



# SAFETY DATA SHEET CUPRIC OXIDE REVISION 4, DATE 01 MAR 23

## 1. IDENTIFICATION

<b>Product Name</b>	<b>Cupric Oxide</b>
<b>Other Names</b>	Black Copper Oxide; Copper(II) oxide
<b>Uses</b>	Colourant in ceramic, anti-fouling paints; reagent; catalyst; solvent; electroplating; metallurgical and welding fluxes.
<b>Chemical Family</b>	No Data Available
<b>Chemical Formula</b>	CuO
<b>Chemical Name</b>	Copper oxide
<b>Product Description</b>	No Data Available

### Contact Details of the Supplier of this Safety Data Sheet

Organisation	Location	Telephone
Redox Ltd	2 Swettenham Road Minto NSW 2566 Australia	+61-2-97333000
Redox Ltd	11 Mayo Road Wiri Auckland 2104 New Zealand	+64-9-2506222
Redox Inc.	3960 Paramount Boulevard Suite 107 Lakewood CA 90712 USA	+1-424-675-3200
Redox Chemicals Sdn Bhd	Level 2, No. 8, Jalan Sapir 33/7 Seksyen 33, Shah Alam Premier Industrial Park 40400 Shah Alam Sengalor, Malaysia	+60-3-5614-2111

### Emergency Contact Details

*For emergencies only; DO NOT contact these companies for general product advice.*

Organisation	Location	Telephone
Poisons Information Centre	Westmead NSW	1800-251525 131126
Chemcall	Australia	1800-127406 +64-4-9179888
Chemcall	Malaysia	+64-4-9179888
Chemcall	New Zealand	0800-243622 +64-4-9179888
National Poisons Centre	New Zealand	0800-764766
CHEMTREC	USA & Canada	1-800-424-9300 CN723420 +1-703-527-3887

## 2. HAZARD IDENTIFICATION

### Poisons Schedule (Aust)

Schedule 6



## Globally Harmonised System

**Hazard Classification** Hazardous according to the criteria of the Globally Harmonised System of Classification and Labelling of Chemicals (GHS)

**Hazard Categories** Acute Toxicity (Oral) - Category 4  
 Serious Eye Damage/Irritation - Category 2B  
 Specific Target Organ Toxicity (Repeated Exposure) - Category 2  
 Acute Hazard To The Aquatic Environment - Category 1  
 Long-term Hazard To The Aquatic Environment - Category 1

**Pictograms**

**Signal Word** Warning

<b>Hazard Statements</b>		<b>H302</b>	Harmful if swallowed.
		<b>H320</b>	Causes eye irritation.
		<b>H373</b>	May cause damage to organs through prolonged or repeated exposure.
		<b>H410</b>	Very toxic to aquatic life with long lasting effects.
		<b>NZ9.3</b>	Hazardous to terrestrial vertebrates
<b>Precautionary Statements</b>	Prevention	<b>P273</b>	Avoid release to the environment.
		<b>P264</b>	Wash exposed skin thoroughly after handling.
		<b>P270</b>	Do not eat, drink or smoke when using this product.
		<b>P260</b>	Do not breathe dusts or mists.
		<b>P280</b>	Wear eye protection/face protection.
	Response	<b>P391</b>	Collect spillage.
		<b>P301 + P312</b>	IF SWALLOWED: Call a POISON CENTER or doctor if you feel unwell.
		<b>P330</b>	Rinse mouth.
		<b>P337 + P313</b>	If eye irritation persists: Get medical advice.
		<b>P314</b>	Get medical advice if you feel unwell.
	Disposal	<b>P305 + P351 + P338</b>	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
		<b>P501</b>	Dispose of contents/container in accordance with local / regional / national / international regulations.

