

# SAFETY DATA SHEET

according to Regulation (EC) No. 1907/2006

Version 6.7

Revision Date 11.03.2025

Print Date 29.05.2025

GENERIC EU MSDS - NO COUNTRY SPECIFIC DATA - NO OEL DATA

## SECTION 1: Identification of the substance/mixture and of the company/undertaking

### 1.1 Product identifiers

Product name : Diethyl ether

Product Number : 296082

Brand : Sigma-Aldrich

Index-No. : 603-022-00-4

REACH No. : 01-2119535785-29-XXXX

CAS-No. : 60-29-7

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

Identified uses : Laboratory chemicals, Manufacture of substances

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

Company : Merck Life Science (Pty) Ltd.  
1 Friesland Drive  
Longmeadow Business Estate  
MODDERFONTEIN  
1609  
SOUTH AFRICA

Telephone : +27 +27 (0) 8600 63725

Fax : +27 +27 (0) 860 522 329

E-mail address : Melissa.byrne@merckgroup.com

### 1.4 Emergency telephone

Emergency Phone # : 0-800-983-611

## SECTION 2: Hazards identification

### 2.1 Classification of the substance or mixture

Flammable liquids, (Category 1) H224: Extremely flammable liquid and vapor.

Acute toxicity, (Category 4) H302: Harmful if swallowed.

Specific target organ toxicity - single exposure, (Category 3), Central nervous system H336: May cause drowsiness or dizziness.



## 2.2 Label elements

### Labelling according Regulation (EC) No 1272/2008

Pictogram



Signal Word

Danger

Hazard Statements

H224

Extremely flammable liquid and vapor.

H302

Harmful if swallowed.

H336

May cause drowsiness or dizziness.

Precautionary Statements

P210

Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.

P233

Keep container tightly closed.

P240

Ground and bond container and receiving equipment.

P241

Use explosion-proof electrical/ ventilating/ lighting/ equipment.

P301 + P312

IF SWALLOWED: Call a POISON CENTER/ doctor if you feel unwell.

P403 + P233

Store in a well-ventilated place. Keep container tightly closed.

Supplemental Hazard information (EU)

EUH019

May form explosive peroxides.

EUH066

Repeated exposure may cause skin dryness or cracking.

### Reduced Labeling (<= 125 ml)

Pictogram



Signal Word

Danger

Hazard Statements

H224

Extremely flammable liquid and vapor.

Precautionary Statements

P210

Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.

P233

Keep container tightly closed.

P240

Ground and bond container and receiving equipment.

P241

Use explosion-proof electrical/ ventilating/ lighting/ equipment.

P403 + P233

Store in a well-ventilated place. Keep container tightly closed.

Supplemental Hazard information (EU)

EUH019

May form explosive peroxides.

EUH066

Repeated exposure may cause skin dryness or cracking.

## 2.3 Other hazards

This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

Ecological information:

The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

Toxicological information:



The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

## SECTION 3: Composition/information on ingredients

### 3.1 Substances

Synonyms : Ether  
Ethyl ether

Formula : C<sub>4</sub>H<sub>10</sub>O  
Molecular weight : 74,12 g/mol  
CAS-No. : 60-29-7  
EC-No. : 200-467-2  
Index-No. : 603-022-00-4

| Component            |              | Classification   | Concentration |
|----------------------|--------------|--|---------------|
| <b>Diethyl ether</b> |              |  |               |
| CAS-No.              | 60-29-7      | Flam. Liq. 1; Acute Tox. 4;<br>STOT SE 3; H224, H302,<br>H336<br>Concentration limits:<br>>= 20 %: STOT SE 3,<br>H336; | <= 100 %      |
| EC-No.               | 200-467-2    |  |               |
| Index-No.            | 603-022-00-4 |  |               |

For the full text of the H-Statements mentioned in this Section, see Section 16.

## SECTION 4: First aid measures

### 4.1 Description of first-aid measures

#### General advice

Show this material 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.

