

• SAFETY DATA SHEET

Version 6.9
Revision Date 11/06/2025
Print Date 11/07/2025

SECTION 1. IDENTIFICATION

1.1 Product identifiers

Product name : Mercury(II) oxide

Product Number : 203793

Brand : Aldrich

Index-No. : 080-002-00-6

CAS-No. : 21908-53-2

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

Identified uses : Scientific research and development, Reagent for analysis

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

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 2

Aldrich - 203793

Page 1 of 15

| | |
|--|-----------------------|
| Acute toxicity (Inhalation) | : Category 2 |
| Acute toxicity (Dermal) | : Category 1 |
| Specific target organ toxicity - repeated exposure | : Category 2 (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 | : H300 + H310 + H330 Fatal if swallowed, in contact with skin or if inhaled. H373 May cause damage to organs (Kidney) through prolonged or repeated exposure. H410 Very toxic to aquatic life with long lasting effects. |
|-------------------|--|

| | |
|--------------------------|---|
| Precautionary statements | : Prevention: P260 Do not breathe dust. P262 Do not get in eyes, on skin, or on clothing. P264 Wash skin thoroughly after handling. P270 Do not eat, drink or smoke when using this product. P271 Use only outdoors or in a well-ventilated area. P273 Avoid release to the environment. P280 Wear protective gloves/ protective clothing. P284 Wear respiratory protection. Response: P301 + P310 + P330 IF SWALLOWED: Immediately call a POISON CENTER/ doctor. Rinse mouth. P302 + P350 + P310 IF ON SKIN: Gently wash with plenty of soap and water. Immediately call a POISON CENTER or doctor/ physician. P304 + P340 + P310 IF INHALED: Remove person to |
|--------------------------|---|

fresh air and keep comfortable for breathing.
Immediately call a POISON CENTER/ doctor.
P314 Get medical advice/ attention if you feel unwell.
P362 Take off contaminated clothing and wash 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.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

Substance / Mixture : Substance
CAS-No. : 21908-53-2

Components

| Chemical name | CAS No./Unique ID | Concentration (% w/w) | Trade secret |
|-------------------|-------------------|-----------------------|--------------|
| Mercury(II) oxide | 21908-53-2* | >= 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 : First aiders need to protect themselves.
Show this safety data sheet to the doctor in attendance.

If inhaled : After inhalation: fresh air. Immediately call in physician.
If breathing stops: immediately apply artificial respiration, if necessary also oxygen.

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

In case of eye contact : After eye contact: rinse out with plenty of water.
Call in ophthalmologist.
Remove contact lenses.

| | |
|---|---|
| If swallowed | : If swallowed: give water to drink (two glasses at most). Seek medical advice immediately. In exceptional cases only, if medical care is not available within one hour, induce vomiting (only in persons who are wide awake and fully conscious), administer activated charcoal (20 - 40 g in a 10% slurry) and consult a doctor as quickly as possible. |
| Most important symptoms and effects, both acute and delayed | : The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11 |
| Protection of first-aiders | : For personal protection see section 8. |
| Notes to physician | : No data available |

SECTION 5. FIREFIGHTING MEASURES

| | |
|--|--|
| Suitable extinguishing media | : Use extinguishing measures that are appropriate to local circumstances and the surrounding environment. |
| Unsuitable extinguishing media | : For this substance/mixture no limitations of extinguishing agents are given. |
| Specific hazards during fire fighting | : Not combustible. Ambient fire may liberate hazardous vapours. |
| Hazardous combustion products | : Mercury/mercury oxides. |
| Specific extinguishing methods | : No data available |
| Further information | : Suppress (knock down) gases/vapours/mists with a water spray jet. Prevent fire extinguishing water from contaminating surface water or the ground water system. |
| Special protective equipment for fire-fighters | : Stay in danger area only with self-contained breathing apparatus. Prevent skin contact by keeping a safe distance or by wearing suitable protective clothing. |

SECTION 6. ACCIDENTAL RELEASE MEASURES

| | |
|---|---|
| Personal precautions, protective equipment and emergency procedures | : Advice for non-emergency personnel: Avoid generation and inhalation of dusts in all circumstances. Avoid substance contact. Ensure adequate ventilation. Evacuate the danger area, observe emergency procedures, consult an expert. Advice for emergency responders: 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. Observe possible material restrictions (see sections 7 and 10). Take up carefully. Dispose of properly. Clean up affected area. Avoid generation of dusts. |

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 | : 6.1A, Combustible, acute toxic Cat. 1 and 2 / very toxic hazardous materials |
| Recommended storage temperature | : Recommended storage temperature see product label. |
| Further information on storage stability | : Light sensitive. |

