

# SAFETY DATA SHEET

according to the OSHA  
Hazard Communication Standard

Version 7.2  
Revision Date 07/13/2026  
Print Date 07/14/2026

## SECTION 1. IDENTIFICATION

### 1.1 Product identifiers

Product name : Copper(II) oxide

Product Number : 544868  
Brand : Aldrich  
Index-No. : 029-016-00-6  
CAS-No. : 1317-38-0

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

Identified uses : Laboratory chemicals, Synthesis of substances

Restrictions on use : Not Available

### 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

Short-term (acute) : Category 1  
aquatic hazard

Long-term (chronic) : Category 1

aquatic hazard

### Other hazards

None known.

### GHS label elements

Hazard pictograms

:



Signal word

: Warning

Hazard statements

: H410 Very toxic to aquatic life with long lasting effects.

Precautionary statements

: **Prevention:**

P273 Avoid release to the environment.

**Response:**

P391 Collect spillage.

**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.

: 1317-38-0

### Components

| Chemical name    | CAS No./Unique ID | Concentration (% w/w) | Trade secret |
|------------------|-------------------|-----------------------|--------------|
| copper(II) oxide | 1317-38-0*        | >= 80 - <= 100        | TSC          |

\* Indicates that the identifier is a CAS No.

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

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## SECTION 4. FIRST AID MEASURES

If inhaled

: After inhalation: fresh air.

In case of skin contact

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

In case of eye contact

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

Remove contact lenses.

|                                                             |                                                                                                                                        |
|-------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|
| If swallowed                                                | : After swallowing: make victim drink water (two glasses at most). Consult doctor if feeling unwell.                                   |
| Most important symptoms and effects, both acute and delayed | : The most important known symptoms and effects are described in the labelling (see section 2 GHS label elements) 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          | : 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                  | : Copper 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 | : In the event of fire, wear self-contained breathing apparatus.                                |

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## SECTION 6. ACCIDENTAL RELEASE MEASURES

|                                                |                                                                     |
|------------------------------------------------|---------------------------------------------------------------------|
| Personal precautions, protective equipment and | : Advice for non-emergency personnel:<br>Avoid inhalation of dusts. |
|------------------------------------------------|---------------------------------------------------------------------|

emergency procedures                      Evacuate the danger area, observe emergency procedures, consult an expert.  
Advice for emergency responders:  
Wear appropriate personal protective equipment, as indicated in 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 dry. Dispose of properly. Clean up affected area. Avoid generation of dusts.

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## SECTION 7. HANDLING AND STORAGE

For precautions see section 2 GHS label elements

Further information on storage conditions                      : Tightly closed.  
Dry.

Storage class                      : 13, Non Combustible Solids

Recommended storage temperature                      : Recommended storage temperature see product label.

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## SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

### Ingredients with workplace control parameters

| Components       | CAS-No.   | Value type<br>(Form of exposure) | Control parameters /<br>Permissible concentration | Basis     |
|------------------|-----------|----------------------------------|---------------------------------------------------|-----------|
| copper(II) oxide | 1317-38-0 | TWA<br>(Fumes)                   | 0.1 mg/m <sup>3</sup><br>(Copper)                 | 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 P1

The entrepreneur has to ensure that maintenance, cleaning and testing of respiratory protective devices are carried out according to the instructions of the producer. These measures have to be properly documented.

Hand protection

Material : Nitrile rubber  
Break through time : 480 min  
Glove thickness : 0.11 mm  
Protective index : Full contact  
Manufacturer : KCL 741 Dermatril® L

Material : Nitrile rubber  
Break through time : 480 min  
Glove thickness : 0.11 mm  
Protective index : Splash contact  
Manufacturer : KCL 741 Dermatril® L

Remarks : This recommendation applies only to the product stated in the safety data sheet, supplied by us and for the designated use. When dissolving in or mixing with other substances and under conditions deviating from those stated in EN 16523-1 please contact the supplier of CE-approved gloves (e.g. KCL GmbH, D-36124 Eichenzell, Internet: [www.kcl.de](http://www.kcl.de)).

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

Hygiene measures : Change contaminated clothing. Wash hands after working with substance.

