Safety Data Sheet COPPER METAL Powder

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SECTION 1: Identification

GHS Product identifier

Product name	COPPER METAL Powder

Other means of identification

Product	Product Code
COPPER METAL Powder	CL051

Recommended use of the chemical and restrictions on use

Electrical conductors, ammunition, manufacture of bronzes, brass and other copper alloys, electroplated protective coatings and undercoats for nickel, chromium and zinc, insecticides, catalyst, antifouling paints and laboratory 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.au

Emergency phone number

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

SECTION 2: Hazard identification

Classification of the substance or mixture

GHS classification in accordance with: UN GHS revision 7

- Hazardous to the aquatic environment, short-term (acute), Cat. 1
- Hazardous to the aquatic environment, long-term (chronic), Cat. 1
- Flammable solids, Cat. 1

GHS label elements, including precautionary statements

Pictograms

Signal word	**Danger**

Hazard statement(s)

H228	Flammable solid
H410	Very toxic to aquatic life with long lasting effects

Precautionary statement(s)

P210	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P240	Ground and bond container and receiving equipment.
P241	Use explosion-proof [electrical/ventilating/lighting/...] equipment.
P273	Avoid release to the environment.
P280	Wear protective gloves/protective clothing/eye protection/face protection.
P370+P378	In case of fire: Use agents recommended in Section 5 of SDS for extinction
P391	Collect spillage.
P501	Dispose of contents/container to an approved waste disposal facility

SECTION 3: Composition/information on ingredients

Mixtures

Molecular weight: 63.55

Components

Component	CAS no.	Concentration
Copper powder (EC no.: 231-159-6; Index no.: 029-024-00-X)	**7440-50-8**	**<= 100 % (weight)**
CLASSIFICATIONS: Hazardous to the aquatic environment, long-term (chronic), Cat. 2. HAZARDS: H411 - Toxic to aquatic life with long lasting effects.		

SECTION 4: First-aid measures

Description of necessary first-aid measures

General advice	First Aid Facilities: Maintain eyewash fountain in work area.
If inhaled	If inhaled, remove from contaminated area to fresh air immediately. Apply artificial respiration if not breathing. If breathing is difficult, give oxygen. Get medical aid if cough or other symptoms appear.
In case of skin contact	Wash affected areas with copious quantities of water. If irritation occurs seek medical advice.
In case of eye contact	Immediately irrigate with copious quantity of water for at least 15 minutes. Eyelids to be held open. Seek medical advice if effects persist.
If swallowed	Rinse mouth thoroughly with water immediately, repeat until all traces of product have been removed. DO NOT INDUCE VOMITING. Seek medical advice if effects persist.

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, contact the National Poisons Information Centre (Phone Australia 13 11 26; New Zealand 0800 764 766) or a doctor.

SECTION 5: Fire-fighting measures

Suitable extinguishing media
Do NOT use halogenated hydrocarbon extinguishers.
In case of fire: Use dry sand, dry chemical or alcohol-resistant foam for extinction.
If safe to do so, move undamaged containers from the fire area. Cool containers with flooding quantities of water until well after the fire is out.

Specific hazards arising from the chemical
Hazards from Combustion Products: Irritating, toxic and corrosive fumes and vapours including copper fumes and some metallic oxides.

May burn but not ignite readily. May be ignited by friction, heat, sparks or flame. Vapours or dust may form explosive mixtures with air. May burn fiercely. May re-ignite after fire is extinguished. Fire may produce irritating, poisonous and/or corrosive gases. Runoff may pollute waterways. Containers may explode when heating.

Special protective actions for fire-fighters
Wear SCBA and structural firefighter's uniform.

SECTION 6: Accidental release measures

Personal precautions, protective equipment and emergency procedures
Follow precautions for safe handling described in this safety data sheet. No smoking, sparks, flames or other sources of ignition near spillage. Provide adequate ventilation. Keep unnecessary and unprotected personnel away from the spillage. Treat the spilled material according to the instructions in the clean-up section.
Avoid contact with skin and eyes. Avoid ingestion and or inhalation of material.

Environmental precautions
Prevent from entering into drains, ditches or rivers.

Methods and materials for containment and cleaning up
Avoid breathing dust or vapours and contact with skin and eyes. Vacuum or sweep up material and place into a suitable container for disposal. Avoid creating dusty conditions. Provide ventilation.

