# SAFETY DATA SHEETS

According to Globally Harmonized System of Classification and Labelling of Chemicals (GHS) - Sixth revised edition

Version: 1.0

Creation Date: Aug 12, 2017

Revision Date: Aug 12, 2017

## 1. Identification

### 1.1 GHS Product identifier

| | |
|---|---|
| Product name | Lead(IV) oxide |

### 1.2 Other means of identification

| | |
|---|---|
| Product number | - |
| Other names | dioxolead |

### 1.3 Recommended use of the chemical and restrictions on use

| | |
|---|---|
| Identified uses | For industry use only. Intermediates |
| Uses advised against | no data available |

## 2. Hazard identification

### 2.1 Classification of the substance or mixture

Oxidizing solids, Category 3

Acute toxicity - Oral, Category 4

Acute toxicity - Inhalation, Category 4

Reproductive toxicity, Category 1A

Specific target organ toxicity – repeated exposure, Category 2

Hazardous to the aquatic environment, short-term (Acute) - Category Acute 1

Hazardous to the aquatic environment, long-term (Chronic) - Category Chronic 1

## 2.2 GHS label elements, including precautionary statements

Pictogram(s)

Signal word

Danger

Hazard statement(s)

H272 May intensify fire; oxidizer

H302 Harmful if swallowed

H332 Harmful if inhaled

H360 May damage fertility or the unborn child

H373 May cause damage to organs through prolonged or repeated exposure

H410 Very toxic to aquatic life with long lasting effects

Precautionary statement(s)

Prevention

P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.

P220 Keep away from clothing and other combustible materials.

P280 Wear protective gloves/protective clothing/eye protection/face protection.

P264 Wash ... thoroughly after handling.

P270 Do not eat, drink or smoke when using this product.

P261 Avoid breathing dust/fume/gas/mist/vapours/spray.

P271 Use only outdoors or in a well-ventilated area.

P201 Obtain special instructions before use.

P202 Do not handle until all safety precautions have been read and understood.

| | |
|---|---|
| | P260 Do not breathe dust/fume/gas/mist/vapours/spray. |
| | P273 Avoid release to the environment. |
| Response | P370+P378 In case of fire: Use ... to extinguish. |
| | P301+P312 IF SWALLOWED: Call a POISON CENTER/doctor/…if you feel unwell. |
| | P330 Rinse mouth. |
| | P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing. |
| | P312 Call a POISON CENTER/doctor/…if you feel unwell. |
| | P308+P313 IF exposed or concerned: Get medical advice/ attention. |
| | P314 Get medical advice/attention if you feel unwell. |
| | P391 Collect spillage. |
| Storage | P405 Store locked up. |
| Disposal | P501 Dispose of contents/container to ... |

## 2.3 Other hazards which do not result in classification

none

# 3. Composition/information on ingredients

## 3.1 Substances

| Chemical name | Common names and synonyms | CAS number | EC number | Concentration |
|---|---|---|---|---|
| Lead(IV) oxide | Lead(IV) oxide | 1309-60-0 | none | 100% |

# 4. First-aid measures

## 4.1 Description of necessary first-aid measures

General advice

Consult a physician. Show this safety data sheet to the doctor in attendance.

If inhaled

Fresh air, rest.

In case of skin contact

Remove contaminated clothes. Rinse and then wash skin with water and soap.

In case of eye contact

First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then refer for medical attention.

If swallowed

Rinse mouth. Give one or two glasses of water to drink. Refer for medical attention .

