

# • SAFETY DATA SHEET

Version 6.11  
Revision Date 11/06/2025  
Print Date 02/23/2026

## SECTION 1. IDENTIFICATION

### 1.1 Product identifiers

Product name : Phthaldialdehyde

Product Number : P0657

Brand : Sigma-Aldrich

CAS-No. : 643-79-8

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

Identified uses : Laboratory chemicals, Synthesis of substances

Uses advised against : 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

|                                                  |                                   |
|--------------------------------------------------|-----------------------------------|
| Skin corrosion                                   | : Category 1B                     |
| Serious eye damage                               | : Category 1                      |
| Skin sensitisation                               | : Category 1                      |
| Specific target organ toxicity - single exposure | : Category 3 (Respiratory system) |
| 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 Toxic if swallowed.  
H314 Causes severe skin burns and eye damage.  
H317 May cause an allergic skin reaction.  
H335 May cause respiratory irritation.  
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.  
P272 Contaminated work clothing must not be allowed out of the workplace.  
P273 Avoid release to the environment.  
P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.

#### Response:

P301 + P310 + P330 IF SWALLOWED: Immediately call a POISON CENTER/ doctor. Rinse mouth.  
P301 + P330 + P331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.  
P303 + P361 + P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with

water/ shower.

P304 + P340 + P310 IF INHALED: Remove person to fresh air and keep comfortable for breathing.

Immediately call a POISON CENTER/ doctor.

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.

P333 + P313 If skin irritation or rash occurs: Get medical advice/ attention.

P363 Wash contaminated clothing before reuse.

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. : 643-79-8

**Components**

| Chemical name      | CAS No./Unique ID | Concentration (% w/w) | Trade secret |
|--------------------|-------------------|-----------------------|--------------|
| o-phthaldialdehyde | 643-79-8*         | >= 90 - <= 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. Call in physician.

In case of skin contact : In case of skin contact: Take off immediately all contaminated clothing. Rinse skin with water/ shower.  
Call a physician immediately.

In case of eye contact : After eye contact: rinse out with plenty of water.

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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. Do not attempt to neutralise.
- 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 media : Water  
Foam  
Carbon dioxide (CO<sub>2</sub>)  
Dry powder

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

Specific hazards during fire fighting : Combustible.

Vapours are heavier than air and may spread along floors.

Forms explosive mixtures with air on intense heating.

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

Hazardous combustion products : Carbon oxides

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

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## SECTION 6. ACCIDENTAL RELEASE MEASURES

|                                                                     |                                                                                                                                                                                                                                                                                             |
|---------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Personal precautions, protective equipment and emergency procedures | : Advice for non-emergency personnel:<br>Avoid inhalation of dusts.<br>Avoid substance contact.<br>Ensure adequate ventilation.<br>Evacuate the danger area, observe emergency procedures, consult an expert.<br>Advice for emergency responders:<br>For personal protection see section 8. |
| Environmental precautions                                           | : Do not let product enter drains.                                                                                                                                                                                                                                                          |
| Methods and materials for containment and cleaning up               | : Cover drains. Collect, bind, and pump off spills.<br>Observe possible material restrictions (see sections 7 and 10).<br>Take up 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 2.2.

|                                           |                                                                                                                                                   |
|-------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|
| 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                             | : 6.1A, Combustible, acute toxic Cat. 1 and 2 / very toxic hazardous materials                                                                    |
| Recommended storage temperature           | : 36 - 46 °F / 2 - 8 °C                                                                                                                           |

Further information on storage stability : Light sensitive.  
Moisture sensitive.  
Store under inert gas.

## SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

### Ingredients with workplace control parameters

| Components         | CAS-No.  | Value type<br>(Form of exposure) | Control parameters /<br>Permissible concentration | Basis |
|--------------------|----------|----------------------------------|---------------------------------------------------|-------|
| o-phthaldialdehyde | 643-79-8 | SL                               | 25 µg/100 cm <sup>2</sup>                         | ACGIH |
|                    |          | C (Vapour)                       | 0.0001 ppm                                        | ACGIH |

**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 : Dermatrill® (KCL 740 / Aldrich Z677272, Size M)

Material : Nitrile rubber  
Break through time : 480 min  
Glove thickness : 0.11 mm  
Protective index : Splash contact  
Manufacturer : Dermatrill® (KCL 740 / Aldrich Z677272, Size M)