SECTION 7: Handling and storage

Precautions for safe handling
Avoid generation or accumulation of dusts. Avoid prolonged or repeated contact with skin, eyes and clothing . Keep container tightly closed when not in use. Use in well ventilated areas away from all ignition sources. In case of insufficient ventilation, wear suitable respiratory equipment.

Conditions for safe storage, including any incompatibilities
Store away from sources of heat or ignition. Store in a cool,dry place. Isolate from incompatible substances.

Corrosiveness: More resistant to atmospheric corrosion than iron, forming a green layer of hydrated basic carbonate. Readily attacked by alkalies. Attacked by acetic acid and other organic acids.

SECTION 8: Exposure controls/personal protection

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.

Hand Protection: Ensure hand protection complies with AS 2161, Occupational protective gloves - Selection, use and maintenance.

Body protection
Footwear: Safety boots in industrial situations is advisory, foot protection should comply with AS 2210, Occupational protective footwear - Guide to selection, care and use.

Body Protection: Clean clothing or protective clothing should be worn, preferably with and apron. Clothing for protection against chemicals should comply with AS 3765 Clothing for Protection Against Hazardous Chemicals.

Respiratory protection
Where ventilation is not adequate, respiratory protection may be required. Avoid breathing dust, vapours or mists. Respiratory protection should comply with AS 1716 - Respiratory Protective Devices and be selected in accordance with AS 1715 - Selection, Use and Maintenance of Respiratory Protective Devices. Filter capacity and respirator type depends on exposure levels. In event of emergency or planned entry into unknown concentrations a positive pressure, full-facepiece SCBA should be used. If respiratory protection is required, institute a complete respiratory protection program including selection, fit testing, training, maintenance and inspection.

SECTION 9: Physical and chemical properties

Basic physical and chemical properties

Physical state	Solid
Appearance	Distinctive reddish coloured powder.
Color	No data available.
Odor	Odourless.
Odor threshold	No data available.
Melting point/freezing point	1083 °C
Boiling point or initial boiling point and boiling range	2580 - 2595 °C
Flammability	No data available.
Lower and upper explosion limit/flammability limit	No data available.
Flash point	No data available.
Explosive properties	No data available.
Auto-ignition temperature	No data available.
Decomposition temperature	No data available.
Oxidizing properties	No data available.
pH	No data available.
Kinematic viscosity	No data available.
Solubility	Solubility in Water: Insoluble. Solubility in Organic Solvents: Slowly soluble in ammonia water, slightly soluble in diluted acid.
Partition coefficient n-octanol/water (log value)	No data available.
Vapor pressure	1 mm Hg @ 1628 °C
Evaporation rate	No data available.
Density and/or relative density	Specific Gravity: 8.94
Relative vapor density	No data available.

Particle characteristics	No data available.

Supplemental information regarding physical hazard classes
No data available.

Further safety characteristics (supplemental)
[3U] Other Information: Excellent conductor of electricity. Dissolves readily in nitric and hot concentrated sulfuric acids, in hydrochloric and dilute sulfuric acids slowly, but only when exposed to the atmosphere.
Heat of fusion: 48.9 cal/g.
Heat of vapourisation: 300.3 kJ/mol.
Mohs' hardness: 3.0.
Resistivity: 1.673 microohms/cm.

SECTION 10: Stability and reactivity

Reactivity
Stable under normal conditions of storage and handling.

Risk of ignition. Dust may form explosive mixtures with air

Chemical stability
When exposed to air/moist over a long period of time, the copper becomes dull in colour and gradually becomes coated with green basic carbonate.

Possibility of hazardous reactions
Reacts violently with acetylene, ammonium nitrate, bromates, bromopropyne, chlorates, iodates, chlorine, chlorine trifluorine, (chloride + oxygen difluoride), ethylene oxide, fluorine, halogens and halogenated compounds, hydrogen peroxide, hydrazine mononitrate, hydrazoic acid, hydrogen sulfide, lead azide, nitrates, nitrides, peroxides, potassium peroxide, sodium azide and sodium peroxide.
Reaction with strong acids releases flammable hydrogen gas.
Copper ignites on contact with chlorine, fluorine (abouve 121°C), chlorine trifluoride, and hydrazinum nitrate (above 70°C).

Conditions to avoid
Prolonged exposure to air and moisture and incompatibles.

