# SAFETY DATA SHEET according to the OSHA Hazard Communication Standard

Version 8.10
Revision Date 07/22/2026
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## SECTION 1. IDENTIFICATION

### 1.1 Product identifiers

| | | |
|---|---|---|
| Product name | : | Lead |
| Product Number | : | GF46776145 |
| Brand | : | Aldrich |
| Index-No. | : | 082-014-00-7 |
| CAS-No. | : | 7439-92-1 |

### 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.<br>3050 SPRUCE ST<br>ST. LOUIS MO 63103<br>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 |

## SECTION 2. HAZARDS IDENTIFICATION

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

### Hazards for the product as supplied



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| | | |
|---|---|---|
| Reproductive toxicity | : | Category 1A |
| Effects on or via lactation | | |
| Specific target organ toxicity - repeated exposure (Oral) | : | Category 1 (Central nervous system, Blood, Immune system, Kidney) |
| 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 :
H360 May damage fertility or the unborn child.
H362 May cause harm to breast-fed children.
H372 Causes damage to organs (Central nervous system, Blood, Immune system, Kidney) through prolonged or repeated exposure if swallowed.
H410 Very toxic to aquatic life with long lasting effects.

Precautionary statements :

**Prevention:**

P201 Obtain special instructions before use.
P202 Do not handle until all safety precautions have been read and understood.
P260 Do not breathe dust.
P263 Avoid contact during pregnancy/ while nursing.
P264 Wash skin thoroughly after handling.
P270 Do not eat, drink or smoke when using this product.
P273 Avoid release to the environment.
P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.

**Response:**

P308 + P313 IF exposed or concerned: Get medical advice/ attention.
P391 Collect spillage.



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**Storage:**

P405 Store locked up.

**Disposal:**

P501 Dispose of contents/ container to an approved waste disposal plant.

## SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Substance

CAS-No. : 7439-92-1

**Components**

| Chemical name | CAS No./Unique ID | Concentration (% w/w) | Trade secret |
|---|---|---|---|
| Lead | 7439-92-1* | >= 90 - <= 100 | - |

* Indicates that the identifier is a CAS No.
Actual concentration is withheld as a trade secret

## 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. 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 : 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 | : | 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.<br><br>Ambient fire may liberate hazardous vapours. |
| Hazardous combustion products | : | Lead oxides |
| Specific extinguishing methods | : | No data available |
| Further information | : | Suppress (knock down) gases/vapours/mists with a water spray jet. |
| 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. |

## SECTION 6. ACCIDENTAL RELEASE MEASURES

| | | |
|---|---|---|
| Personal precautions, protective equipment and emergency procedures | : | Advice for non-emergency personnel:<br>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 | : | No special precautionary measures necessary. |



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precautions

| | | |
|---|---|---|
| Methods and materials for containment and cleaning up | : | 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. |

## 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 see product label. |

## SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

**Ingredients with workplace control parameters**

| Components | CAS-No. | Value type (Form of exposure) | Control parameters / Permissible concentration | Basis |
|---|---|---|---|---|
| Lead | 7439-92-1 | TWA | 0.05 mg/m3 (Lead) | ACGIH |
| | | PEL | 0.05 mg/m3 (Lead) | OSHA CARC |
| | | TWA | 0.05 mg/m3 (Lead) | NIOSH REL |

**Biological occupational exposure limits**

| Components | CAS-No. | Control parameters | Biological specimen | Sampling time | Permissible concentration | Basis |
|---|---|---|---|---|---|---|
| Lead | 7439-92- | Lead | In blood | Not | 200 µg/l | ACGIH |



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| | | | | | | |
|---|---|---|---|---|---|---|
| | 1 | (Lead) | | critical | | BEI |

**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 entrepeneur 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).