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

Excerpt from ERG Guide 141 [Oxidizers - Toxic]: Toxic by ingestion. Inhalation of dust is toxic. Fire may produce irritating, corrosive and/or toxic gases. Contact with substance may cause severe burns to skin and eyes. Runoff from fire control or dilution water may cause pollution. (ERG, 2016)

## 4.3 Indication of immediate medical attention and special treatment needed, if necessary

Immediate first aid: Ensure that adequate decontamination has been carried out. If patient is not breathing, start artificial respiration, preferably with a demand valve resuscitator, bag-valve-mask device, or pocket mask, as trained. Perform CPR if necessary. Immediately flush contaminated eyes with gently flowing water. Do not induce vomiting. If vomiting occurs, lean patient forward or place on left side (head-down position, if possible) to maintain an open airway and prevent aspiration. Keep patient quiet and maintain normal body temperature. Obtain medical attention. /Lead and Related Compounds/

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# 5. Fire-fighting measures

## 5.1 Extinguishing media

Suitable extinguishing media

Suitable extinguishing media: Use water spray, alcohol-resistant foam, dry

chemical or carbon dioxide.

## 5.2 Specific hazards arising from the chemical

Excerpt from ERG Guide 141 [Oxidizers - Toxic]: These substances will accelerate burning when involved in a fire. May explode from heat or contamination. Some may burn rapidly. Some will react explosively with hydrocarbons (fuels). May ignite combustibles (wood, paper, oil, clothing, etc.). Containers may explode when heated. Runoff may create fire or explosion hazard. (ERG, 2016)

## 5.3 Special protective actions for fire-fighters

Wear self-contained breathing apparatus for firefighting if necessary.

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# 6. Accidental release measures

## 6.1 Personal precautions, protective equipment and emergency procedures

Use personal protective equipment. Avoid dust formation. Avoid breathing vapours, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas. Avoid breathing dust. For personal protection see section 8.

## 6.2 Environmental precautions

Personal protection: particulate filter respirator adapted to the airborne concentration of the substance. Do NOT let this chemical enter the environment. Sweep spilled substance into covered containers. If appropriate, moisten first to prevent dusting. Carefully collect remainder. Then store and dispose of according to local regulations.

## 6.3 Methods and materials for containment and cleaning up

ACCIDENTAL RELEASE MEASURES: Personal precautions, protective equipment and emergency procedures: Use personal protective equipment. Avoid dust formation. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas. Avoid breathing dust. Environmental precautions: Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided. Methods and materials for containment and cleaning up: Sweep up and shovel. Contain spillage, and then collect with an electrically protected vacuum cleaner or by wetbrushing and place in container for disposal according to local regulations. Keep in suitable, closed containers for disposal.

## 7. Handling and storage

### 7.1 Precautions for safe handling

Avoid contact with skin and eyes. Avoid formation of dust and aerosols. Avoid exposure - obtain special instructions before use.Provide appropriate exhaust ventilation at places where dust is formed. For precautions see section 2.2.

### 7.2 Conditions for safe storage, including any incompatibilities

Separated from food and feedstuffs and incompatible materials. See Chemical Dangers.Keep container tightly closed in a dry and well-ventilated place. Keep in a dry place. Storage class (TRGS 510): Oxidizing hazardous materials.

## 8. Exposure controls/personal protection

### 8.1 Control parameters

Occupational Exposure limit values

NIOSH considers "Lead" to mean metallic lead, lead oxides, and lead salts (including organic salts such as lead soaps but excluding lead arsenate).

Recommended Exposure Limit: 10 hr Time-Weighted Avg: 0.050 mg/cu m /Lead/

Air concentrations should be maintained so that worker blood lead remains less than 0.06 mg Pb/100 g of whole blood. /Lead/

Biological limit values

no data available

### 8.2 Appropriate engineering controls

Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

### 8.3 Individual protection measures, such as personal protective equipment (PPE)

Eye/face protection

Safety glasses with side-shields conforming to EN166. Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).

Skin protection

Wear impervious clothing. The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace. 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. The selected protective gloves have to satisfy the specifications of EU Directive 89/686/EEC and the standard EN 374 derived from it.

Respiratory protection

Wear dust mask when handling large quantities.

