals are listed under the U.S. Clean Water Act, Section 311, Table 117.3:

selenium dioxide      7446-08-4       $\geq 90 - \leq 100 \%$   
This product does not contain any priority pollutants related to the U.S. Clean Water Act

## US State Regulations

## Massachusetts Right To Know

|                  |           |
|------------------|-----------|
| selenium dioxide | 7446-08-4 |
|------------------|-----------|

## Pennsylvania Right To Know

|                  |           |
|------------------|-----------|
| selenium dioxide | 7446-08-4 |
|------------------|-----------|

## 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.

## 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 |
| OSHA Z-1 / TWA  | : | 8-hour time weighted average                                                              |

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); LSPN - List of Hazardous Notified Substances (Chile); 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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