Safety Data Sheet Copper (I) Oxide

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SECTION 1: Identification

GHS Product identifier

Product name	Copper (I) Oxide
Brand	ChemSupply

Other Names and Product Codes

Name	Product Code
Copper (I) Oxide (LR)	CL081
Copper (I) Oxide (TG)	CT081
Cuprous oxide	
Copper hemioxide	
Copper oxide red	
Copper suboxide	
Copper protoxide	

Recommended use of the chemical and restrictions on use

Laboratory and Analytical Reagent

Supplier's details

Name	ChemSupply Australia Pty Ltd
Address	38-50 Bedford Street 5013 Gillman South Australia Australia
Telephone	08 8440 2000
email	www.chemsupply.com

Emergency phone number

CHEMCALL 1800 127 406 (Australia) / +64-4-917-9888 (International)

SECTION 2: Hazard identification

General hazard statement

Classified as dangerous goods according to the Australian Dangerous Goods Code (ADG).

Classified as Hazardous according to the Globally Harmonised System of classification and labelling of Chemicals (GHS) including Work, Health and Safety regulations, Australia.

Classification of the substance or mixture

GHS classification in accordance with: UN GHS revision 7

- Serious eye damage/eye irritation, Cat. 1
- Acute toxicity, oral, Cat. 4
- Acute toxicity, inhalation, Cat. 4
- Hazardous to the aquatic environment, short-term (acute), Cat. 1
- Hazardous to the aquatic environment, long-term (chronic), Cat. 1

GHS label elements, including precautionary statements

Pictograms

Signal word	**Danger**

Hazard statement(s)

H302	Harmful if swallowed
H318	Causes serious eye damage
H332	Harmful if inhaled
H400	Very toxic to aquatic life
H410	Very toxic to aquatic life with long lasting effects

Precautionary statement(s)

P261	Avoid breathing dust/fume/gas/mist/vapors/spray.
P264	Wash hands 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	IF SWALLOWED: Call a POISON CENTER/doctor/physician if you feel unwell,
P304+P340	IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P305+P351+P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P310	Immediately call a POISON CENTER/doctor/physician
P330	Rinse mouth.
P391	Collect spillage.
P501	Dispose of contents/container to approved waste disposal facility

SECTION 3: Composition/information on ingredients

Substances

Formula: Cu2O; Molecular weight: 143.09

Hazardous components

Component	Concentration
Copper (I) oxide, powder (CAS no.: 1317-39-1; EC no.: 215-270-7; Index no.: 029-002-00-X)	**100 % (weight)**

SECTION 4: First-aid measures

Description of necessary first-aid measures

General advice	For advice, contact a Poisons Information Centre (e.g. phone Australia 13 11 26; New Zealand 0800 764 766) or a doctor (at once).

If inhaled	If inhaled, remove from contaminated area. Apply artificial respiration if not breathing.
In case of skin contact	If skin or hair contact occurs, remove contaminated clothing and flush skin and hair with running water.
In case of eye contact	If in eyes, hold eyelids apart and flush eye continuously with running water. Continue flushing until advised to stop by a Poisons Information Centre (e.g. phone Australia 13 11 26; New Zealand 0800 764 766) or a doctor, or for at least 15 minutes.
If swallowed	If swallowed, do NOT induce vomiting. Seek immediate medical advice

Most important symptoms/effects, acute and delayed
The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11

Indication of immediate medical attention and special treatment needed, if necessary
For advice in an emergency, contact a Poisons Information Centre (Phone Australia 131 126) or a doctor at once.

SECTION 5: Fire-fighting measures

Suitable extinguishing media
Use fire extinguishing media appropriate for surrounding environment. Use water spray, dry chemical, carbon dioxide, or appropriate foam.

Specific hazards arising from the chemical
Material does not burn. Runoff may pollute waterways. Fire or heat may produce irritating, poisonous and/or corrosive fumes. Containers may explode when heated.

Special protective actions for fire-fighters
Fire fighters should wear full protective clothing and self-contained breathing apparatus (SCBA) operated in positive pressure mode. Fight fire from safe location.