### 4.2 Most important symptoms and effects, both acute and delayed

The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11

### 4.3 Indication of any immediate medical attention and special treatment needed

No data available



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## SECTION 5: Firefighting measures

### 5.1 Extinguishing media

#### **Suitable extinguishing media**

Carbon dioxide (CO<sub>2</sub>) Foam Dry powder

#### **Unsuitable extinguishing media**

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

### 5.2 Special hazards arising from the substance or mixture

Carbon oxides

Combustible.

Pay attention to flashback.

Vapors are heavier than air and may spread along floors.

Development of hazardous combustion gases or vapours possible in the event of fire.

Forms explosive mixtures with air at ambient temperatures.

### 5.3 Advice for firefighters

In the event of fire, wear self-contained breathing apparatus.

### 5.4 Further information

Remove container from danger zone and cool with water. Prevent fire extinguishing water from contaminating surface water or the ground water system.

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## SECTION 6: Accidental release measures

### 6.1 Personal precautions, protective equipment and emergency procedures

Advice for non-emergency personnel: Do not breathe vapors, aerosols. Avoid substance contact. Ensure adequate ventilation. Keep away from heat and sources of ignition.

Evacuate the danger area, observe emergency procedures, consult an expert.

For personal protection see section 8.

### 6.2 Environmental precautions

Do not let product enter drains. Risk of explosion.

### 6.3 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). Take up with liquid-absorbent material (e.g. Chemisorb® ).

Dispose of properly. Clean up affected area.

### 6.4 Reference to other sections

For disposal see section 13.

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## SECTION 7: Handling and storage

### 7.1 Precautions for safe handling

#### **Advice on safe handling**

Work under hood. Do not inhale substance/mixture. Avoid generation of vapours/aerosols.

#### **Advice on protection against fire and explosion**

Keep away from open flames, hot surfaces and sources of ignition. Take precautionary measures against static discharge.

#### **Hygiene measures**

Change contaminated clothing. Preventive skin protection recommended. Wash hands after working with substance.

For precautions see section 2.2.



## 7.2 Conditions for safe storage, including any incompatibilities

### Storage conditions

Keep container tightly closed in a dry and well-ventilated place. Keep away from heat and sources of ignition.

Test for peroxide formation periodically and before distillation.

### Storage class

Storage class (TRGS 510): 3: Flammable liquids

## 7.3 Specific end use(s)

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

#### Ingredients with workplace control parameters

##### Derived No Effect Level (DNEL)

| Application Area        | Routes of exposure | Health effect    | Value                  |
|-------------------------|--------------------|------------------|------------------------|
| Worker DNEL, acute      | inhalation         | Systemic effects | 616 mg/m <sup>3</sup>  |
| Worker DNEL, longterm   | dermal             | Systemic effects |                        |
| Worker DNEL, longterm   | inhalation         | Systemic effects | 308 mg/m <sup>3</sup>  |
| Consumer DNEL, longterm | dermal             | Systemic effects |                        |
| Consumer DNEL, longterm | inhalation         | Systemic effects | 54,5 mg/m <sup>3</sup> |
| Consumer DNEL, longterm | oral               | Systemic effects |                        |

##### Predicted No Effect Concentration (PNEC)

| Compartment          | Value       |
|----------------------|-------------|
| Fresh water          | 2 mg/l      |
| Sea water            | 0,2 mg/l    |
| Fresh water sediment | 9,14 mg/kg  |
| Sea sediment         | 0,914 mg/kg |
| Soil                 | 0,66 mg/kg  |

### 8.2 Exposure controls

#### Personal protective equipment

##### Eye/face protection

Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU). Safety glasses

##### Skin protection

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)).

Splash contact

Material: Viton®

Minimum layer thickness: 0,7 mm

Break through time: 30 min

Material tested: Vitoject® (KCL 890 / Aldrich Z677698, Size M)

### **Body Protection**

Flame retardant antistatic protective clothing.