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Ingredients with workplace control parameters

| Components | CAS-No. | Value type (Form of exposure) | Control parameters / Permissible | Basis |
|------------|---------|----------------------------------|----------------------------------|-------|
|------------|---------|----------------------------------|----------------------------------|-------|

Aldrich - 203793

Page 5 of 15

| | | | concentration | |
|-------------------|------------|-----------------|--------------------------|-----------|
| Mercury(II) oxide | 21908-53-2 | TWA | 0.025 mg/m3 (Mercury) | ACGIH |
| | | TWA (Vapour) | 0.05 mg/m3 (Mercury) | NIOSH REL |
| | | C | 0.1 mg/m3 (Mercury) | 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).

| | |
|--------------------------|---|
| Eye protection | : Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU). Safety glasses |
| Skin and body protection | : protective clothing |
| Hygiene measures | : Immediately change contaminated clothing. Apply preventive skin protection. Wash hands and face after working with substance. |

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

| | |
|---|--|
| Appearance | : solid |
| Color | : No data available |
| Odor | : No data available |
| Odor Threshold | : No data available |
| pH | : No data available |
| Melting point/ range | : 932 °F / 500 °C Method: dec. |
| Boiling point/boiling range | : No data available |
| Flash point | : Not applicable |
| Evaporation rate | : No data available |
| Flammability (solid, gas) | : No data available |
| Flammability (liquids) | : 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 |
| Vapor pressure | : No data available |
| Relative vapour density | : No data available |
| Relative density | : No data available |
| Density | : 11.1 g/cm ³ (68 °F / 20 °C) |

Aldrich - 203793

Page 7 of 15

| | |
|---|---------------------|
| Water solubility | : No data available |
| Partition coefficient: n-octanol/water | : No data available |
| Autoignition temperature | : No data available |
| Decomposition temperature | : No data available |
| Viscosity, dynamic | : No data available |
| Viscosity, kinematic | : No data available |
| Flow time | : No data available |
| Explosive properties | : No data available |
| Oxidizing properties | : No data available |
| Molecular weight | : 216.59 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 | : Risk of explosion with: nitrates Chlorine boron compounds hypophosphites various alloys Potassium magnesium sodium phosphorus Reducing agents sulfur iodine with Methanol butadiene with |

ethanol
 iodine
 Hydrocarbons
 with
 Chlorine
 hydrogen peroxide
 with
 Nitric acid
 Risk of ignition or formation of inflammable gases or
 vapours with:
 Alcohols
 nitrates
 halogens
 semimetallic halides
 hydrazine and derivatives
 Light metals
 nonmetals
 nonmetallic hydrogen compounds
 hydrogen peroxide
 Nitric acid
 Reducing agents
 Ozone
 Violent reactions possible with:
 Alkali metals
 Ozone
 Sulphur trioxide
 mercaptans

Conditions to avoid : no information available

Incompatible materials : No data available

Hazardous decomposition products : In the event of fire: see section 5

SECTION 11. TOXICOLOGICAL INFORMATION

11.1 Information on toxicological effects

Acute toxicity

LD50 Oral - Rat - 18 mg/kg

Remarks: (RTECS)

Oral: absorption

Acute toxicity estimate Inhalation - 4 h - 0.051 mg/l - dust/mist

(Expert judgement)

Inhalation: absorption

Acute toxicity estimate Dermal - 5 mg/kg

(Expert judgement)

No data available

Skin corrosion/irritation

No data available

Aldrich - 203793

Page 9 of 15

Serious eye damage/eye irritation

No data available

Respiratory or skin sensitization

Sensitisation possible in predisposed persons.

Germ cell mutagenicity

No data available

Carcinogenicity

IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

NTP: No component of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

OSHA: No component of this product present at levels greater than or equal to 0.1% is on OSHA's list of regulated carcinogens.

Reproductive toxicity

Laboratory experiments have shown teratogenic effects.

Overexposure may cause reproductive disorder(s) based on tests with laboratory animals.

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.

- Kidney

Aspiration hazard

No data available

11.2 Additional Information

RTECS: OW8750000

Liver injury may occur., Kidney injury may occur., Nausea, Vomiting, Diarrhoea, Tremors, Salivation

Mercury compounds have a cytotoxic and protoplasmatoxic effect. Intoxication symptoms: acute: contact with eye causes severe lesions. Swallowing and inhalation of dusts damages mucous membranes of gastrointestinal and respiratory tract (metallic taste, nausea, vomiting, abdominal pain, bloody diarrhoea, intestinal burns, glottal oedema, aspiration pneumonia); drop in blood pressure, cardiac dysrhythmia, circulatory collapse, and renal failure; chronic: inflammation of the mouth with loss of teeth and mercurial line. The principal signs manifest themselves in the CNS (impaired speech, vision, hearing, and sensitivity, loss of memory, irritability, hallucinations, delirium inter alia).

