

## SECTION 1: Identification of the substance/mixture and of the company/undertaking

### 1.1 Product identifier

Trade name **Copper(II) oxide, nanopowder**

Stock number: 44663  
CAS Number: 1317-38-0  
EC number: 215-269-1

1.2 Relevant identified uses of the substance or mixture and uses advised against.  
Identified use: SU24 Scientific research and development

### 1.3 Details of the supplier of the safety data sheet

Manufacturer/Supplier: Alfa Aesar GmbH & Co.KG  
A Johnson Matthey Company  
Zeppelinstr. 7b  
76185 Karlsruhe / Germany  
Tel: +49 (0) 721 84007 280  
Fax: +49 (0) 721 84007 300  
Email: tech@alfa.com  
www.alfa.com  
Product safety Tel + +049 (0) 7275 988687-0  
Carechem 24: +44 (0) 1235 239 670 (Multi-language emergency number)  
Poison Information Center Mainz  
www.giftinfo.uni-mainz.de Telephone: +49(0)6131/19240


Informing department:

1.4 Emergency telephone number:

## SECTION 2: Hazards identification

### 2.1 Classification of the substance or mixture

Classification according to Regulation (EC) No 1272/2008


 GHS09 environment

Aquatic Acute 1 H400 Very toxic to aquatic life.  
Aquatic Chronic 1 H410 Very toxic to aquatic life with long lasting effects.


 GHS07

Acute Tox. 4 H302 Harmful if swallowed.

Classification according to Directive 67/548/EEC or Directive 1999/45/EC

 Xn; Harmful

R22: Harmful if swallowed.

 N; Dangerous for the environment

R50/53: Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

Information concerning particular hazards

Not applicable

Other hazards that do not result in classification

No information known.

### 2.2 Label elements

Labelling according to Regulation (EC) No 1272/2008

Hazard pictograms

The substance is classified and labelled according to the CLP regulation.

GHS07 GHS09

Signal word

Warning

Hazard statements

H302 Harmful if swallowed.  
H410 Very toxic to aquatic life with long lasting effects.  
P273 Avoid release to the environment.  
P264 Wash thoroughly after handling.  
P270 Do not eat, drink or smoke when using this product.  
P330 Rinse mouth.  
P391 Collect spillage.  
P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

Precautionary statements

### 2.3 Other hazards

Results of PBT and vPvB assessment

PBT: Not applicable.

vPvB: Not applicable.

## SECTION 3: Composition/information on ingredients

### 3.1 Substances

CAS# Designation: 1317-38-0 Copper(II) oxide

Identification number(s): 215-269-1

EC number:

## SECTION 4: First aid measures

### 4.1 Description of first aid measures

After inhalation

Supply fresh air. If required, provide artificial respiration. Keep patient warm. Consult doctor if symptoms persist.

After skin contact

Seek immediate medical advice.  
Instantly wash with water and soap and rinse thoroughly.

After eye contact

Seek immediate medical advice.

After swallowing

Rinse opened eye for several minutes under running water. Then consult doctor.  
Seek medical treatment.

4.2 Most important symptoms and effects, both acute and delayed

No further relevant information available.

4.3 Indication of any immediate medical attention and special treatment needed

No further relevant information available.

## SECTION 5: Firefighting measures

### 5.1 Extinguishing media

Suitable extinguishing agents

Product is not flammable. Use fire fighting measures that suit the surrounding fire.

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

If this product is involved in a fire, the following can be released:  
Metal oxide

**5.3 Advice for firefighters  
Protective equipment:**

Wear self-contained breathing apparatus.  
Wear full protective suit.

**SECTION 6: Accidental release measures**

**6.1 Personal precautions, protective equipment and emergency procedures**

Wear protective equipment. Keep unprotected persons away.  
Ensure adequate ventilation

**6.2 Environmental precautions:**

Do not allow product to reach sewage system or water bodies.  
Do not allow to enter the ground/soil.

**6.3 Methods and material for containment and cleaning up:**

Dispose of contaminated material as waste according to item 13.  
No special measures required.

**Prevention of secondary hazards:**

See Section 7 for information on safe handling

**6.4 Reference to other sections**

See section 8 for information on personal protection equipment.  
See Section 13 for information on disposal.

**SECTION 7: Handling and storage**

**7.1 Precautions for safe handling**

Keep containers tightly sealed.  
Store in cool, dry place in tightly closed containers.  
Ensure good ventilation/exhaustion at the workplace.

**Information about protection against explosions and fires:**

The product is not flammable

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

**Storage  
Requirements to be met by storerooms and containers:  
Information about storage in one common storage facility:**

No special requirements.

Store away from aluminum, aluminum alloys  
Store away from metal powders.  
Store away from magnesium/magnesium alloys  
Store away from alkali metals.

**Further information about storage conditions:**

Keep container tightly sealed.  
Store in cool, dry conditions in well sealed containers.