### **Respiratory protection**

required when vapours/aerosols 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 AX

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.

### **Control of environmental exposure**

Do not let product enter drains. Risk of explosion.

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## **SECTION 9: Physical and chemical properties**

### **9.1 Information on basic physical and chemical properties**

|   |   |
|---|---|
| a) Physical state                               | liquid  |
| b) Color  | colorless   |
| c) Odor   | sweet, ether-like   |
| d) Melting point/freezing point                 | Melting point: -116 °C  |
| e) Initial boiling point and boiling range      | 34,6 °C at 1.013 hPa  |
| f) Flammability (solid, gas)                    | No data available   |
| g) Upper/lower flammability or explosive limits | Upper explosion limit: 36 %(V)<br>Lower explosion limit: 1,7 %(V)                   |
| h) Flash point                                  | -40 °C - closed cup - DIN 51755 Part 1  |
| i) Autoignition temperature                     | 175 °C<br>at 1.013,25 hPa   |
| j) Decomposition temperature                    | No data available   |
| k) pH   | No data available   |
| l) Viscosity                                    | Viscosity, kinematic: No data available<br>Viscosity, dynamic: 0,195 mPa.s at 40 °C |
| m) Water solubility                             | 65 g/l at 20 °C - completely soluble  |



- |  |   |
|--|---|
| n) Partition coefficient:<br>n-octanol/water | log Pow: 1,1 - Bioaccumulation is not expected.   |
| o) Vapor pressure                            | 189 hPa at 0 °C<br>389 hPa at 10 °C<br>563 hPa at 20 °C<br>863 hPa at 30 °C<br>1.228 hPa at 40 °C<br>2.311 hPa at 60 °C |
| p) Density                                   | 0,71 g/cm <sup>3</sup> at 20 °C   |
| Relative density                             | No data available   |
| q) Relative vapor<br>density                 | No data available   |
| r) Particle<br>characteristics               | No data available   |
| s) Explosive properties                      | Not classified as explosive.  |
| t) Oxidizing properties                      | none  |

## 9.2 Other safety information

|                           |                    |
|---------------------------|--------------------|
| Relative vapor<br>density | 2,56 - (Air = 1.0) |
|---------------------------|--------------------|

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## SECTION 10: Stability and reactivity

### 10.1 Reactivity

Formation of peroxides possible.  
Vapors may form explosive mixture with air.

### 10.2 Chemical stability

The product is chemically stable under standard ambient conditions (room temperature) .  
Contains the following stabilizer(s):  
butyl hydroxytoluene (BHT) (1 ppm)

### 10.3 Possibility of hazardous reactions

Risk of ignition or formation of inflammable gases or vapours with:  
chromyl chloride  
Peroxides  
Risk of explosion with:  
azides  
halogens  
halogen-halogen compounds  
nonmetallic oxyhalides  
Strong oxidizing agents  
chromium(VI) oxide  
halogen oxides  
peroxi compounds  
perchloric acid  
perchlorates  
Nitric acid  
nitrating acid  
Oxygen  
Ozone



turpentine oils and/or turpentine substitutes  
nitrates  
metallic chlorides  
salts of oxyhalogenic acids  
nitrogen oxides  
nonmetallic oxides  
chromosulfuric acid  
chlorates  
hydrogen peroxide  
permanganic acid  
sulfuric acid  
with  
Nitric acid  
sulfur  
Risk of explosion during distillation.  
Exothermic reaction with:  
acid halides

#### **10.4 Conditions to avoid**

Light. Heat. Air  
Warming.  
Moisture.

#### **10.5 Incompatible materials**

No data available

#### **10.6 Hazardous decomposition products**

Peroxides  
In the event of fire: see section 5

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### **SECTION 11: Toxicological information**

#### **11.1 Information on toxicological effects**

##### **Acute toxicity**

Acute toxicity estimate Oral - 1.211 mg/kg  
(Calculation method)

LD50 Oral - Rat - 1.211 mg/kg

Remarks: (RTECS)

Symptoms: Risk of aspiration upon vomiting., Aspiration may cause pulmonary edema and pneumonitis.