SECTION 6: Accidental release measures

Personal precautions, protective equipment and emergency procedures
Avoid breathing vapours, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas. For personal protection see section 8.

Environmental precautions
Prevent further leakage or spillage if safe to do so. Do not let product enter drains.

Methods and materials for containment and cleaning up
Contain the spill. Place inert absorbent material onto spillage. Collect the material and place into a suitable labelled container. Do not dilute material but contain. Dispose of waste according to the applicable local and national regulations.

SECTION 7: Handling and storage

Precautions for safe handling
Avoid ingestion and inhalation of dust. Avoid contact with eyes, skin, and clothing. Avoid prolonged or repeated exposure. Avoid generating dust. Keep containers closed when not in use. Use with adequate ventilation. In case of insufficient ventilation, wear suitable respiratory equipment. If ingested, seek medical advice immediately and show the container or the label. Wear suitable protective clothing. Under no circumstances eat, drink or smoke while handling this material. Wash thoroughly after handling. Wash hands before eating. Remove contaminated clothing and wash before reuse. Chemicals should be used only by those trained in handling potentially hazardous materials. Have emergency equipment (for fires, spills, leaks, etc.) readily available. Containers of this material may be

hazardous when empty since they retain product residues (dust, solids); observe all warnings and precautions listed for the product.

Conditions for safe storage, including any incompatibilities
Keep container tightly closed in a dry and well-ventilated place.
Corrodes aluminium

SECTION 8: Exposure controls/personal protection

Control parameters

1. Copper, dusts and mists (as Cu) (CAS: 7440-50-8)
TWA (Inhalation): 1 mg/m3; Australia (AU/SWA)

Appropriate engineering controls
Use ventilation adequate to keep exposures (airborne levels of dust, fume, vapor, gas, etc.) below recommended exposure limits.

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

Eye/face protection
The use of a face shield, chemical goggles or safety glasses with side shield protection as appropriate. Must comply with Australian Standards AS 1337 and be selected and used in accordance with AS 1336.

Skin protection
Clean impervious clothing should be worn. Clothing for protection against chemicals should comply with AS 3765 Clothing for Protection Against Hazardous Chemicals.

Body protection
Suitable protective workwear, e.g. cotton overalls buttoned at neck and wrist is recommended. Chemical resistant apron is recommended where large quantities are handled.

Respiratory protection
If engineering controls are not effective in controlling airborne exposure then an approved respirator with a replaceable vapor/ mist filter should be used. Refer to relevant regulations for further information concerning respiratory protective requirements. Reference should be made to Australian Standards AS/ NZS 1715, Selection, Use and Maintenance of Respiratory Protective Devices; and AS/NZS 1716, Respiratory Protective Devices, in order to make any necessary changes for individual circumstances.

Environmental exposure controls
Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.

SECTION 9: Physical and chemical properties

Basic physical and chemical properties

Physical state	Solid
Appearance	Powder
Color	Red
Odor	Odorless
Odor threshold	n/a
Melting point/freezing point	1230°C
Boiling point or initial boiling point and boiling range	Decomposes 1800°C
Flammability	Not combustible
Lower and upper explosion limit/flammability limit	n/a
Flash point	n/a

Explosive properties	No data available.
Auto-ignition temperature	No data available.
Decomposition temperature	No data available.
Oxidizing properties	No data available.
pH	8 for 10% w/v solution (suspension)
Kinematic viscosity	No data available.
Solubility	Insoluble
Partition coefficient n-octanol/water (log value)	No data available.
Vapor pressure	No data available.
Evaporation rate	No data available.
Density and/or relative density	6 g/cm3
Relative vapor density	No data available.

Particle characteristics
No data available.

Supplemental information regarding physical hazard classes
No data available.

Further safety characteristics (supplemental)
No data available.

SECTION 10: Stability and reactivity

Reactivity
Stable under normal conditions of storage and handling.

Chemical stability
Stable in dry air. Sensitive to air, sensitive to moisture. Gradually oxidises in moist air to cupric oxide (CuO).

