

## SAFETY DATA SHEET

Version 8.8  
Revision Date 04/01/2022  
Print Date 05/28/2022

**SECTION 1: Identification of the substance/mixture and of the company/undertaking****1.1 Product identifiers**

Product name : Lead(II) oxide

Product Number : 402982  
Brand : SIGALD  
Index-No. : 082-001-00-6  
CAS-No. : 1317-36-8

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

Identified uses : Laboratory chemicals, Synthesis of substances

**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**

Emergency Phone # : 800-424-9300 CHEMTREC (USA) +1-703-  
527-3887 CHEMTREC (International) 24  
Hours/day; 7 Days/week

**SECTION 2: Hazards identification****2.1 Classification of the substance or mixture****GHS Classification in accordance with 29 CFR 1910 (OSHA HCS)**

Acute toxicity, Oral (Category 4), H302  
Acute toxicity, Inhalation (Category 4), H332  
Carcinogenicity (Category 2), H351  
Reproductive toxicity (Category 1A), H360  
Effects on or via lactation, H362  
Specific target organ toxicity - repeated exposure (Category 1), Central nervous system,  
Kidney, Blood, H372  
Short-term (acute) aquatic hazard (Category 1), H400  
Long-term (chronic) aquatic hazard (Category 1), H410

For the full text of the H-Statements mentioned in this Section, see Section 16.

**2.2 GHS Label elements, including precautionary statements**

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Pictogram



Signal word

Danger

Hazard statement(s)

H302 + H332

Harmful if swallowed or if inhaled.

H351

Suspected of causing cancer.

H360

May damage fertility or the unborn child.

H362

May cause harm to breast-fed children.

H372

Causes damage to organs (Central nervous system, Kidney, Blood) through prolonged or repeated exposure.

H410

Very toxic to aquatic life with long lasting effects.

Precautionary statement(s)

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/ vapors/ spray.

P263

Avoid contact during pregnancy/ while nursing.

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/ eye protection/ face protection.

P301 + P312 + P330

IF SWALLOWED: Call a POISON CENTER/ doctor if you feel unwell. Rinse mouth.

P304 + P340 + P312

IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER/ doctor if you feel unwell.

P308 + P313

IF exposed or concerned: Get medical advice/ attention.

P391

Collect spillage.

P405

Store locked up.

P501

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

### 2.3 Hazards not otherwise classified (HNOC) or not covered by GHS - none

## SECTION 3: Composition/information on ingredients

### 3.1 Substances

Formula : OPb  
Molecular weight : 223.20 g/mol  
CAS-No. : 1317-36-8  
EC-No. : 215-267-0  
Index-No. : 082-001-00-6

| Component             | Classification                                                                                                                    | Concentration |
|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------|---------------|
| <b>lead(II) oxide</b> | Acute Tox. 4; Carc. 2;<br>Repr. 1A; Lact. ; STOT RE<br>1; Aquatic Acute 1;<br>Aquatic Chronic 1; H302,<br>H332, H351, H360, H362, | <= 100 %      |

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|  |                                                                                                                                                               |  |
|--|---------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
|  | H372, H400, H410<br>Concentration limits:<br>≥ 2.5 %: Repr. 2,<br>H361f; ≥ 0.5 %: STOT<br>RE 2, H373;<br>M-Factor - Aquatic Acute:<br>10 - Aquatic Chronic: 1 |  |
|--|---------------------------------------------------------------------------------------------------------------------------------------------------------------|--|

For the full text of the H-Statements mentioned in this Section, see Section 16.

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## SECTION 4: First aid measures

### 4.1 Description of first-aid measures

#### General advice

Show this material 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. Consult a physician.

#### In case of eye contact

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

#### If swallowed

After swallowing: immediately make victim drink water (two glasses at most). Consult a physician.

### 4.2 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

### 4.3 Indication of any immediate medical attention and special treatment needed

No data available

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## SECTION 5: Firefighting measures

### 5.1 Extinguishing media

#### 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.

### 5.2 Special hazards arising from the substance or mixture

Lead oxides

Not combustible.