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## SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance : powder

Colour : black

|                                                     |                                                                                                                 |
|-----------------------------------------------------|-----------------------------------------------------------------------------------------------------------------|
| Odour                                               | : odourless                                                                                                     |
| Odour Threshold                                     | : Not applicable                                                                                                |
| pH                                                  | : No data available                                                                                             |
| Melting point/ range                                | : 2,437 °F / 1,336 °C                                                                                           |
| Boiling point/boiling range                         | : No data available                                                                                             |
| Flash point                                         | : Not applicable                                                                                                |
| Evaporation rate                                    | : No data available                                                                                             |
| Flammability (solid, gas)                           | : The product is not flammable.                                                                                 |
| Flammability (liquids)                              | : 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                                                                                             |
| Vapour pressure                                     | : No data available                                                                                             |
| Relative vapour density                             | : No data available                                                                                             |
| Relative density                                    | : No data available                                                                                             |
| Density                                             | : 6.32 g/cm <sup>3</sup>                                                                                        |
| Solubility(ies)<br>Water solubility                 | : 0.0001 g/l insoluble (68 °F / 20 °C)<br>pH: 9<br>Method: Regulation (EC) No. 440/2008, Annex, A.6<br>GLP: yes |
| Partition coefficient: n-<br>octanol/water          | : Not applicable for inorganic substances                                                                       |
| Autoignition temperature                            | : Not applicable                                                                                                |
| 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       | : GLP: yes<br>none             |
| Molecular weight           | : 79.55 g/mol                  |
| Particle characteristics   |                                |
| Particle size              | : < 50 nm                      |
| Particle Size Distribution | : No data available            |
| Specific surface area      | : 29 m <sup>2</sup> /g         |

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## SECTION 10. STABILITY AND REACTIVITY

|                                    |                                                                                                                                                                                                                                                                                                                                    |
|------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Reactivity                         | : No data available                                                                                                                                                                                                                                                                                                                |
| Chemical stability                 | : The product is chemically stable under standard ambient conditions (room temperature) .<br><br>The product is chemically stable under standard ambient conditions (room temperature) .                                                                                                                                           |
| Possibility of hazardous reactions | : Risk of explosion with:<br>Aluminium<br>Violent reactions possible with:<br>Boron<br>hydrazine and derivatives<br>hydroxylamine<br>sodium<br>magnesium<br>Risk of ignition or formation of inflammable gases or vapours with:<br>hydrogen sulphide<br>Fluorine<br>silane<br>hydrides<br>Potassium<br>Acid anhydrides<br>Hydrogen |
| Conditions to avoid                | : no information available                                                                                                                                                                                                                                                                                                         |
| Incompatible materials             | : No data available                                                                                                                                                                                                                                                                                                                |

## SECTION 11. TOXICOLOGICAL INFORMATION

### 11.1 Information on toxicological effects

#### Acute toxicity

LD50 Oral - Rat - male - > 2,500 mg/kg  
(OECD Test Guideline 423)

Symptoms: Possible damages: Vomiting, Pain, Diarrhoea

Symptoms: Irritation symptoms in the respiratory tract.

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

Maximisation Test - Guinea pig

Result: negative

(OECD Test Guideline 406)

#### Germ cell mutagenicity

Test Type: Ames test

Test system: Salmonella typhimurium

Metabolic activation: with and without metabolic activation

Method: OECD Test Guideline 471

Result: negative

Remarks: The value is given in analogy to the following substances: Copper(II) sulphate

Test Type: unscheduled DNA synthesis assay

Species: Rat

Cell type: Liver cells

Application Route: Oral

Method: OECD Test Guideline 486

Result: negative

Remarks: The value is given in analogy to the following substances: Copper(II) sulphate

Test Type: Micronucleus test

Species: Mouse

Cell type: Red blood cells (erythrocytes)

Application Route: Oral

Method: Directive 67/548/EEC, Annex V, B.12.

Result: negative

Remarks: The value is given in analogy to the following substances: Copper(II) sulphate

#### Carcinogenicity

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

Aldrich - 544868

identified as probable, possible or confirmed human carcinogen by IARC.

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

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

**Reproductive toxicity**

No data available

**Specific target organ toxicity - single exposure**

No data available

**Specific target organ toxicity - repeated exposure**

No data available

**Aspiration hazard**

No data available

**11.2 Additional Information**

RTECS: GL7900000

Symptoms of systemic copper poisoning may include: capillary damage, headache, cold sweat, weak pulse, and kidney and liver damage, central nervous system excitation followed by depression, jaundice, convulsions, paralysis, and coma. Death may occur from shock or renal failure. Chronic copper poisoning is typified by hepatic cirrhosis, brain damage and demyelination, kidney defects, and copper deposition in the cornea as exemplified by humans with Wilson's disease. It has also been reported that copper poisoning has lead to hemolytic anemia and accelerates arteriosclerosis. To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

After uptake:

Systemic effects:

CNS disorders

Other dangerous properties can not be excluded.