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



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| | | |
|---|---|---|
| Skin and body protection | : | protective clothing |
| Hygiene measures | : | Immediately change contaminated clothing. Apply preventive skin protection. Wash hands and face after working with substance. |

## 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 | : | 619 °F / 326 °C<br>(ca. 1,013 hPa)<br>Method: OECD Test Guideline 102<br>GLP: yes |
| Boiling point/boiling range | : | 3,164 °F / 1,740 °C |
| 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 | : | No data available |
| Relative vapour density | : | No data available |
| Relative density | : | 11.45 (74.8 °F / 23.8 °C)<br>Method: OECD Test Guideline 109<br>GLP: yes |
| Density | : | 11.45 g/cm3 (74.8 °F / 23.8 °C, 1,013 hPa)<br>Method: OECD Test Guideline 109<br>GLP: yes |



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| | | |
|---|---|---|
| Solubility(ies) | | |
| Water solubility | : | 0.185 g/l partly soluble (68 °F / 20 °C, 1,013 hPa)<br>pH: 10.96<br>Method: OECD Test Guideline 105<br>GLP: yes |
| Partition coefficient: n-octanol/water | : | Not applicable for inorganic substances |
| 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 | : | Not classified as explosive. |
| Oxidizing properties | : | none |
| Molecular weight | : | 207.20 g/mol |
| Particle characteristics | | |
| Particle size | : | No data available |

## 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 | : | No data available |
| Conditions to avoid | : | no information available |
| Incompatible materials | : | Strong oxidizing agents |
| 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 - male and female - > 2,000 mg/kg
(OECD Test Guideline 423)
LC50 Inhalation - Rat - male and female - 4 h - > 5.05 mg/l - dust/mist

(OECD Test Guideline 403)
LD50 Dermal - Rat - male and female - > 2,000 mg/kg
(OECD Test Guideline 402)

**Skin corrosion/irritation**
Skin - Rabbit
Result: No skin irritation - 4 h
(OECD Test Guideline 404)

**Serious eye damage/eye irritation**
Eyes - Rabbit
Result: No eye irritation - 72 h
(OECD Test Guideline 405)

**Respiratory or skin sensitization**
Maximisation Test - Guinea pig
Result: negative
(OECD Test Guideline 406)

**Germ cell mutagenicity**

Test Type: Micronucleus test
Species: Rat
Cell type: Red blood cells (erythrocytes)
Application Route: Oral

Result: positive
Remarks: (ECHA)

Test Type: comet assay
Species: Mouse
Cell type: Liver cells
Application Route: Inhalation

Result: negative
Remarks: (ECHA)

Test Type: Micronucleus test
Species: Mouse
Cell type: Bone marrow
Application Route: Oral

Result: Positive results were obtained in some in vivo tests.
Remarks: (ECHA)



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Test Type: Chromosome aberration test in vitro
Species: Monkey
Cell type: lymphocyte
Application Route: Oral

Result: Positive results were obtained in some in vivo tests.
Remarks: (ECHA)

**Carcinogenicity**

IARC: 2B - Group 2B: Possibly carcinogenic to humans (Lead)

NTP: RAHC - Reasonably anticipated to be a human carcinogenThe reference note has been added by TD based on the background information of the NTP. (Lead)

OSHA: OSHA specifically regulated carcinogen (Lead)

**Reproductive toxicity**
May damage the unborn child. Positive evidence from human epidemiological studies.
May damage fertility. Positive evidence from human epidemiological studies. Studies indicating a hazard to babies during the lactation period

**Specific target organ toxicity - single exposure**
No data available

**Specific target organ toxicity - repeated exposure**
Oral - Causes damage to organs through prolonged or repeated exposure.
- Central nervous system, Blood, Immune system, Kidney

**Aspiration hazard**
No data available

## 11.2 Additional Information

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

On the basis of the morphology of the product, no hazardous properties are to be expected when it is handled and used with appropriate care.

The following applies to lead compounds in general: Due to the poor absorbability via the gastrointestinal tract, only very high doses lead to acute cases of intoxication. After a latency period of several hours, metallic taste, nausea, vomiting, and colics occur, in many instances followed by shock. Chronic uptake causes peripheral muscular weakness ("drop-wrist"), anaemia, and central-nervous disorders. Women of child-bearing age should not be exposed to the substance over longer periods of time (observe critical threshold).

Handle in accordance with good industrial hygiene and safety practice.