Thermal hazards

no data available

## 9. Physical and chemical properties

| | |
|---|---|
| Physical state | black powder |
| Colour | Brown, hexagonal crystals |
| Odour | no data available |
| Melting point/ freezing point | 290°C |
| Boiling point or initial boiling point and boiling range | no data available |
| Flammability | Not combustible but enhances combustion of other substances. Gives off irritating or toxic fumes (or gases) in a fire. |
| Lower and upper explosion limit / flammability limit | no data available |
| Flash point | no data available |
| Auto-ignition temperature | no data available |
| Decomposition temperature | 290°C |
| pH | no data available |
| Kinematic viscosity | no data available |
| Solubility | Insoluble |

| | |
|---|---|
| Partition coefficient n-octanol/water (log value) | no data available |
| Vapour pressure | no data available |
| Density and/or relative density | 9.36 |
| Relative vapour density | no data available |
| Particle characteristics | no data available |

## 10. Stability and reactivity

### 10.1 Reactivity

no data available

### 10.2 Chemical stability

Stable under recommended storage conditions.

### 10.3 Possibility of hazardous reactions

Lead dioxide does not burn but it will increase the intensity of a fire.LEAD DIOXIDE is a strong oxidizing agent. Noncombustible but accelerates the burning of combustible material. Reacts violently with hydrogen sulfide [Bretherick 1979. p. 977-978]. Ignites with hydroxylamine [Mellor 8:291. 1946-47]. Reacts violently with hydrogen peroxide [Mellor 1:937 1946-47], with phenylhydrazine [Mellor 7:637 1946-47], or with sulfuryl chloride [Mellor 10:676. 1946-47]. Reacts with incandescence with sulfur dioxide [Mellor, 1941, Vol. 7, 689]. Explodes when ground with boron or yellow phosphorus [Mellor, 1946, Vol. 5, 17]. Mixtures with sulfur and red phosphorus ignite [Mellor, 1941, Vol. 7, 689]. Reacts vigorously when heated with calcium sulfide, strontium sulfide or barium sulfide [Mellor, 1941, Vol. 3, 745].

### 10.4 Conditions to avoid

no data available

### 10.5 Incompatible materials

Incompatible materials: Strong reducing agents, powdered metals

### 10.6 Hazardous decomposition products

When heated to decomposition it emits toxic fumes of /lead/.

## 11. Toxicological information

Acute toxicity

- Oral: no data available
- Inhalation: no data available
- Dermal: no data available

Skin corrosion/irritation

no data available

Serious eye damage/irritation

no data available

Respiratory or skin sensitization

no data available

Germ cell mutagenicity

no data available

Carcinogenicity

There is limited evidence in humans for the carcinogenicity of inorganic lead compounds. ... There is sufficient evidence in experimental animals for the carcinogenicity of inorganic lead compounds. There is sufficient evidence in experimental animals for the carcinogenicity of lead acetate, lead subacetate, lead chromate, and lead phosphate. There is inadequate evidence in experimental animals for the carcinogenicity of lead oxide and lead arsenate. ... There is inadequate evidence in experimental animals for the carcinogenicity of lead powder. Overall evaluation Inorganic lead compounds are probably carcinogenic to humans (Group 2A). /Inorganic lead compounds/

Reproductive toxicity

no data available

STOT-single exposure

no data available

STOT-repeated exposure

no data available

Aspiration hazard

no data available

## 12. Ecological information

### 12.1 Toxicity

- Toxicity to fish: no data available
- Toxicity to daphnia and other aquatic invertebrates: no data available
- Toxicity to algae: no data available
- Toxicity to microorganisms: no data available

### 12.2 Persistence and degradability

no data available

### 12.3 Bioaccumulative potential

Bioaccumulation of lead(IV) dioxide may occur in plants and in mammals(1).