**7.3 Specific end use(s)**

No further relevant information available.

**SECTION 8: Exposure controls/personal protection**

**Additional information about design of technical systems:**

Properly operating chemical fume hood designed for hazardous chemicals and having an average face velocity of at least 100 feet per minute.

**8.1 Control parameters**

**Components with critical values that require monitoring at the workplace:**

**1317-38-0 Copper(II) oxide (100,0%)**

MAK (Germany) | Long-term value: 0,01 A mg/m<sup>3</sup>  
als Cu

**Additional information:**

No data

**8.2 Exposure controls**

**Personal protective equipment  
General protective and hygienic measures**

The usual precautionary measures should be adhered to in handling the chemicals.  
Keep away from foodstuffs, beverages and food.  
Instantly remove any soiled and impregnated garments.  
Wash hands during breaks and at the end of the work.  
Maintain an ergonomically appropriate working environment.  
Use breathing protection with high concentrations.

**Breathing equipment:**

**Recommended filter device for short term use:**

Use a respirator with type N95 (USA) or PE (EN 143) cartridges as a backup to engineering controls. Risk assessment should be performed to determine if air-purifying respirators are appropriate. Only use equipment tested and approved under appropriate government standards.

**Protection of hands:**

Check protective gloves prior to each use for their proper condition.  
The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer.

**Material of gloves**

Nitrile rubber, NBR

**Penetration time of glove material**

Not determined

**Eye protection:**

Safety glasses

**Body protection:**

Protective work clothing.

**SECTION 9: Physical and chemical properties**

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

**General Information**

**Appearance:**

**Form:** Various forms (powder/flake/crystalline/beads, etc.)  
**Colour:** Black  
**Smell:** Odourless  
**Odour threshold:** Not determined.

**pH-value:**

Not applicable.

**Change in condition**

**Melting point/Melting range:** 1326 °C  
**Boiling point/Boiling range:** Not determined  
**Sublimation temperature / start:** Not determined  
**Inflammability (solid, gaseous)** Not determined.  
**Ignition temperature:** Not determined  
**Decomposition temperature:** Not determined  
**Self-inflammability:** Not determined.

**Danger of explosion:**

Not determined.

**Critical values for explosion:**

**Lower:** Not determined

**Upper:** Not determined

**Steam pressure:**

Not applicable.

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Density at 20 °C	6,3-6,49 g/cm <sup>3</sup>
Relative density	Not determined.
Vapour density	Not applicable.
Evaporation rate	Not applicable.
Solubility in / Miscibility with Water:	Insoluble
Partition coefficient (n-octanol/water):	Not determined.
Viscosity:	
dynamic:	Not applicable.
kinematic:	Not applicable.
9.2 Other information	No further relevant information available.

**SECTION 10: Stability and reactivity**

10.1 Reactivity	No information known.
10.2 Chemical stability	Stable under recommended storage conditions.
Thermal decomposition / conditions to be avoided:	No decomposition if used and stored according to specifications.
10.3 Possibility of hazardous reactions	No dangerous reactions known
10.5 Incompatible materials:	Aluminum and aluminum alloys. Metal powders Magnesium/magnesium alloys Alkali metals Metal oxide
10.6 Hazardous decomposition products:	Metal oxide

**SECTION 11: Toxicological information**

11.1 Information on toxicological effects	
Acute toxicity:	Harmful if swallowed. The Registry of Toxic Effects of Chemical Substances (RTECS) contains acute toxicity data for this substance.

**LD/LC50 values that are relevant for classification:**

Oral LD50 470 mg/kg (rat)

Skin irritation or corrosion:	May cause irritation
Eye irritation or corrosion:	May cause irritation
Sensitization:	No sensitizing effect known.
Germ cell mutagenicity:	The Registry of Toxic Effects of Chemical Substances (RTECS) contains mutation data for this substance.
Carcinogenicity:	EPA-D: Not classifiable as to human carcinogenicity: inadequate human and animal evidence of carcinogenicity or no data are available.
Reproductive toxicity:	No effects known.
Specific target organ system toxicity - repeated exposure:	No effects known.
Specific target organ system toxicity - single exposure:	No effects known.
Aspiration hazard:	No effects known.
Subacute to chronic toxicity:	The Registry of Toxic Effects of Chemical Substances (RTECS) contains multiple dose toxicity data for this substance.
Additional toxicological information:	To the best of our knowledge the acute and chronic toxicity of this substance is not fully known. This product contains nanoparticles. Elements or compounds in the form of nanoparticles or nanotubes can exhibit different properties from larger particles of the same element or compound. Many nanoparticles are small enough to cross cell membranes including the blood-brain barrier. Nanoparticles may have greater toxicity than larger particles. Ensure that nanoparticles are not ingested, inhaled or come in contact with the skin.