Manufacturer : data source: KCL GmbH, D-36124 Eichenzell, phone +49 (0)6659 87300, e-mail sales@kcl.de, test

method: EN374

|                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|--------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Remarks                  | : Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.<br>If used in solution, or mixed with other substances, and under conditions which differ from EN 374, contact the supplier of the CE approved gloves. This recommendation is advisory only and must be evaluated by an industrial hygienist and safety officer familiar with the specific situation of anticipated use by our customers. It should not be construed as offering an approval for any specific use scenario. |
| Eye protection           | : Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).<br>Tightly fitting safety goggles                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Skin and body protection | : protective clothing                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Hygiene measures         | : Immediately change contaminated clothing. Apply preventive skin protection. Wash hands and face after working with substance.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |

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## SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

|                             |                                         |
|-----------------------------|-----------------------------------------|
| Appearance                  | : powder                                |
| Color                       | : light yellow                          |
| Odor                        | : No data available                     |
| Odor Threshold              | : No data available                     |
| pH                          | : No data available                     |
| Melting point/ range        | : 131 - 133 °F / 55 - 56 °C             |
| Boiling point/boiling range | : 181 °F / 83 °C (1.067 hPa)            |
| Flash point                 | : 270 °F / 132 °C<br>Method: closed cup |

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|                                                     |                                                                                                                             |
|-----------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|
| Evaporation rate                                    | : No data available                                                                                                         |
| Burning rate                                        | : No data available                                                                                                         |
| Upper explosion limit /<br>Upper flammability limit | : No data available                                                                                                         |
| Lower explosion limit /<br>Lower flammability limit | : No data available                                                                                                         |
| Vapor pressure                                      | : 0.33 Pa (68 °F / 20 °C)<br>Method: OECD Test Guideline 104                                                                |
| Relative vapour density                             | : No data available                                                                                                         |
| Relative density                                    | : 1.29 (68 °F / 20 °C)<br>Method: OECD Test Guideline 109                                                                   |
| Density                                             | : 1.13 g/cm <sup>3</sup> (68 °F / 20 °C)                                                                                    |
| Solubility(ies)<br>Water solubility                 | : 37.7 g/l (68 °F / 20 °C)<br>pH: 4.6<br>Method: OECD Test Guideline 105                                                    |
| Partition coefficient: n-<br>octanol/water          | : log Pow: 0.99 (86 °F / 30 °C)<br>pH: 7<br>Method: OECD Test Guideline 117<br>GLP: yes<br>Bioaccumulation is not expected. |
| Autoignition temperature                            | : 896 °F / 480 °C                                                                                                           |
| Decomposition<br>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                                    | : 134.13 g/mol                                                                                                              |
| Particle characteristics<br>Particle size           | : No data available                                                                                                         |

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## SECTION 10. STABILITY AND REACTIVITY

|                                    |                                                                                                                                                                                                                                                                                                                                                  |
|------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Reactivity                         | : Forms explosive mixtures with air on intense heating.<br><br>A range from approx. 15 Kelvin below the flash point is to be rated as critical.<br><br>The following applies in general to flammable organic substances and mixtures: in correspondingly fine distribution, when whirled up a dust explosion potential may generally be assumed. |
| Chemical stability                 | : The product is chemically stable under standard ambient conditions (room temperature) .                                                                                                                                                                                                                                                        |
| Possibility of hazardous reactions | : Violent reactions possible with:<br>Amines<br>Ammonia<br>Oxidizing agents                                                                                                                                                                                                                                                                      |
| Conditions to avoid                | : Strong heating.                                                                                                                                                                                                                                                                                                                                |
| Incompatible materials             | : 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 - male and female - 178 mg/kg  
(OECD Test Guideline 401)

Inhalation: No data available

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

#### Skin corrosion/irritation

Skin - Rabbit

Result: Causes burns. - 4 h  
(OECD Test Guideline 404)

#### Serious eye damage/eye irritation

Remarks: No data available

#### Respiratory or skin sensitization

Maximisation Test - Guinea pig

Result: Causes sensitisation.  
(OECD Test Guideline 406)

#### Germ cell mutagenicity

Test Type: Ames test

Method: OECD Test Guideline 471

Result: negative

### **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

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

May cause respiratory irritation.