**National Transport Commission (Australia)**

Australian Code for the Transport of Dangerous Goods by Road & Rail (ADG Code)

**Dangerous Goods Classification** NOT Dangerous Goods according to the criteria of the Australian Code for the Transport of Dangerous Goods by Road & Rail (ADG Code)

**Safe Work Australia**

National Guide for Classifying Hazardous Chemicals under the Model WHS Regulations

**Hazard Classification** Hazardous according to the criteria of Safe Work Australia under Model WHS Regulations

**3. COMPOSITION/INFORMATION ON INGREDIENTS***Ingredients*

Chemical Entity	Formula	CAS Number	Proportion
Copper(II) oxide	CuO	1317-38-0	<=100 %

**4. FIRST AID MEASURES***Description of necessary measures according to routes of exposure*

<b>Swallowed</b>	IF SWALLOWED: Rinse mouth. Do not induce vomiting unless directed to do so by medical personnel. Call a Poison Centre or doctor/physician if you feel unwell.
<b>Eye</b>	IF IN EYES: Immediately flush eyes with running water for several minutes, holding eyelids open and occasionally lifting the upper and lower lids. Remove contact lenses if present and easy to do. Continue rinsing for at least 15 minutes. If eye irritation persists, get medical advice/attention.
<b>Skin</b>	IF ON SKIN: Wash with plenty of soap and water. Take off contaminated clothing and wash it before reuse. If skin irritation occurs, get medical advice/attention.
<b>Inhaled</b>	IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. If respiratory symptoms persist, get medical advice/attention. Give artificial respiration if victim is not breathing. Administer oxygen if breathing is difficult.
<b>Advice to Doctor</b>	Get medical advice/attention if you feel unwell. Ensure that medical personnel are aware of the material(s) involved and take precautions to protect themselves. *Most important symptoms and effects, both acute and delayed: Harmful if swallowed. Causes eye irritation. May cause damage to organs through prolonged or repeated exposure.
<b>Medical Conditions Aggravated by Exposure</b>	Persons with pre-existing skin disorders, impaired liver, kidney or pulmonary function, glucose 6-phosphate-dehydrogenase deficiency, or pre-existing Wilson's disease may be more susceptible to the effects of this material.

**5. FIRE FIGHTING MEASURES**

<b>General Measures</b>	If safe to do so, move undamaged containers from fire area. Cool containers with water spray until well after fire is out. Dike fire-control water for later disposal.
<b>Flammability Conditions</b>	Non-combustible.
<b>Extinguishing Media</b>	If material is involved in a fire, use dry chemical, Carbon dioxide (CO <sub>2</sub> ), foam or water spray for extinction. Do not scatter spilled material with high-pressure water streams. *Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.
<b>Fire and Explosion Hazard</b>	Ambient fire may liberate hazardous vapours. Large masses exposed to moist air at over 100°C can result in spontaneous combustion.
<b>Hazardous Products of Combustion</b>	Fire may produce irritating and/or toxic gases, including Copper oxides.
<b>Special Fire Fighting Instructions</b>	Contain runoff from fire control water - Runoff may cause pollution.
<b>Personal Protective Equipment</b>	Wear positive pressure self-contained breathing apparatus (SCBA). Structural firefighters' protective clothing will only provide limited protection.
<b>Flash Point</b>	No Data Available
<b>Lower Explosion Limit</b>	No Data Available
<b>Upper Explosion Limit</b>	No Data Available
<b>Auto Ignition Temperature</b>	No Data Available
<b>Hazchem Code</b>	No Data Available

**6. ACCIDENTAL RELEASE MEASURES**

<b>General Response Procedure</b>	Ensure adequate ventilation. Remove all ignition sources. Do not touch or walk through spilled material. Clean up all spills immediately! Avoid generating dust. Do not breathe dusts or mists and avoid contact with eyes, skin and clothing.
<b>Clean Up Procedures</b>	Recover product wherever possible. With clean shovel, place material into clean, dry container and cover loosely; move containers from spill area.
<b>Containment</b>	Stop leak if you can do it without risk. Prevent dust cloud. Prevent entry into waterways, sewers, basements or confined areas.
<b>Decontamination</b>	Wash area down with large amounts of water and prevent runoff into drains.
<b>Environmental Precautionary Measures</b>	Spillages and decontamination runoff should be prevented from entering drains and watercourses.
<b>Evacuation Criteria</b>	Spill or leak area should be isolated immediately. Keep unauthorised personnel away.
<b>Personal Precautionary Measures</b>	Use personal protective equipment as required (see SECTION 8).