**SECTION 12: Ecological information**

12.1 Toxicity	
Aquatic toxicity:	No further relevant information available.
12.2 Persistence and degradability	No further relevant information available.
12.3 Bioaccumulative potential	No further relevant information available.
12.4 Mobility in soil	No further relevant information available.
Ecotoxicological effects:	
Remark:	Very toxic for fish
Additional ecological information:	
General notes:	Water hazard class 1 (Assessment by list): slightly hazardous for water. Do not allow undiluted product or large quantities of it to reach ground water, water bodies or sewage system. Also poisonous for fish and plankton in water bodies. May cause long lasting harmful effects to aquatic life. Avoid transfer into the environment. Very toxic for aquatic organisms
12.5 Results of PBT and vPvB assessment	
PBT:	Not applicable.
vPvB:	Not applicable.
12.6 Other adverse effects	No further relevant information available.

**SECTION 13: Disposal considerations**

13.1 Waste treatment methods	
Recommendation	Hand over to disposers of hazardous waste. Must be specially treated under adherence to official regulations. Consult state, local or national regulations for proper disposal.
Uncleaned packagings:	
Recommendation:	Disposal must be made according to official regulations.

**SECTION 14: Transport information**

UN-Number	
ADR, IMDG, IATA	UN3077
14.2 UN proper shipping name	
ADR	3077 ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Copper(II) oxide)
IMDG, IATA	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Copper(II) oxide)

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**14.3 Transport hazard class(es)**

ADR



Class  
Label  
IMDG

9 (M7) Miscellaneous dangerous substances and articles.  
9



Class  
Label  
IATA

9 Miscellaneous dangerous substances and articles.  
9



Class  
Label

9 Miscellaneous dangerous substances and articles.  
9

Packing group  
ADR, IMDG, IATA

III

14.5 Environmental hazards:  
Special marking (ADR):  
Special marking (IATA):

Symbol (fish and tree)  
Symbol (fish and tree)

14.6 Special precautions for user  
Kemler Number:  
EMS Number:

Warning: Miscellaneous dangerous substances and articles.  
90  
F-A,S-F

14.7 Transport in bulk according to Annex II of MARPOL73/78 and the IBC  
Code

Not applicable.

Transport/Additional information:

ADR  
Excepted quantities (EQ):  
Limited quantities (LQ)  
Transport category  
Tunnel restriction code

E1  
5 kg  
3  
E

UN "Model Regulation":

UN3077, ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S.  
(Copper(II) oxide), 9, III

**SECTION 15: Regulatory information**

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

Australian Inventory of Chemical  
Substances

Substance is listed.

Standard for the Uniform Scheduling of Medicines and Poisons

1317-38-0 | Copper(II) oxide

S5, S6

National regulations

Information about limitation of use:

Employment restrictions concerning young persons must be observed.  
For use only by technically qualified individuals.

Classification according to VbF:  
Technical instructions (air):

Not applicable

Class	Share in %
III	100,0

Water hazard class:

Water hazard class 1 (Assessment by list): slightly hazardous for water.

Other regulations, limitations and prohibitive  
regulations  
ELINCS (European List of Notified Chemical  
Substances)

Substance is not listed.

Substance of Very High Concern (SVHC)  
according to the REACH Regulations (EC)  
No. 1907/2006.

Substance is not listed.  
Substance is listed.

REACH - Pre-registered substances  
15.2 Chemical safety assessment:

A Chemical Safety Assessment has not been carried out.

**SECTION 16: Other information**

Employers should use this information only as a supplement to other information gathered by them, and should make independent judgement of suitability of this information to ensure proper use and protect the health and safety of employees. This information is furnished without warranty, and any use of the product not in conformance with this Material Safety Data Sheet, or in combination with any other product or process, is the responsibility of the user.

Department issuing SDS:  
Abbreviations and acronyms:

Health, Safety and Environmental Department.  
ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)  
IMDG: International Maritime Code for Dangerous Goods  
IATA: International Air Transport Association  
GHS: Globally Harmonized System of Classification and Labelling of Chemicals  
EINECS: European Inventory of Existing Commercial Chemical Substances  
CAS: Chemical Abstracts Service (division of the American Chemical Society)  
VbF: Verordnung über brennbare Flüssigkeiten, Österreich (Ordinance on the storage of combustible liquids, Austria)  
LC50: Lethal concentration, 50 percent  
LD50: Lethal dose, 50 percent  
vPvB: very Persistent and very Bioaccumulative  
ACGIH: American Conference of Governmental Industrial Hygienists (USA)  
OSHA: Occupational Safety and Health Administration (USA)  
NTP: National Toxicology Program (USA)  
IARC: International Agency for Research on Cancer  
EPA: Environmental Protection Agency (USA)  
Acute Tox. 4: Acute toxicity, Hazard Category 4  
Aquatic Acute 1: Hazardous to the aquatic environment - Acute Hazard, Category 1  
Aquatic Chronic 1: Hazardous to the aquatic environment - Chronic Hazard, Category 1