Handle in accordance with good industrial hygiene and safety practice.

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**SECTION 12. ECOLOGICAL INFORMATION**

**Ecotoxicity**

**Components:**

**copper(II) oxide:**

**Ecotoxicology Assessment**

Acute aquatic toxicity : Very toxic to aquatic life.

Chronic aquatic toxicity : Very toxic to aquatic life with long lasting effects.

### **Persistence and degradability**

#### **Components:**

##### **copper(II) oxide:**

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

### **Bioaccumulative potential**

#### **Components:**

##### **copper(II) oxide:**

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

### **Mobility in soil**

No data available

### **Other adverse effects**

#### **Product:**

Ozone-Depletion Potential : Regulation: 40 CFR Protection of Environment; Part 82 Protection of Stratospheric Ozone - CAA Section 602 Class I Substances  
Remarks: This product neither contains, nor was manufactured with a Class I or Class II ODS as defined by the U.S. Clean Air Act Section 602 (40 CFR 82, Subpt. A, App.A + B).

#### **Components:**

##### **copper(II) oxide:**

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

### **Endocrine disrupting properties**

No data available

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## **SECTION 13. DISPOSAL CONSIDERATIONS**

### **Disposal methods**

Waste from residues : Waste material must be disposed of in accordance with the national and local regulations. Leave chemicals in original containers. No mixing with other waste. Handle uncleaned containers like the product itself.

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## SECTION 14. TRANSPORT INFORMATION

### International Regulations

#### IATA-DGR

UN/ID No. : UN 3077  
Proper shipping name : Environmentally hazardous substance, solid, n.o.s.  
(copper(II) oxide)  
Class : 9  
Packing group : III  
Labels : Class 9 - Miscellaneous dangerous substances and  
articles  
Packing instruction (cargo : 956  
aircraft)  
Packing instruction : 956  
(passenger aircraft)

#### IMDG-Code

UN number : UN 3077  
Proper shipping name : ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID,  
N.O.S.  
(copper(II) oxide)  
Class : 9  
Packing group : III  
Labels : 9  
EmS Code : F-A, S-F  
Marine pollutant : yes

### Transport in bulk according to IMO instruments

Not applicable for product as supplied.

### National Regulations

#### 49 CFR

Not regulated as a dangerous good  
Poison Inhalation Hazard : No

### Special precautions for user

Remarks : EHS-Mark required (ADR 2.2.9.1.10, IMDG code  
2.10.3) for single packagings and combination  
packagings containing inner packagings with  
Dangerous Goods > 5L for liquids or > 5kg for solids.  
Packages smaller than or equal to 5 kg / L , not  
dangerous goods of Class 9

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** : No SARA Hazards

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

|                  |           |                  |
|------------------|-----------|------------------|
| copper(II) oxide | 1317-38-0 | >= 90 - <= 100 % |
|------------------|-----------|------------------|

### Clean Air Act

This product neither contains, nor was manufactured with a Class I or Class II ODS as defined by the U.S. Clean Air Act Section 602 (40 CFR 82, Subpt. A, App.A + B).

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 contains the following toxic pollutants listed under the U.S. Clean Water Act Section 307

|                  |           |                  |
|------------------|-----------|------------------|
| copper(II) oxide | 1317-38-0 | >= 90 - <= 100 % |
|------------------|-----------|------------------|

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

### US State Regulations

#### Massachusetts Right To Know

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

#### Pennsylvania Right To Know

|                  |           |
|------------------|-----------|
| copper(II) oxide | 1317-38-0 |
|------------------|-----------|

#### Maine Chemicals of High Concern

Product does not contain any listed chemicals

#### Vermont Chemicals of High Concern

Product does not contain any listed chemicals

## Washington Chemicals of High Concern

Product does not contain any listed chemicals

### The components of this product are reported in the following inventories:

US TSCA : All substances listed as active on the TSCA inventory

### TSCA list

No substances are subject to a Significant New Use Rule.

No substances are subject to TSCA 12(b) export notification requirements.

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## SECTION 16. OTHER INFORMATION

### Relevant changes since previous version

9. Physical and chemical properties

### Full text of other abbreviations

NIOSH REL : USA. NIOSH Recommended Exposure Limits  
NIOSH REL / TWA : Time-weighted average concentration for up to a 10-hour workday during a 40-hour workweek

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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