**7. HANDLING AND STORAGE**

<b>Handling</b>	Safety showers and eyewash facilities should be provided within the immediate work area for emergency use. Ensure adequate ventilation - Use only outdoors or in a well-ventilated area. Handle in accordance with good industrial hygiene and safety practice. Avoid generating dust. Do not breathe dusts or mists and avoid contact with eyes, skin and clothing. Do not ingest. Use personal protective equipment as required (see SECTION 8).
<b>Storage</b>	Store in a cool, dry and well-ventilated place, protected from direct sunlight. Keep container tightly closed. Protect against physical damage. Avoid exposure to moisture and air. Keep away from heat and sources of ignition - No smoking. Keep away from incompatible materials (see SECTION 10). Store locked up.
<b>Container</b>	Keep in the original container. *Containers of this material may be hazardous when empty since they retain product residues; Observe all warnings and precautions listed for the product.

**8. EXPOSURE CONTROLS / PERSONAL PROTECTION**

<b>General</b>	No specific exposure standard is available for this product. For Copper, dusts & mists (as Cu): - Safe Work Australia Exposure Standard: TWA = 1 mg/m3. DECOMPOSITION PRODUCT: Copper (fume): - Safe Work Australia Exposure Standard: TWA = 0.2 mg/m3.
<b>Exposure Limits</b>	No Data Available
<b>Biological Limits</b>	No information available.
<b>Engineering Measures</b>	A system of local and/or general exhaust is recommended to keep employee exposures as low as possible. Local exhaust ventilation is generally preferred because it can control the emissions of the contaminant at its source, preventing dispersion of it into the general work area.
<b>Personal Protection Equipment</b>	- Respiratory protection: In case of inadequate ventilation, wear respiratory protection. Recommended: Dust mask/particulate respirator. For emergencies or instances where the exposure levels are not known, use a full-facepiece positive pressure, air-supplied respirator. - Eye/face protection: Wear appropriate eye protection to avoid eye contact. Recommended: Use chemical safety goggles and/or full face shield where dusting or splashing of solutions is possible. Use equipment for eye protection tested and approved under appropriate government standards. - Hand protection: Handle with gloves. Recommended: Impervious gloves, e.g. Nitrile rubber. - Skin/body protection: Wear appropriate personal protective clothing to avoid skin contact. Recommended: Clean, body covering clothing.
<b>Special Hazards Precautions</b>	No information available.
<b>Work Hygienic Practices</b>	Do not eat, drink or smoke when using this product. Wash thoroughly after handling. Take off contaminated clothing and other protective equipment and wash before storage or reuse.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

<b>Physical State</b>	Solid
<b>Appearance</b>	Powder, granules or crystals
<b>Odour</b>	Odourless
<b>Colour</b>	Black or brownish-black
<b>pH</b>	No Data Available
<b>Vapour Pressure</b>	No Data Available
<b>Relative Vapour Density</b>	No Data Available
<b>Boiling Point</b>	No Data Available
<b>Melting Point</b>	1,026 - 1,336 °C
<b>Freezing Point</b>	No Data Available
<b>Solubility</b>	Insoluble in water
<b>Specific Gravity</b>	6.32
<b>Flash Point</b>	No Data Available
<b>Auto Ignition Temp</b>	No Data Available
<b>Evaporation Rate</b>	No Data Available
<b>Bulk Density</b>	No Data Available
<b>Corrosion Rate</b>	No Data Available
<b>Decomposition Temperature</b>	No Data Available
<b>Density</b>	6.32 g/cm3
<b>Specific Heat</b>	No Data Available
<b>Molecular Weight</b>	No Data Available
<b>Net Propellant Weight</b>	No Data Available
<b>Octanol Water Coefficient</b>	No Data Available
<b>Particle Size</b>	No Data Available
<b>Partition Coefficient</b>	No Data Available
<b>Saturated Vapour Concentration</b>	No Data Available
<b>Vapour Temperature</b>	No Data Available
<b>Viscosity</b>	No Data Available
<b>Volatile Percent</b>	No Data Available
<b>VOC Volume</b>	No Data Available
<b>Additional Characteristics</b>	Hygroscopic.
<b>Potential for Dust Explosion</b>	No information available.
<b>Fast or Intensely Burning Characteristics</b>	No information available.
<b>Flame Propagation or Burning Rate of Solid Materials</b>	No information available.
<b>Non-Flammables That Could Contribute Unusual Hazards to a Fire</b>	No information available.
<b>Properties That May Initiate or Contribute to Fire Intensity</b>	Non-combustible; Material does not burn. *Large masses exposed to moist air at over 100°C can result in spontaneous combustion.
<b>Reactions That Release Gases or Vapours</b>	Toxic metal fumes, including Copper oxides, may form when heated to decomposition.
<b>Release of Invisible Flammable Vapours and Gases</b>	No information available.