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## SECTION 12. ECOLOGICAL INFORMATION

### Ecotoxicity

**Components:**

**Lead:**

| | | |
|---|---|---|
| Toxicity to fish (Chronic toxicity) | : | NOEC (Acipenser baerii): 129 mg/l<br>Exposure time: 112 d<br>Analytical monitoring: yes |
| Toxicity to daphnia and other aquatic invertebrates (Chronic toxicity) | : | NOEC (Alona rectangula): 355 mg/l<br>Exposure time: 25 d |
| M-Factor (Chronic aquatic toxicity) | : | 10 |
| Toxicity to microorganisms | : | EC50: 0.082 mg/l<br>Exposure time: 48 h<br>Test Type: static test |

### Ecotoxicology Assessment

| | | |
|---|---|---|
| Acute aquatic toxicity | : | Very toxic to aquatic life. |
| Chronic aquatic toxicity | : | Very toxic to aquatic life with long lasting effects. |

### Persistence and degradability

**Components:**

**Lead:**

| | | |
|---|---|---|
| Biodegradability | : | Result: According to the results of tests of biodegradability this product is not readily biodegradable.<br>Remarks: The methods for determining biodegradability are not applicable to inorganic substances. |

### Bioaccumulative potential

**Components:**

**Lead:**

| | | |
|---|---|---|
| Bioaccumulation | : | Species: Oncorhynchus kisutch<br>Bioconcentration factor (BCF): 12<br>Exposure time: 2 Weeks<br>Concentration: 150 µg/l |
| Partition coefficient: n- | : | Remarks: Not applicable for inorganic substances |



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octanol/water

**Mobility in soil**

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<br>Remarks: 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). |

**Components:**

**Lead:**

| | | |
|---|---|---|
| Additional ecological information | : | Discharge into the environment must be avoided. |

**Endocrine disrupting properties**

No data available

## 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. |

## 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



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Poison Inhalation Hazard : No

**Special precautions for user**

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

## SECTION 15. REGULATORY INFORMATION

**CERCLA Reportable Quantity**

| Components | CAS-No. | Component RQ (lbs) | Calculated product RQ (lbs) |
|---|---|---|---|
| Lead | 7439-92-1 | 10 | 10 |
| Lead | 7439-92-1 | 10 | 10 (D008) |

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

Lead 7439-92-1 >= 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):

Lead 7439-92-1 >= 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 SOCMI Intermediate or Final VOC's (40 CFR 60.489).

**Clean Water Act**

This product does not contain any Hazardous Substances listed under the U.S. CleanWater Act, Section 311, Table 116.4A.
This product does not contain any Hazardous Chemicals listed under the U.S. CleanWater Act, Section 311, Table 117.3.
This product contains the following toxic pollutants listed under the U.S. Clean Water Act Section 307

Lead 7439-92-1 >= 90 - <= 100 %

This product contains the following priority pollutants related to the U.S. Clean Water Act:

Lead 7439-92-1 >= 90 - <= 100 %

**US State Regulations**

**Massachusetts Right To Know**



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Lead 7439-92-1

**Pennsylvania Right To Know**

Lead 7439-92-1

**Maine Chemicals of High Concern**

Product does not contain any listed chemicals

**Vermont Chemicals of High Concern**

Lead 7439-92-1

**Washington Chemicals of High Concern**

Product does not contain any listed chemicals

**California Prop. 65**

WARNING: This product can expose you to chemicals including Lead, which is/are known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov. **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.

The following substance(s) is/are subject to TSCA 12(b) export notification requirements:
Lead 7439-92-1

## SECTION 16. OTHER INFORMATION

**Full text of other abbreviations**

| | | |
|---|---|---|
| ACGIH | : | USA. ACGIH Threshold Limit Values (TLV) |
| ACGIH BEI | : | ACGIH - Biological Exposure Indices (BEI) |
| NIOSH REL | : | USA. NIOSH Recommended Exposure Limits |
| OSHA CARC | : | OSHA Specifically Regulated Chemicals/Carcinogens |
| 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 CARC / PEL | : | Permissible exposure limit (PEL) |

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 -



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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 and/or the reverse side of invoice or packing slip for additional terms and conditions of sale.
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