Possibility of hazardous reactions
Reaction with peroxyformic acid can cause violent decomposition and possible explosion.
Reaction with aluminium is violent when heated.
Promotes the decomposition of hydrazine.
Reaction with acetylene + caustic solution can form explosive acetylides.
Heated interaction to produce metallic copper is violent.
Liable to oxidation to cupric oxide and to conversion to a carbonate on exposure to moist air.

Conditions to avoid
Avoid storing in direct sunlight and avoid extremes of temperature. Exposure to moist air.

Incompatible materials
Oxidizing agents, peroxyformic acid, aluminium, hydrazine, acetylene + caustic solution. Aluminium

Hazardous decomposition products
rritating and toxic fumes and gases; copper fumes which may cause metal fume fever; copper monoxide (CuO) (spontaneous combustion (oxidation): if exposed to moist air at temperatures above 100 °C); oxygen (decomposition: at 1800 °C).

SECTION 11: Toxicological information

Information on toxicological effects

Acute toxicity
Toxic if swallowed. If ingested in large amounts, gastrointestinal irritation may occur with severe nausea and vomiting, salivation, abdominal pain, epigastric burning, gastric pain, diarrhea, haemolysis, gastrointestinal bleeding with haemorrhagic gastritis, haematemesis and melena, anaemia, hypotension, jaundice, seizures, coma, shock and death. Hepatic and renal failure may develop several days after acute ingestion. Methemoglobinemia may

rarely occur. Copper may produce a metallic or sweet taste. Symptoms of exposure may include hepatic cirrhosis, brain damage and demyelination, kidney defects and copper deposition in the cornea (in humans with Wilson's disease), haemolytic anaemia and accelerated arteriosclerosis.

LD50 (rat): 470 mg/kg.

Skin corrosion/irritation
Causes skin irritation, which will result in redness, itchiness, pain, dry skin, eczema, allergic contact dermatitis, possible hypersensitivity and a greenish discolouration of the hair, teeth and skin from exposure to copper fume.

LD50 (rat): > 2,000 mg/kg.

Serious eye damage/irritation
Causes eye irritation, which will result in redness, pain, lachrymation and may cause conjunctivitis, ulceration or clouding of the cornea and possible corneal injury.

Respiratory or skin sensitization
May be harmful if inhaled. Causes irritation to respiratory tract, symptoms may include headaches, nausea, coughing, sore throat, shortness of breath and breathing difficulties. May result in ulceration and perforation of respiratory tract. When heated, this compound may give off copper fume, which can cause symptoms similar to the common cold, including headache, cough, sweating, nausea, fever, chills and stuffiness of the head and may cause symtoms of metallic taste. The symptoms of metal fume fever do not become manifest until 4-12 hours after exposure.

Not a skin or respiratory sensitiser

LC50 (rat): 5 mg/L/ 4 h.

Germ cell mutagenicity
Not considered to be a mutagenic hazard.

Carcinogenicity
Not considered to be a carcinogenic hazard.

Reproductive toxicity
Not considered to be toxic to reproduction.

Specific target organ toxicity (STOT) - single exposure
Not expected to cause toxicity to a specific target organ.

Specific target organ toxicity (STOT) - repeated exposure
Not expected to cause toxicity to a specific target organ.

Aspiration hazard
Not expected to be an aspiration hazard.

Additional information
Prolonged or repeated skin contact may cause dermatitis. Prolonged or repeated exposure to dusts may cause discolouration of the skin or hair, blood and liver damage, ulceration and perforation of the nasal septum, runny nose, metallic taste and atrophic changes and irritation of the mucous membranes. Individuals with Wilson's disease are unable to metabolize copper. Thus, copper accumulates in various tissues and may result in liver, kidney and brain damage. Symptoms of exposure may include hepatic cirrhosis, brain damage and demyelination, kidney defects and copper deposition in the cornea (in humans with Wilson's disease), haemolytic anaemia and accelerated arteriosclerosis. May cause reproductive and foetal effects.