**10. STABILITY AND REACTIVITY**

<b>General Information</b>	No information available.
<b>Chemical Stability</b>	Stable under ordinary conditions of use and storage.
<b>Conditions to Avoid</b>	Avoid generating dust.
<b>Materials to Avoid</b>	Risk of explosion with Aluminium. Violent reactions possible with Boron, hydrazine and derivatives, hydroxylamine, sodium, magnesium. Risk of ignition or formation of inflammable gases or vapours with hydrogen sulphide, Fluorine, silane, hydrides, Potassium, Acid anhydrides, Hydrogen.
<b>Hazardous Decomposition Products</b>	Toxic metal fumes, including Copper oxides, may form when heated to decomposition.
<b>Hazardous Polymerisation</b>	Will not occur.

**11. TOXICOLOGICAL INFORMATION**

<b>General Information</b>	<p>Toxicological information:</p> <ul style="list-style-type: none"> <li>- Acute toxicity: Harmful if swallowed.</li> <li>- Skin corrosion/irritation: Causes mild skin irritation.</li> <li>- Serious eye damage/irritation: Causes eye irritation.</li> <li>- Respiratory/skin sensitisation: Not sensitising [OECD 406; ECHA].</li> <li>- Germ cell mutagenicity: Copper and copper compounds are not considered genotoxic [ECHA].</li> <li>- Carcinogenicity: Copper compounds have no carcinogenic potential [ECHA].</li> <li>- Reproductive toxicity: Copper has no reproductive or developmental toxicity potential [ECHA].</li> <li>- STOT (single exposure): May cause respiratory tract irritation.</li> <li>- STOT (repeated exposure): May cause damage to organs through prolonged or repeated exposure (affects the liver and kidneys). 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.</li> <li>- Aspiration toxicity: No information available.</li> </ul> <p>Information on likely routes of exposure:</p> <ul style="list-style-type: none"> <li>- Ingestion: Systemic copper poisoning may result from ingestion of this compound. Symptoms may include capillary damage, headache, cold sweat, weak pulse, kidney and liver damage, central nervous excitation followed by depression, jaundice, convulsions, blood effects, paralysis and coma. Death may occur from shock or renal failure.</li> <li>- Eye contact: Causes irritation with redness, pain.</li> <li>- Skin contact: Causes irritation, redness, pain.</li> <li>- Inhalation: Causes irritation to respiratory tract. Symptoms may include coughing, sore throat and shortness of breath. 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 chills and stuffiness of the head.</li> </ul> <p>Chronic effects: Prolonged or repeated exposure to dusts of copper salts may cause discoloration of the skin or hair, blood and liver damage, ulceration and perforation of the nasal septum, runny nose, metallic taste, atrophic changes and irritation of the mucous membranes.</p>
<b>Carcinogen Category</b>	None

**12. ECOLOGICAL INFORMATION**

<b>Ecotoxicity</b>	<p>Hazardous to the aquatic environment (acute) – category 1 (M = 100).</p> <p>Hazardous to the aquatic environment (chronic) – category 1 (M = 10).</p>
<b>Persistence/Degradability</b>	Methods for the determination of biodegradability are not applicable to inorganic substances.
<b>Mobility</b>	No information available.
<b>Environmental Fate</b>	Very toxic to aquatic life with long lasting effects - Avoid release to the environment.