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

No data available

### **Aspiration hazard**

No data available

## **11.2 Additional Information**

RTECS: TH6950000

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## **SECTION 12. ECOLOGICAL INFORMATION**

### **Ecotoxicity**

#### **Components:**

#### **o-phthaldialdehyde:**

Toxicity to fish : LC50 (Oncorhynchus mykiss (rainbow trout)): 0.07 mg/l  
Exposure time: 96 h  
Remarks: (ECOTOX Database)

Toxicity to daphnia and other aquatic invertebrates : EC50 (Daphnia magna (Water flea)): 0.087 mg/l  
Exposure time: 48 h

EC50 (Daphnia magna (Water flea)): 0.11 mg/l  
End point: Immobilization  
Exposure time: 48 h  
Test Type: static test  
Analytical monitoring: yes  
Method: OECD Test Guideline 202  
GLP: yes

Toxicity to algae/aquatic plants : EC50 (Pseudokirchneriella subcapitata (green algae)): 0.22 mg/l  
Exposure time: 96 h

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Test Type: static test  
Remarks: (ECOTOX Database)

M-Factor (Acute aquatic toxicity) : 10

M-Factor (Chronic aquatic toxicity) : 10

Toxicity to microorganisms : EC50 (activated sludge): 76.6 mg/l  
Exposure time: 3 h  
Test Type: static test  
Method: OECD Test Guideline 209  
GLP: yes

NOEC (activated sludge): 9.8 mg/l  
Exposure time: 3 h  
Test Type: static test  
Method: OECD Test Guideline 209  
GLP: yes

### **Persistence and degradability**

#### **Components:**

##### **o-phthaldialdehyde:**

Biodegradability : Remarks: No data available

aerobic  
Inoculum: activated sludge  
Result: Not readily biodegradable.  
Biodegradation: 7 %  
Exposure time: 28 d  
Method: OECD Test Guideline 301B  
GLP: yes

### **Bioaccumulative potential**

#### **Components:**

##### **o-phthaldialdehyde:**

Partition coefficient: n-octanol/water : log Pow: 0.99 (86 °F / 30 °C)  
pH: 7  
Method: OECD Test Guideline 117  
GLP: yes  
Remarks: Bioaccumulation is not expected.

### **Mobility in soil**

No data available

### **Other adverse effects**

#### **Product:**

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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).

**Components:**

**o-phthaldialdehyde:**

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

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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 2923  
Proper shipping name : Corrosive solid, toxic, n.o.s. (o-phthaldialdehyde)  
Class : 8  
Subsidiary risk : 6.1  
Packing group : II  
Labels : Class 8 - Corrosive substances, Division 6.1 - Toxic substances  
Packing instruction (cargo aircraft) : 863  
Packing instruction (passenger aircraft) : 859

**IMDG-Code**

UN number : UN 2923  
Proper shipping name : CORROSIVE SOLID, TOXIC, N.O.S. (o-phthaldialdehyde)  
Class : 8  
Subsidiary risk : 6.1  
Packing group : II  
Labels : 8 (6.1)  
EmS Code : F-A, S-B  
Marine pollutant : yes

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## Transport in bulk according to IMO instruments

Not applicable for product as supplied.

## National Regulations

### 49 CFR Road

|                          |                                                                      |
|--------------------------|----------------------------------------------------------------------|
| UN/ID/NA number          | : UN 2923                                                            |
| Proper shipping name     | : Corrosive solids, toxic, n.o.s.<br>(o-phthaldialdehyde)            |
| Class                    | : 8                                                                  |
| Subsidiary risk          | : 6.1                                                                |
| Packing group            | : II                                                                 |
| Labels                   | : Class 8 - Corrosive substances, Division 6.1 - Toxic<br>substances |
| ERG Code                 | : 154                                                                |
| 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.

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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

**SARA 313** : This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

### 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).

This product does not contain any hazardous air pollutants (HAP), as defined by the U.S. Clean Air Act Section 112 (40 CFR 61).

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.

#### **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:**

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)  
ACGIH / C : Ceiling limit  
ACGIH / SL : Threshold Limit Value-Surface Limit (TLV-SL)

AIIC - Australian Inventory of Industrial Chemicals; ASTM - American Society for the Testing of Materials; bw - Body weight; CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act; CMR - Carcinogen, Mutagen or Reproductive Toxicant; DIN - Standard of the German Institute for Standardisation; DOT - Department of Transportation; DSL - Domestic Substances List (Canada); ECx - Concentration associated with x% response; EHS - Extremely Hazardous Substance; ELx - Loading rate associated with x% response; EmS - Emergency Schedule; ENCS - Existing and New Chemical Substances (Japan); ErCx - Concentration associated with x% growth rate response; ERG - Emergency Response Guide; GHS - Globally Harmonised System; GLP - Good Laboratory Practice; HMIS - Hazardous Materials Identification System; IARC - International Agency for Research on Cancer; IATA -

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

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

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Revision Date : 11/06/2025

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