Incompatible materials
Acetylene, air, alkali oxides, ammonium nitrate, bromates, bromopropyne, chlorates, iodates, chlorine, chlorine trifluorine, (chloride + oxygen difluoride), ethylene oxide, fluorine, halogens and halogenated compounds, hydrogen peroxide, hydrogen sulfide, hydrazine mononitrate, hydrazoic acid, hydrogen sulfide, lead azide, nitrates, nitrides, oxidisers, peroxides, phosphorus, picrates, potassium peroxide, sodium azide, sodium peroxide, sulfur, sulfuric acid.

Hazardous decomposition products
Irritating, toxic and corrosive fumes and vapours including copper fumes and some metallic oxides.

SECTION 11: Toxicological information

Information on toxicological effects

Acute toxicity
Ingestion: Ingestion of sufficient concentrations may cause irritation and possible burning and pain of mucous membranes in the mouth, pharynx, oesophagus, and gastrointestinal tract. Poisoning could occur due to the material being soluble in hydrochloric acid, which the stomach contains. Symptoms include salvation, headache, nausea, abdominal/gastric pain, diziness, tiredness, metallictaste, convulsions, jaundice, shock, bloodly diarrhoea and vomiting (vomitus is characteristically greenish-blue) may occur. If vomiting does not occur immediately systemic copper poisoning may occur, such as capillary damage, headache, cold sweat, weak pulse, ulceration in the stomach and intestines, internal haemorrhage, nephritis, coma and possibly even death.

Inhalation: Inhalation of dust and fumes of metallic copper causes irritation to the mucous membranes of the upper respiratory tract (nose, throat, mouth). Early symptoms of copper poisoning include coughing, sore throat, wheezing, high temperatures, metallic taste, nausea, general weakness, muscle aches and exhaustion) - metal fume fever. May result in harmful corrosive effects including lesions, ulcerations and perforation of the nasal septum and respiratory tract, delayed pulmonary edema, pneumonitis and emphysema. Copper poisoning by inhalation lead to haemolysis of the red blood cells, hepatic necrosis, gastro intestinal bleeding, ozotemia, hemoglobinuria, coma and death.

Skin corrosion/irritation
May cause discolouration of the skin; greenish-black skin. May be harmful if absorbed through the skin. Causes skin irritation, possibly severe, resulting in redness, itching and pain. May cause skin sensitization, an allergic reaction, which becomes evident upon re-exposure to this material.

Serious eye damage/irritation
Copper (dust/mist) particles may cause eye irritation with symptoms including redness, itching, pain, stinging, blurred vision, discoloration and possible eye damage (permanent corneal opacifiaction, chemical conjunctivitis, ulceration) leading to irreversible eye injury.

Respiratory or skin sensitization
Not classified based on available information.

Germ cell mutagenicity
Not classified based on available information.

Carcinogenicity
Not classified based on available information.

Reproductive toxicity
Not classified based on available information.

Specific target organ toxicity (STOT) - single exposure
Not classified based on available information.

Specific target organ toxicity (STOT) - repeated exposure
Not classified based on available information.

Aspiration hazard
Not classified based on available information.

Additional information
Chronic Effects: Prolonged or repeated skin exposure may cause defatting leading to dermatitis. Prolonged or repeated exposure to copper (dust/mist) 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. Effects may be delayed. 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. Chronic copper poisoning is typified by 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 'metal fever' poisoning has lead to hemolytic anemia and accelerates arteriosclerosis. 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. Depending on the intensity and duration of exposure, effects may vary from mild irritation to severe destruction of tissue.
The lethal dose of an untreated adult is 10 - 20 g Copper.

SECTION 12: Ecological information

Toxicity
Very toxic to aquatic life with long lasting effects

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: 3089
Class: 4.1
Packing Group: II
Proper Shipping Name: METAL POWDER, FLAMMABLE, N.O.S. (Copper metal powder)

Hazchem emergency action code (EAC)
1Z

IMDG
UN Number: 3089
Class: 4.1
Packing Group: II
Proper Shipping Name: METAL POWDER, FLAMMABLE, N.O.S. (Copper metal powder)

IATA
UN Number: 3089
Class: 4.1
Packing Group: II
Proper Shipping Name: METAL POWDER, FLAMMABLE, N.O.S. (Copper metal powder)

SECTION 15: Regulatory information

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

Australia SUSMP
Poison Schedule: NS

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)