Bioaccumulation Potential	No information available.
Environmental Impact	No Data Available

### 13. DISPOSAL CONSIDERATIONS

General Information	Dispose of contents/container in accordance with local/regional/national regulations. Whatever cannot be saved for recovery or recycling should be managed in an appropriate and approved waste disposal facility.
Special Precautions for Land Fill	Processing, use or contamination of this product may change the waste management options.

### 14. TRANSPORT INFORMATION

#### Land Transport (Australia)

ADG Code

Proper Shipping Name	Cupric oxide
Class	No Data Available
Subsidiary Risk(s)	No Data Available
EPG	47 Low To Moderate Hazard Substances
UN Number	No Data Available
Hazchem	No Data Available
Pack Group	No Data Available
Special Provision	AU01
Comments	UN#3077

#### Land Transport (Malaysia)

ADR Code

Proper Shipping Name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID N.O.S. (Cupric oxide)
Class	9 Miscellaneous Dangerous Goods and Articles
Subsidiary Risk(s)	No Data Available
EPG	47 Low To Moderate Hazard Substances
UN Number	3077
Hazchem	2Z
Pack Group	III
Special Provision	No Data Available

#### Land Transport (New Zealand)

NZS5433

Proper Shipping Name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID N.O.S. (Cupric oxide)
Class	9 Miscellaneous Dangerous Goods and Articles
Subsidiary Risk(s)	No Data Available
EPG	47 Low To Moderate Hazard Substances
UN Number	3077
Hazchem	2Z
Pack Group	III

**Special Provision** No Data Available

**Land Transport (United States of America)**

US DOT

**Proper Shipping Name** ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID N.O.S. (Cupric oxide)  
**Class** 9 Miscellaneous Dangerous Goods and Articles  
**Subsidiary Risk(s)** No Data Available  
**ERG** 171 Substances (Low to Moderate Hazard)  
**UN Number** 3077  
**Hazchem** 2Z  
**Pack Group** III  
**Special Provision** No Data Available

**Sea Transport**

IMDG Code

**Proper Shipping Name** ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID N.O.S. (Cupric oxide)  
**Class** 9 Miscellaneous Dangerous Goods and Articles  
**Subsidiary Risk(s)** No Data Available  
**UN Number** 3077  
**Hazchem** 2Z  
**Pack Group** III  
**Special Provision** No Data Available  
**EMS** F-A, S-F  
**Marine Pollutant** Yes

**Air Transport**

IATA DGR

**Proper Shipping Name** ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID N.O.S. (Cupric oxide)  
**Class** 9 Miscellaneous Dangerous Goods and Articles  
**Subsidiary Risk(s)** No Data Available  
**UN Number** 3077  
**Hazchem** 2Z  
**Pack Group** III  
**Special Provision** No Data Available

**National Transport Commission (Australia)**

Australian Code for the Transport of Dangerous Goods by Road &amp; Rail (ADG Code)

**Dangerous Goods Classification** NOT Dangerous Goods according to the criteria of the Australian Code for the Transport of Dangerous Goods by Road & Rail (ADG Code)

**15. REGULATORY INFORMATION**

**General Information** COPPER OXIDES  
**Poisons Schedule (Aust)** Schedule 6



## Environmental Protection Authority (New Zealand)

Hazardous Substances and New Organisms Amendment Act 2015

Approval Code HSR002766

## National/Regional Inventories

Australia (AIC)	Listed
Canada (DSL)	Not Determined
Canada (NDSL)	Not Determined
China (IECSC)	Not Determined
Europe (EINECS)	215-269-1
Europe (REACH)	Not Determined
Japan (ENCS/METI)	Not Determined
Korea (KECI)	Not Determined
Malaysia (EHS Register)	Not Determined
New Zealand (NZIoC)	Listed
Philippines (PICCS)	Not Determined
Switzerland (Giftliste 1)	Not Determined
Switzerland (Inventory of Notified Substances)	Not Determined
Taiwan (NCSR)	Not Determined
USA (TSCA)	Not Determined