### 12.4 Mobility in soil

The downward movement of inorganic lead compounds from soil to groundwater by leaching is very slow under most natural conditions(1). /Lead compounds/

### 12.5 Other adverse effects

no data available

## 13. Disposal considerations

### 13.1 Disposal methods

Product

The material can be disposed of by removal to a licensed chemical destruction plant or by controlled incineration with flue gas scrubbing. Do not contaminate water, foodstuffs, feed or seed by storage or disposal. Do not discharge to sewer systems.

Contaminated packaging

Containers can be triply rinsed (or equivalent) and offered for recycling or reconditioning. Alternatively, the packaging can be punctured to make it

unusable for other purposes and then be disposed of in a sanitary landfill. Controlled incineration with flue gas scrubbing is possible for combustible packaging materials.

## 14. Transport information

### 14.1 UN Number

ADR/RID: UN1872 IMDG: UN1872 IATA: UN1872

### 14.2 UN Proper Shipping Name

ADR/RID: LEAD DIOXIDE
IMDG: LEAD DIOXIDE
IATA: LEAD DIOXIDE

### 14.3 Transport hazard class(es)

ADR/RID: 6.1 IMDG: 6.1 IATA: 6.1

### 14.4 Packing group, if applicable

ADR/RID: III IMDG: III IATA: III

### 14.5 Environmental hazards

ADR/RID: yes IMDG: yes IATA: yes

### 14.6 Special precautions for user

no data available

### 14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

no data available

## 15. Regulatory information

### 15.1 Safety, health and environmental regulations specific for the product in question

| Chemical name | Common names and synonyms | CAS number | EC number |
|---|---|---|---|
| Lead(IV) oxide | Lead(IV) oxide | 1309-60-0 | none |
| European Inventory of Existing Commercial Chemical Substances | | | Listed. |

| | |
|---|---|
| (EINECS) | |
| EC Inventory | Listed. |
| United States Toxic Substances Control Act (TSCA) Inventory | Listed. |
| China Catalog of Hazardous chemicals 2015 | Listed. |
| New Zealand Inventory of Chemicals (NZIoC) | Listed. |
| Philippines Inventory of Chemicals and Chemical Substances (PICCS) | Listed. |
| Vietnam National Chemical Inventory | Listed. |
| Chinese Chemical Inventory of Existing Chemical Substances (China IECSC) | Listed. |

## 16. Other information

Information on revision

| | |
|---|---|
| Creation Date | Aug 12, 2017 |
| Revision Date | Aug 12, 2017 |

Abbreviations and acronyms

- CAS: Chemical Abstracts Service
- ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road
- RID: Regulation concerning the International Carriage of Dangerous Goods by Rail
- IMDG: International Maritime Dangerous Goods
- IATA: International Air Transportation Association
- TWA: Time Weighted Average
- STEL: Short term exposure limit
- LC50: Lethal Concentration 50%
- LD50: Lethal Dose 50%
- EC50: Effective Concentration 50%

References


- IPCS - The International Chemical Safety Cards (ICSC), website: http://www.ilo.org/dyn/icsc/showcard.home
- HSDB - Hazardous Substances Data Bank, website: https://toxnet.nlm.nih.gov/newtoxnet/hsdb.htm

- IARC - International Agency for Research on Cancer, website: http://www.iarc.fr/
- eChemPortal - The Global Portal to Information on Chemical Substances by OECD, website: http://www.echemportal.org/echemportal/index?pageID=0&request_locale=en
- CAMEO Chemicals, website: http://cameochemicals.noaa.gov/search/simple
- ChemIDplus, website: http://chem.sis.nlm.nih.gov/chemidplus/chemidlite.jsp
- ERG - Emergency Response Guidebook by U.S. Department of Transportation, website: http://www.phmsa.dot.gov/hazmat/library/erg
- Germany GESTIS-database on hazard substance, website: http://www.dguv.de/ifa/gestis/gestis-stoffdatenbank/index-2.jsp
- ECHA - European Chemicals Agency, website: https://echa.europa.eu/

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