SECTION 12: Ecological information

Toxicity

Very toxic for fish. Very toxic for aquatic organisms. Danger to drinking water if even extremely small quantities leak into the ground. Also poisonous for fish and plankton in water bodies.
The following applies to copper compounds: biological effects: toxic for aquatic organisms; copper ions toxic for fish, algae, protozoa, and bacteria at concentrations below 1 mg/l.

Freshwater Fish

LC50 >0.17mg/l - 96.0h Cyprinodon variegatus (sheepshead minnow)

Water Flea

EC50: = 0.51 mg/L, 48h (Daphnia magna)

Freshwater Algae

EC50: 0.055 - 0.076 mg/L, 96h static (Pseudokirchneriella subcapitata)

Persistence and degradability
Product contains heavy metals. Insoluble in water, may persist

Bioaccumulative potential
Product has a high potential to bioconcentrate; May have some potential to bioaccumulate

Mobility in soil
Spillage unlikely to penetrate soil Is not likely mobile in the environment due its low water solubility.

Endocrine disrupting properties
This product does not contain any known or suspected endocrine disruptors

SECTION 13: Disposal considerations

Disposal methods

Product disposal
Waste material must be disposed of in accordance with the national and local regulations. Leave chemicals in original containers.

Other disposal recommendations
Do not discharge this material into waterways, drains and sewers.

SECTION 14: Transport information

ADG (Road and Rail)
UN Number: 3077
Class: 9
Packing Group: III
Proper Shipping Name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (COPPER (I) OXIDE)
Marine pollutant: Yes
IERG No: 47

Hazchem emergency action code (EAC)
2X

IMDG
UN Number: 3077
Class: 9
Packing Group: III
EMS Number: F-A, S-F

Proper Shipping Name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (COPPER (I) OXIDE)
Special Provisions: 274, 335, 966, 967, 969
Marine Pollutant: Yes

IATA
UN Number: 3077
Class: 9
Packing Group: III
Proper Shipping Name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (COPPER (I) OXIDE)
Pax/Cargo Pkg Inst: 956
Max Net Qty/Pkg: 400kg
Cargo Aircraft Only Pkg Inst: 956
Max Net Qty/Pkg: 400kg
Special Provisions: A97, A158, A179, A197, A215

SECTION 15: Regulatory information

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

Standard for the Uniform Scheduling of Medicines and Poisons (SUSMP)
S6

Australian Inventory of Industrial Chemicals
Listed

HSNO Approval Number:
HSR002596 Laboratory Chemicals and Reagent Kits Group Standard 2020

SECTION 16: Other information

Further information/disclaimer
ChemSupply Australia Pty Ltd does not warrant that this product is suitable for any use or purpose. The user must ascertain the suitability of the product before use or application intended purpose. Preliminary testing of the product before use or application is recommended. Any reliance or purported reliance upon ChemSupply Australia Pty Ltd with respect to any skill or judgement or advice in relation to the suitability of this product of any purpose is disclaimed. Except to the extent prohibited at law, any condition implied by any statute as to the merchantable quality of this product or fitness for any purpose is hereby excluded. This product is not sold by description. Where the provisions of Part V, Division 2 of the Trade Practices Act apply, the liability of ChemSupply Australia Pty Ltd is limited to the replacement of supply of equivalent goods or payment of the cost of replacing the goods or acquiring equivalent goods.

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Standard for the Uniform Scheduling of Medicines and Poisons, Commonwealth of Australia
National Road Transport Commission, 'Australian Code for the Transport of Dangerous Goods by Road and Rail 7th. Ed.'
Safe Work Australia, 'National Code of Practice fot the Preparation of Safety Data Sheets for Hazardous Chemicals', July 2020.
Safe Work Australia, 'National Guide for Classifying Hazardous Chemicals', July 2020.
Safe Work Australia, Workplace Exposure Standards for Airbourne Contaminants, December 2019

Safe Work Australia, Hazardous Chemical Information System (HCIS), hcis.safeworkaustralia.gov.au
IATA, Dangerous Goods Regulations (DGR)
IMO, International Maritime Dangerous Goods Code (IMDG)