## 16. OTHER INFORMATION

**Related Product Codes** COPOXI8510, CUPOXI0500, CUPOXI0700, CUPOXI0800, CUPOXI1000, CUPOXI1001, CUPOXI1002, CUPOXI1003, CUPOXI1004, CUPOXI1005, CUPOXI1006, CUPOXI1007, CUPOXI1008, CUPOXI1009, CUPOXI1010, CUPOXI1022, CUPOXI1024, CUPOXI1026, CUPOXI1100, CUPOXI1500, CUPOXI2000, CUPOXI2001, CUPOXI2010, CUPOXI2011, CUPOXI2015, CUPOXI2500, CUPOXI3000, CUPOXI3500, CUPOXI3600, CUPOXI4000, CUPOXI4100, CUPOXI5000, CUPOXI5001, CUPOXI5002, CUPOXI6000, CUPOXI6001, CUPOXI8510

**Revision** 4

**Revision Date** 01 Mar 2023

**Key/Legend**

&lt; Less Than

&gt; Greater Than

**AICS** Australian Inventory of Chemical Substances**atm** Atmosphere**CAS** Chemical Abstracts Service (Registry Number)**cm<sup>2</sup>** Square Centimetres**CO<sub>2</sub>** Carbon Dioxide**COD** Chemical Oxygen Demand**deg C (°C)** Degrees Celcius**EPA (New Zealand)** Environmental Protection Authority of New Zealand

**deg F (°F)** Degrees Fahrenheit

**g** Grams

**g/cm<sup>3</sup>** Grams per Cubic Centimetre

**g/l** Grams per Litre

**HSNO** Hazardous Substance and New Organism

**IDLH** Immediately Dangerous to Life and Health

**immiscible** Liquids are insoluble in each other.

**inHg** Inch of Mercury

**inH<sub>2</sub>O** Inch of Water

**K** Kelvin

**kg** Kilogram

**kg/m<sup>3</sup>** Kilograms per Cubic Metre

**lb** Pound

**LC<sub>50</sub>** LC stands for lethal concentration. LC<sub>50</sub> is the concentration of a material in air which causes the death of 50% (one half) of a group of test animals. The material is inhaled over a set period of time, usually 1 or 4 hours.

**LD<sub>50</sub>** LD stands for Lethal Dose. LD<sub>50</sub> is the amount of a material, given all at once, which causes the death of 50% (one half) of a group of test animals.

**ltr or L** Litre

**m<sup>3</sup>** Cubic Metre

**mbar** Millibar

**mg** Milligram

**mg/24H** Milligrams per 24 Hours

**mg/kg** Milligrams per Kilogram

**mg/m<sup>3</sup>** Milligrams per Cubic Metre

**Misc** or **Miscible** Liquids form one homogeneous liquid phase regardless of the amount of either component present.

**mm** Millimetre

**mmH<sub>2</sub>O** Millimetres of Water

**mPa.s** Millipascals per Second

**N/A** Not Applicable

**NIOSH** National Institute for Occupational Safety and Health

**NOHSC** National Occupational Health and Safety Commission

**OECD** Organisation for Economic Co-operation and Development

**Oz** Ounce

**PEL** Permissible Exposure Limit

**Pa** Pascal

**ppb** Parts per Billion

**ppm** Parts per Million

**ppm/2h** Parts per Million per 2 Hours

**ppm/6h** Parts per Million per 6 Hours

**psi** Pounds per Square Inch

**R** Rankine

**RCP** Reciprocal Calculation Procedure

**STEL** Short Term Exposure Limit

**TLV** Threshold Limit Value

**tne** Tonne

**TWA** Time Weighted Average

**ug/24H** Micrograms per 24 Hours

**UN** United Nations

**wt** Weight