Ambient fire may liberate hazardous vapours.

### **5.3 Advice for firefighters**

Stay in danger area only with self-contained breathing apparatus. Prevent skin contact by keeping a safe distance or by wearing suitable protective clothing.

### **5.4 Further information**

Suppress (knock down) gases/vapors/mists with a water spray jet. Prevent fire extinguishing water from contaminating surface water or the ground water system.

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## **SECTION 6: Accidental release measures**

### **6.1 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.  
For personal protection see section 8.

### **6.2 Environmental precautions**

Do not let product enter drains.

### **6.3 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.

### **6.4 Reference to other sections**

For disposal see section 13.

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## **SECTION 7: Handling and storage**

### **7.1 Precautions for safe handling**

#### **Advice on safe handling**

Work under hood. Do not inhale substance/mixture.

#### **Hygiene measures**

Immediately change contaminated clothing. Apply preventive skin protection. Wash hands and face after working with substance.  
For precautions see section 2.2.

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

#### **Storage conditions**

Tightly closed. Dry. Keep in a well-ventilated place. Keep locked up or in an area accessible only to qualified or authorized persons.

#### **Storage class**

Storage class (TRGS 510): 6.1D: Non-combustible, acute toxic Cat.3 / toxic hazardous materials or hazardous materials causing chronic effects

### **7.3 Specific end use(s)**

Apart from the uses mentioned in section 1.2 no other specific uses are stipulated

## SECTION 8: Exposure controls/personal protection

### 8.1 Control parameters

#### Ingredients with workplace control parameters

| Component      | CAS-No.   | Value                                                        | Control parameters     | Basis                                                                                   |
|----------------|-----------|--------------------------------------------------------------|------------------------|-----------------------------------------------------------------------------------------|
| lead(II) oxide | 1317-36-8 | TWA                                                          | 0.05 mg/m <sup>3</sup> | USA. ACGIH Threshold Limit Values (TLV)                                                 |
|                | Remarks   | Confirmed animal carcinogen with unknown relevance to humans |                        |                                                                                         |
|                |           | PEL                                                          | 0.05 mg/m <sup>3</sup> | OSHA Specifically Regulated Chemicals/Carcinogens                                       |
|                |           | OSHA specifically regulated carcinogen                       |                        |                                                                                         |
|                |           | TWA                                                          | 0.05 mg/m <sup>3</sup> | USA. NIOSH Recommended Exposure Limits                                                  |
|                |           | PEL                                                          | 0.05 mg/m <sup>3</sup> | California permissible exposure limits for chemical contaminants (Title 8, Article 107) |

#### Biological occupational exposure limits

| Component      | CAS-No.   | Parameters   | Value    | Biological specimen | Basis                                     |
|----------------|-----------|--------------|----------|---------------------|-------------------------------------------|
| lead(II) oxide | 1317-36-8 | Lead         | 200 µg/l | In blood            | ACGIH - Biological Exposure Indices (BEI) |
|                | Remarks   | Not critical |          |                     |                                           |

### 8.2 Exposure controls

#### Appropriate engineering controls

Immediately change contaminated clothing. Apply preventive skin protection. Wash hands and face after working with substance.

#### Personal protective equipment

##### Eye/face protection

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

##### Skin protection

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 EN374 please contact the supplier of CE-approved gloves (e.g. KCL GmbH, D-36124 Eichenzell, Internet: [www.kcl.de](http://www.kcl.de)).

Full contact

Material: Nitrile rubber

Minimum layer thickness: 0.11 mm

Break through time: 480 min

Material tested: KCL 741 Dermatrill® L

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 EN374 please

contact the supplier of CE-approved gloves (e.g. KCL GmbH, D-36124 Eichenzell, Internet: [www.kcl.de](http://www.kcl.de)).

Splash contact

Material: Nitrile rubber

Minimum layer thickness: 0.11 mm

Break through time: 480 min

Material tested: KCL 741 Dermatril® L

### **Body Protection**

protective clothing

### **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.

### **Control of environmental exposure**

Do not let product enter drains.

