

# SAFETY DATA SHEET

according to the OSHA  
Hazard Communication Standard

Version 7.2  
Revision Date 07/10/2026  
Print Date 07/11/2026

## SECTION 1. IDENTIFICATION

### 1.1 Product identifiers

Product name : Manganese(II) chloride tetrahydrate

Product Number : M8054  
Brand : Sigma-Aldrich  
CAS-No. : 13446-34-9

### 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

Acute toxicity (Oral) : Category 3

Serious eye damage : Category 1

Specific target organ toxicity - repeated exposure : Category 2 (Brain)

Short-term (acute) aquatic hazard : Category 3

#### Other hazards

None known.

#### GHS label elements

Hazard pictograms :



Signal word : Danger

Hazard statements : H301 Toxic if swallowed.  
H318 Causes serious eye damage.  
H373 May cause damage to organs (Brain) through prolonged or repeated exposure.  
H402 Harmful to aquatic life.

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.  
P273 Avoid release to the environment.  
P280 Wear eye protection/ face protection.

**Response:**

P301 + P310 + P330 IF SWALLOWED: Immediately call a POISON CENTER/ doctor. Rinse mouth.  
P305 + P351 + P338 + P310 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER/ doctor.  
P314 Get medical advice/ attention if you feel unwell.

**Storage:**

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. : 13446-34-9

#### Components

| Chemical name                     | CAS No./Unique ID | Concentration (% w/w) | Trade secret |
|-----------------------------------|-------------------|-----------------------|--------------|
| Manganese dichloride tetrahydrate | 13446-34-9*       | >= 80 - <= 100        | TSC          |

\* Indicates that the identifier is a CAS No.

TSC- the actual concentration or concentration range is withheld as a trade secret

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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. Consult a physician.  
In case of eye contact : After eye contact: rinse out with plenty of water. Immediately 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 2.2) 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 : Use extinguishing measures that are appropriate to

|                                                |                                                                                                                                                                      |
|------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| media                                          | 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                  | : Hydrogen chloride gas                                                                                                                                              |
|                                                | Manganese/manganese oxides                                                                                                                                           |
| Specific extinguishing methods                 | : No data available                                                                                                                                                  |
| Further information                            | : Suppress (knock down) gases/vapours/mists with a water spray jet.<br>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>For personal protection see section 8. |
| Environmental precautions                                           | : Do not let product enter drains.                                                                                                                                                                                                                                                          |
| Methods and materials for containment and                           | : Cover drains. Collect, bind, and pump off spills.<br>Observe possible material restrictions (see sections 7                                                                                                                                                                               |

cleaning up

and 10).

Take up carefully. Dispose of properly. Clean up affected area.

Avoid generation of dusts.

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## SECTION 7. HANDLING AND STORAGE

For precautions see section 2.2.

Advice on safe handling : Work under hood. Do not inhale substance/mixture.

Further information on storage conditions : Tightly closed.  
Dry.  
Keep in a well-ventilated place.  
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.

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## SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

### Ingredients with workplace control parameters

| Components                        | CAS-No.    | Value type<br>(Form of exposure)       | Control parameters / Permissible concentration | Basis     |
|-----------------------------------|------------|----------------------------------------|------------------------------------------------|-----------|
| Manganese dichloride tetrahydrate | 13446-34-9 | 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 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).  
Tightly fitting safety goggles

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                                          | : flakes                                                                                                                                               |
| Colour                                              | : No data available                                                                                                                                    |
| Odour                                               | : odourless                                                                                                                                            |
| Odour Threshold                                     | : Not applicable                                                                                                                                       |
| pH                                                  | : 3.5 - 6 (77 °F / 25 °C)<br>Concentration: 50 g/l                                                                                                     |
| Melting point/ range                                | : 136 °F / 58 °C<br>Method: lit.                                                                                                                       |
| Boiling point/boiling range                         | : 2,174 °F / 1,190 °C (1,013 hPa)<br>(anhydrous substance)                                                                                             |
| Flash point                                         | : does not flash                                                                                                                                       |
| Evaporation rate                                    | : No data available                                                                                                                                    |
| Burning rate                                        | : No data available                                                                                                                                    |
| Upper explosion limit /<br>Upper flammability limit | : Not applicable                                                                                                                                       |
| Lower explosion limit /<br>Lower flammability limit | : Not applicable                                                                                                                                       |
| Vapour pressure                                     | : No data available                                                                                                                                    |
| Relative vapour density                             | : No data available                                                                                                                                    |
| Relative density                                    | : 2.54 (70.7 °F / 21.5 °C)<br>Method: Regulation (EC) No. 440/2008, Annex, A.3                                                                         |
| Density                                             | : 2.01 g/cm <sup>3</sup> (68 °F / 20 °C)                                                                                                               |
| Solubility(ies)<br>Water solubility                 | : 757 g/l completely soluble (68 °F / 20 °C)<br>pH: 6<br>Method: Regulation (EC) No. 440/2008, Annex, A.6<br>GLP: yes<br><br>1,980 g/l (68 °F / 20 °C) |