Acute toxicity estimate Oral - 1.211 mg/kg  
(ATE value derived from LD50/LC50 value)

LC50 Inhalation - Mouse - 4 h - 97,5 mg/l - vapor

Remarks: (RTECS)

Symptoms: mucosal irritations

LD50 Dermal - Rabbit - male - > 20.000 mg/kg  
(OECD Test Guideline 402)

Remarks: (ECHA)

##### **Skin corrosion/irritation**

Skin - Rabbit

Result: No skin irritation - 4 h  
(OECD Test Guideline 404)

Remarks: Dermatitis





**Serious eye damage/eye irritation**

Eyes - Rabbit

Result: No eye irritation  
(OECD Test Guideline 405)

**Respiratory or skin sensitization**

Local lymph node assay (LLNA) - Mouse

Result: negative  
(OECD Test Guideline 429)

**Germ cell mutagenicity**

Test Type: Micronucleus test

Test system: Human lymphocytes

Metabolic activation: with and without metabolic activation

Method: OECD Test Guideline 487

Result: negative

Test Type: In vitro mammalian cell gene mutation test

Test system: Mouse lymphoma test

Metabolic activation: with and without metabolic activation

Method: OECD Test Guideline 476

Result: negative

Test Type: Ames test

Test system: Escherichia coli/Salmonella typhimurium

Metabolic activation: with and without metabolic activation

Method: OECD Test Guideline 471

Result: negative

Test Type: Micronucleus test

Species: Mouse

Cell type: Red blood cells (erythrocytes)

Application Route: Intraperitoneal

Method: OECD Test Guideline 474

Result: negative

**Carcinogenicity**

No data available

**Reproductive toxicity**

No data available

**Specific target organ toxicity - single exposure**

Oral - May cause drowsiness or dizziness. - Central nervous system

**Specific target organ toxicity - repeated exposure**

No data available

**Aspiration hazard**

No data available

**11.2 Additional Information****Endocrine disrupting properties****Product:**

Assessment

The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.



Repeated dose toxicity - Rat - male and female - Oral - 13 Weeks - NOAEL (No observed adverse effect level) - 500 mg/kg - LOAEL (Lowest observed adverse effect level) - 2.000 mg/kg

Remarks: (ECHA)

RTECS: KI5775000

Inhalation may provoke the following symptoms:

Cough, chest pain, Difficulty in breathing, Dizziness, Drowsiness, Contact with eyes can cause: Redness, Provokes tears., Blurred vision, Prolonged or repeated exposure to skin causes defatting and dermatitis.

To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

Narcotic!

After absorption:

Salivation

ataxia (impaired locomotor coordination)

inebriation

Unconsciousness

Coma

Other dangerous properties can not be excluded.

Handle in accordance with good industrial hygiene and safety practice.

Liver - Ingestion may provoke the following symptoms: Irregularities - Based on Human Evidence

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## SECTION 12: Ecological information

### 12.1 Toxicity

|   |   |
|---|---|
| Toxicity to fish                                    | LC50 - <i>Lepomis macrochirus</i> (Bluegill sunfish) - > 10.000 mg/l - 96 h<br>Remarks: (IUCLID)  |
| Toxicity to daphnia and other aquatic invertebrates | EC50 - <i>Daphnia magna</i> (Water flea) - 1.380 mg/l - 48 h<br>Remarks: (IUCLID)   |
| Toxicity to algae                                   | static test ErC50 - <i>Desmodesmus subspicatus</i> (green algae) - > 100 mg/l - 72 h<br>(OECD Test Guideline 201)<br>static test NOEC - <i>Desmodesmus subspicatus</i> (green algae) - 100 mg/l - 72 h<br>(OECD Test Guideline 201) |
| Toxicity to bacteria                                | static test EC50 - activated sludge - 21.000 mg/l - 3 h<br>(OECD Test Guideline 209)<br>static test NOEC - activated sludge - 42 mg/l - 3 h<br>(OECD Test Guideline 209)  |



Toxicity to daphnia and other aquatic invertebrates(Chronic toxicity) semi-static test NOEC - Daphnia magna (Water flea) - > 100 mg/l - 21 d (OECD Test Guideline 211)

#### 12.2 Persistence and degradability

Not readily biodegradable.