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## **SECTION 9: Physical and chemical properties**

### **9.1 Information on basic physical and chemical properties**

- |                                                 |                                                                                     |
|-------------------------------------------------|-------------------------------------------------------------------------------------|
| a) Appearance                                   | Form: powder<br>Color: yellowlight yellow                                           |
| b) Odor                                         | odorless                                                                            |
| c) Odor Threshold                               | Not applicable                                                                      |
| d) pH                                           | 8 - 9 at 100 g/l at 20 °C (68 °F) - (slurry)                                        |
| e) Melting point/freezing point                 | Melting point/range: 886 °C (1627 °F) - lit.                                        |
| f) Initial boiling point and boiling range      | > 600 °C > 1112 °F at ca.1,013 hPa - OECD Test Guideline 103<br>1,470 °C (2,678 °F) |
| g) Flash point                                  | ( )Not applicable                                                                   |
| h) Evaporation rate                             | No data available                                                                   |
| i) Flammability (solid, gas)                    | The product is not flammable.                                                       |
| j) Upper/lower flammability or explosive limits | No data available                                                                   |
| k) Vapor pressure                               | No data available                                                                   |
| l) Vapor density                                | No data available                                                                   |
| m) Density                                      | 9.530 g/cm <sup>3</sup> at 20 °C (68 °F)                                            |
| Relative density                                | 9.9622.5 °C - OECD Test Guideline 109                                               |
| n) Water solubility                             | 0.0702 g/l at 20 °C (68 °F) - OECD Test Guideline 105 - slightly soluble            |
| o) Partition coefficient: n-octanol/water       | Not applicable for inorganic substances                                             |

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- |                              |                   |
|------------------------------|-------------------|
| p) Autoignition temperature  | No data available |
| q) Decomposition temperature | No data available |
| r) Viscosity                 | No data available |
| s) Explosive properties      | No data available |
| t) Oxidizing properties      | none              |

## 9.2 Other safety information

No data available

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## SECTION 10: Stability and reactivity

### 10.1 Reactivity

No data available

### 10.2 Chemical stability

The product is chemically stable under standard ambient conditions (room temperature) .

### 10.3 Possibility of hazardous reactions

Risk of explosion with:

Aluminum

Powdered metals

performic acid

perchloric acid

glycerol

Violent reactions possible with:

carbides

Sulfur oxides

hydrogen peroxide

halogens

alkenes

Risk of ignition or formation of inflammable gases or vapours with:

Boron

Alkali metals

hydrides

silanes

vegetable/animal oils

Fluorine

### 10.4 Conditions to avoid

no information available

### 10.5 Incompatible materials

No data available

### 10.6 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

Acute toxicity estimate Oral - 1,100.1 mg/kg

(Expert judgment)

Oral: No data available

Acute toxicity estimate Inhalation - 1.6 mg/l - dust/mist

(Expert judgment)

Inhalation: No data available

LD50 Dermal - Rat - male and female - > 2,000 mg/kg

(OECD Test Guideline 402)

#### Skin corrosion/irritation

Skin - Rabbit

Result: No skin irritation - 4 h

(OECD Test Guideline 404)

#### Serious eye damage/eye irritation

Eyes - Rabbit

Result: No eye irritation - 72 h

(OECD Test Guideline 405)

#### Respiratory or skin sensitization

Maximization Test - Guinea pig

Result: negative

(OECD Test Guideline 406)

#### Germ cell mutagenicity

Test Type: Micronucleus test

Species: Rat

Cell type: Red blood cells (erythrocytes)

Application Route: Oral

Result: positive

Remarks: (ECHA)

Test Type: comet assay

Species: Mouse

Cell type: Liver cells

Application Route: Inhalation

Result: negative

Remarks: (ECHA)

#### Carcinogenicity

Suspected of causing cancer.