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|                                           |                                                                          |
|-------------------------------------------|--------------------------------------------------------------------------|
| Partition coefficient: n-octanol/water    | : Not applicable for inorganic substances                                |
| Autoignition temperature                  | : not combustible                                                        |
| Decomposition temperature                 | : 223 - 388 °F / 106 - 198 °C<br>Elimination of water of crystallisation |
| Viscosity, dynamic                        | : No data available                                                      |
| Viscosity, kinematic                      | : No data available                                                      |
| Flow time                                 | : No data available                                                      |
| Explosive properties                      | : Not classified as explosive.                                           |
| Oxidizing properties                      | : none<br><br>Method: Regulation (EC) No. 440/2008, Annex, A.17<br>none  |
| Molecular weight                          | : 197.91 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 | : Risk of explosion with:<br>Alkali metals<br>Zinc<br>Violent reactions possible with:<br>acids |
| Conditions to avoid                | : no information available                                                                      |
| Incompatible materials             | : Metals<br>Light metals                                                                        |
| 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 - female - 236 mg/kg

Remarks: (ECHA)

The value is given in analogy to the following substances: manganese(II) chloride

Inhalation: No data available

Dermal: No data available

No data available

#### Skin corrosion/irritation

Skin - Rabbit

Result: No skin irritation - 4 h

(OECD Test Guideline 404)

#### Serious eye damage/eye irritation

Eyes - Rabbit

Result: Causes serious eye damage.

(OECD Test Guideline 405)

#### Respiratory or skin sensitization

Local lymph node assay (LLNA) - Mouse

Result: negative

(OECD Test Guideline 429)

The value is given in analogy to the following substances: manganese(II) chloride

#### Germ cell mutagenicity

Test Type: Mutagenicity (mammal cell test): chromosome aberration.

Test system: Human lymphocytes

Metabolic activation: with and without metabolic activation

Method: OECD Test Guideline 473

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: 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

The value is given in analogy to the following substances: manganese(II) chloride

Test Type: Micronucleus test

Species: Mouse

Cell type: Red blood cells (erythrocytes)

Application Route: Oral

Method: OECD Test Guideline 474

Result: negative

#### Carcinogenicity

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

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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**

May cause damage to organs through prolonged or repeated exposure.

- Brain

#### **Aspiration hazard**

No data available

### **11.2 Additional Information**

RTECS: 009650000

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

After absorption:

We have no description of any toxic symptoms.

Other dangerous properties can not be excluded.

This substance should be handled with particular care.

Liver - Irregularities - Based on Human Evidence

Liver - Irregularities - Based on Human Evidence

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## **SECTION 12. ECOLOGICAL INFORMATION**

### **Ecotoxicity**

#### **Components:**

#### **Manganese dichloride tetrahydrate:**

Toxicity to algae/aquatic plants : 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: (in analogy to similar products)

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The value is given in analogy to the following substances: Manganese sulphate

NOEC (Lemna minor (duckweed)): 30.72 mg/l

Exposure time: 7 d

Test Type: semi-static test

Remarks: (ECHA)

The value is given in analogy to the following substances:

The value is given in analogy to the following substances: manganese(II) chloride

Toxicity to microorganisms

: EC50 (activated sludge): > 1,000 mg/l

Exposure time: 3 h

Test Type: static test

Method: OECD Test Guideline 209

GLP: yes

Remarks: (in analogy to similar products)

The value is given in analogy to the following substances: Manganese sulphate

## **Persistence and degradability**

### **Components:**

#### **Manganese dichloride tetrahydrate:**

Biodegradability : Remarks: The methods for determining the biological degradability are not applicable to inorganic substances.

## **Bioaccumulative potential**

### **Components:**

#### **Manganese dichloride tetrahydrate:**

Partition coefficient: n-octanol/water : Remarks: Not applicable for inorganic substances

## **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  
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).

## 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 3288  
Proper shipping name : Toxic solid, inorganic, n.o.s.  
(Manganese dichloride tetrahydrate)  
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 3288  
Proper shipping name : TOXIC SOLID, INORGANIC, N.O.S.  
(Manganese dichloride tetrahydrate)  
Class : 6.1  
Packing group : III  
Labels : 6.1  
EmS Code : F-A, S-A  
Marine pollutant : no

### Transport in bulk according to IMO instruments

Not applicable for product as supplied.

### National Regulations

#### 49 CFR

UN/ID/NA number : UN 3288  
Proper shipping name : Toxic solid, inorganic, n.o.s.  
(Manganese dichloride tetrahydrate)  
Class : 6.1  
Packing group : III  
Labels : Division 6.1 - Toxic substances  
ERG Code : 151  
Marine pollutant : no

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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.

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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** : Acute Health Hazard  
Chronic Health Hazard

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

|                                   |            |                  |
|-----------------------------------|------------|------------------|
| Manganese dichloride tetrahydrate | 13446-34-9 | >= 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):

|                                   |            |                  |
|-----------------------------------|------------|------------------|
| Manganese dichloride tetrahydrate | 13446-34-9 | >= 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

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 does not contain any toxic pollutants listed under the U.S. Clean Water Act Section 307

This product does not contain any priority pollutants related to the U.S. Clean Water Act

## US State Regulations

### Massachusetts Right To Know

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

### Pennsylvania Right To Know

Manganese dichloride tetrahydrate 13446-34-9

### 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

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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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Revision Date : 07/10/2026

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