#### 12.3 Bioaccumulative potential

No bioaccumulation is to be expected (log Pow ≤ 4).

#### 12.4 Mobility in soil

No data available

#### 12.5 Results of PBT and vPvB assessment

This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

#### 12.6 Endocrine disrupting properties

##### Product:

Assessment : The substance/mixture does not contain components considered to have endocrine disrupting properties according to REACH Article 57(f) or Commission Delegated regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605 at levels of 0.1% or higher.

#### 12.7 Other adverse effects

No data available

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### SECTION 13: Disposal considerations

#### 13.1 Waste treatment methods

No data available

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### SECTION 14: Transport information

#### 14.1 UN number

ADR/RID: 1155

IMDG: 1155

IATA: 1155

#### 14.2 UN proper shipping name

ADR/RID: DIETHYL ETHER

IMDG: DIETHYL ETHER

IATA: Diethyl ether

#### 14.3 Transport hazard class(es)

ADR/RID: 3

IMDG: 3

IATA: 3

#### 14.4 Packaging group

ADR/RID: I

IMDG: I

IATA: I

#### 14.5 Environmental hazards

ADR/RID: no

IMDG Marine pollutant: no

IATA: no



#### 14.6 Special precautions for user

Tunnel restriction code : (D/E)

Further information : No data available

#### 14.7 Maritime transport in bulk according to IMO instruments

Not applicable for product as supplied.

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### SECTION 15: Regulatory information

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

This material safety data sheet complies with the requirements of Regulation (EC) No. 1907/2006.

##### National legislation

Seveso III: Directive 2012/18/EU of the P5a FLAMMABLE LIQUIDS  
European Parliament and of the Council  
on the control of major-accident hazards  
involving dangerous substances.

##### Other regulations

Observe work restrictions regarding maternity protection in accordance to Dir 92/85/EEC or stricter national regulations where applicable.

Take note of Dir 94/33/EC on the protection of young people at work.

#### 15.2 Chemical Safety Assessment

A Chemical Safety Assessment has been carried out for this substance.

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### SECTION 16: Other information

#### Full text of H-Statements

|        |   |
|--------|---|
| H224   | Extremely flammable liquid and vapor.                 |
| H302   | Harmful if swallowed.                                 |
| H336   | May cause drowsiness or dizziness.                    |
| EUH019 | May form explosive peroxides.                         |
| EUH066 | Repeated exposure may cause skin dryness or cracking. |



## Full text of other abbreviations

ADN - European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways; ADR - Agreement concerning the International Carriage of Dangerous Goods by Road; AIIC - Australian Inventory of Industrial Chemicals; ASTM - American Society for the Testing of Materials; bw - Body weight; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DSL - Domestic Substances List (Canada); ECx - Concentration associated with x% response; 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; GHS - Globally Harmonized System; GLP - Good Laboratory Practice; 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 Organization; ISHL - Industrial Safety and Health Law (Japan); ISO - International Organisation for Standardization; 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; n.o.s. - Not Otherwise Specified; NO(A)EC - No Observed (Adverse) Effect Concentration; NO(A)EL - No Observed (Adverse) Effect Level; NOELR - No Observable Effect Loading Rate; NZIoC - New Zealand Inventory of Chemicals; OECD - Organization 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; REACH - Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals; RID - Regulations concerning the International Carriage of Dangerous Goods by Rail; SADT - Self-Accelerating Decomposition Temperature; 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

## Further information

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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