IARC: 2A - Group 2A: Probably carcinogenic to humans (lead(II) oxide)

NTP: No ingredient 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**

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

**Specific target organ toxicity - single exposure**

No data available

**Specific target organ toxicity - repeated exposure**

Causes damage to organs through prolonged or repeated exposure. - Central nervous system, Kidney, Blood

**Aspiration hazard**

No data available

**11.2 Additional Information**

RTECS: OG1750000

Lead salts have been reported to cross the placenta and to induce embryo- and fetomortality. They also have teratogenic effect in some animal species. No teratogenic effects have been reported with exposure to organometallic lead compounds. Adverse effects of lead on human reproduction, embryonic and fetal development, and postnatal (e.g., mental) development have been reported. Excessive exposure can affect blood, nervous, and digestive systems. The synthesis of hemoglobin is inhibited and results in anemia. If left untreated, neuromuscular dysfunction, possible paralysis, and encephalopathy can result. Additional symptoms of overexposure include: joint and muscle pain, weakness of the extensor muscles (frequently the hand and wrist), headache, dizziness, abdominal pain, diarrhea, constipation, nausea, vomiting, blue line on the gums, insomnia, and metallic taste. High body levels produce increased cerebrospinal pressure, brain damage, and stupor leading to coma and often death., Anorexia., Vomiting, Convulsions, Nausea, Headache, Weakness, anemia

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

Stomach - Irregularities - Based on Human Evidence

Stomach - Irregularities - Based on Human Evidence

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**SECTION 12: Ecological information****12.1 Toxicity**

|                                                     |                                                                                                        |
|-----------------------------------------------------|--------------------------------------------------------------------------------------------------------|
| Toxicity to fish                                    | static test LC50 - <i>Oncorhynchus mykiss</i> (rainbow trout) - 0.1 mg/l - 96 h<br>Remarks: (ECHA)     |
| Toxicity to daphnia and other aquatic invertebrates | EC50 - <i>Daphnia magna</i> (Water flea) - 0.13 mg/l - 48 h<br>Remarks: (ECOTOX Database)              |
| Toxicity to algae                                   | static test EC10 - <i>Skeletonema costatum</i> (marine diatom) - 0.0294 mg/l - 96 h<br>Remarks: (ECHA) |

## 12.2 Persistence and degradability

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

Biodegradability                      Result: - According to the results of tests of biodegradability this product is not readily biodegradable.

## 12.3 Bioaccumulative potential

No data available

## 12.4 Mobility in soil

No data available

## 12.5 Results of PBT and vPvB assessment

PBT/vPvB assessment not available as chemical safety assessment not required/not conducted

## 12.6 Endocrine disrupting properties

No data available

## 12.7 Other adverse effects

Discharge into the environment must be avoided.

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## SECTION 13: Disposal considerations

### 13.1 Waste treatment methods

#### Product

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. See [www.retrologistik.com](http://www.retrologistik.com) for processes regarding the return of chemicals and containers, or contact us there if you have further questions.

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## SECTION 14: Transport information

### DOT (US)

UN number: 2291    Class: 6.1                      Packing group: III  
Proper shipping name: Lead compounds, soluble, n.o.s. (lead(II) oxide)  
Reportable Quantity (RQ):  
Poison Inhalation Hazard: No

### IMDG

UN number: 2291    Class: 6.1                      Packing group: III                      EMS-No: F-A, S-A  
Proper shipping name: LEAD COMPOUND, SOLUBLE, N.O.S. (lead(II) oxide)  
Marine pollutant : yes

### IATA

UN number: 2291    Class: 6.1                      Packing group: III  
Proper shipping name: Lead compound, soluble, n.o.s. (lead(II) oxide)

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## SECTION 15: Regulatory information

### SARA 302 Components

This material does not contain any components with a section 302 EHS TPQ.

### **SARA 313 Components**

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

|                | CAS-No.   | Revision Date |
|----------------|-----------|---------------|
| lead(II) oxide | 1317-36-8 | 2007-03-01    |

### **SARA 311/312 Hazards**

Acute Health Hazard, Chronic Health Hazard

### **Massachusetts Right To Know Components**

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

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## **SECTION 16: Other information**

### **Further information**

The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. 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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