This substance should be handled with particular care.

Stomach - Irregularities - Based on Human Evidence

Stomach - Irregularities - Based on Human Evidence

SECTION 12. ECOLOGICAL INFORMATION

Ecotoxicity

Components:

Mercury(II) oxide:

- Toxicity to fish : LC50 (Cyprinus carpio (Carp)): 0.16 mg/l
Exposure time: 96 h
Test Type: mortality
Remarks: The value is given in analogy to the following substances:
The value is given in analogy to the following substances: Mercury dichloride
- Toxicity to daphnia and other aquatic invertebrates : NOEC (Daphnia magna (Water flea)): 0.001 mg/l
Exposure time: 21 d
Remarks: The value is given in analogy to the following substances:
The value is given in analogy to the following substances: Mercury dichloride
- M-Factor (Acute aquatic toxicity) : 1
- M-Factor (Chronic aquatic toxicity) : 100

Persistence and degradability

Components:

Mercury(II) oxide:

- Biodegradability : Remarks: The methods for determining biodegradability are not applicable to inorganic substances.

Bioaccumulative potential

No data available

Mobility in soil

Components:

Mercury(II) oxide:

- Stability in soil : Remarks: No data available

Other adverse effects

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

UN/ID No. : UN 1641
Proper shipping name : Mercury oxide
Class : 6.1
Packing group : II
Labels : Division 6.1 - Toxic substances
Packing instruction (cargo aircraft) : 676
Packing instruction (passenger aircraft) : 669

IMDG-Code

UN number : UN 1641
Proper shipping name : MERCURY OXIDE

Class : 6.1
Packing group : II
Labels : 6.1
EmS Code : F-A, S-A
Marine pollutant : yes

Transport in bulk according to IMO instruments

Not applicable for product as supplied.

National Regulations

49 CFR Road

UN/ID/NA number : UN 1641
Proper shipping name : Mercury oxide

Class : 6.1
Packing group : II
Labels : Division 6.1 - Toxic substances
ERG Code : 151
Marine pollutant : yes

Poison Inhalation Hazard : No

Special precautions for user

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

SECTION 15. REGULATORY INFORMATION

CERCLA Reportable Quantity

This material does not contain any components with a CERCLA RQ.

SARA 304 Extremely Hazardous Substances Reportable Quantity

| Components | CAS-No. | Component RQ (lbs) | Calculated product RQ (lbs) |
|-------------------|------------|--------------------|-----------------------------|
| Mercury(II) oxide | 21908-53-2 | 500 | 500 |

SARA 302 Extremely Hazardous Substances Threshold Planning Quantity

| Components | CAS-No. | Component TPQ (lbs) |
|-------------------|------------|---------------------|
| Mercury(II) oxide | 21908-53-2 | 10000 |
| Mercury(II) oxide | 21908-53-2 | 500* |

*: Solid in the molten or powdered form (particles < 100 microns), in solution, or meeting the NFPA reactivity criteria

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:

| | | |
|-------------------|------------|------------------|
| Mercury(II) oxide | 21908-53-2 | >= 90 - <= 100 % |
|-------------------|------------|------------------|

US State Regulations

Massachusetts Right To Know

| | |
|-------------------|------------|
| Mercury(II) oxide | 21908-53-2 |
|-------------------|------------|

Pennsylvania Right To Know

| | |
|-------------------|------------|
| Mercury(II) oxide | 21908-53-2 |
|-------------------|------------|

Maine Chemicals of High Concern

Product does not contain any listed chemicals

Vermont Chemicals of High Concern

| | |
|-------------------|------------|
| Mercury(II) oxide | 21908-53-2 |
|-------------------|------------|

Washington Chemicals of High Concern

| | |
|-------------------|------------|
| Mercury(II) oxide | 21908-53-2 |
|-------------------|------------|

California Prop. 65

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

International Regulations

Rotterdam Convention (Prior Informed Consent) : Mercury(II) oxide

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.

SECTION 16. OTHER INFORMATION

Full text of other abbreviations

ACGIH : USA. ACGIH Threshold Limit Values (TLV)
NIOSH REL : USA. NIOSH Recommended Exposure Limits
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 / C : Ceiling value not be exceeded at any time.

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

Copyright 2025 Sigma-Aldrich Co. LLC. License granted to make unlimited paper copies for internal use only.

Revision Date : 11/06/2025

The branding on the header and/or footer of this document may temporarily not visually match the product purchased as we transition our branding. However, all of the information in the document regarding the product remains unchanged and matches the product ordered. For further information please contact mlsbranding@sial.com.

US / EN