Infosafe No™	1CHHL	Issue Date : December 2019	RE-ISSUED by CHEMSUPP

Product Name : **COPPER METAL Powder**

Classified as hazardous

1. Identification

GHS Product Identifier COPPER METAL Powder

Company Name CHEM-SUPPLY PTY LTD (ABN 19 008 264 211)

Address 38 - 50 Bedford Street GILLMAN
SA 5013 Australia

Telephone/Fax Number Tel: (08) 8440-2000
Fax: (08) 8440-2001

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

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.

Other Names

Name	Product Code
COPPER METAL Powder	CL051

Other Information

Chem-Supply 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 Chem-Supply 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 Chem-Supply 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.

2. Hazard Identification

GHS classification of the substance/mixture Hazardous to the Aquatic Environment - Acute Hazard: Category 1
Hazardous to the Aquatic Environment - Long-Term Hazard: Category 1
Flammable Solids: Category 1

Signal Word (s) DANGER

Hazard Statement (s) H228 Flammable solid.
H400 Very toxic to aquatic life.
H410 Very toxic to aquatic life with long lasting effects.

Pictogram (s) Flame, Environment


Precautionary statement – Prevention P210 Keep away from heat/sparks/open flames/hot surfaces. – No smoking.
P240 Ground/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.

Precautionary statement – Response P370+P378 In case of fire: Use dry sand, dry chemical or alcohol-resistant foam for extinction.
P391 Collect spillage.

Precautionary statement – Disposal P501 Dispose of contents/container to an approved waste disposal plant.

3. Composition/information on ingredients

Chemical Characterization Solid

Ingredients

Name	CAS	Proportion	Hazard Symbol	Risk Phrase
Copper	7440-50-8	100 %		

4. First-aid measures

Inhalation	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.
Ingestion	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.
Skin	Wash affected areas with copious quantities of water. If irritation occurs seek medical advice.
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.
First Aid Facilities	Eye wash fountains and safety showers should be available for emergency use.
Advice to Doctor	Treat symptomatically based on judgement of doctor and individual reactions of the patient.
Other Information	For advice, contact the National Poisons Information Centre (Phone Australia 13 11 26; New Zealand 0800 764 766) or a doctor.

5. Fire-fighting measures

Hazards from Combustion Products	Irritating, toxic and corrosive fumes and vapours including copper fumes and some metallic oxides.
Specific Methods	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	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.
Hazchem Code	1Z
Precautions in connection with Fire	Wear SCBA and structural firefighter's uniform.

6. Accidental release measures

Spills & Disposal	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.
Personal Precautions	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.
Personal Protection	Wear protective clothing specified for normal operations (see Section 8)
Clean-up Methods - Small Spillages	Sweep up (avoid generating dust) and remove to a suitable, clearly labelled container for disposal in accordance with local regulations.
Environmental Precautions	Prevent from entering into drains, ditches or rivers.

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 incompatabilities	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.
Storage Regulations	Refer Australian Standard AS/NZS 5026-2012 'The storage and handling of Class 4 dangerous goods'.

8. Exposure controls/personal protection

Classified as hazardous

Occupational exposure limit values

Name	STEL		TWA		
	mg/m3	ppm	mg/m3	ppm	Footnote
Copper			0.2		Copper (fume)

Other Exposure Information
These Workplace Exposure Standards are guides to be used in the control of occupational health hazards. All atmospheric contamination should be kept to as low a level as is workable. These workplace exposure standards should not be used as fine dividing lines between safe and dangerous concentrations of chemicals. They are not a measure of relative toxicity.
These Workplace Exposure Standards are guides to be used in the control of occupational health hazards. All atmospheric contamination should be kept to as low a level as is workable. These workplace exposure standards should not be used as fine dividing lines between safe and dangerous concentrations of chemicals. They are not a measure of relative toxicity.
The exposure value at the TWA is the average airborne concentration of a particular substance when calculated over a normal 8 hour working day for a 5 day working week.

Appropriate engineering controls
Maintain the concentrations values below the TWA. This may be achieved by process modification, use of local exhaust ventilation, capturing substances at the source, or other methods.

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.

Eye 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.

Hand Protection
Wear gloves of impervious material conforming to AS/NZS 2161: Occupational protective gloves - Selection, use and maintenance. Final choice of appropriate glove type will vary according to individual circumstances. This can include methods of handling, and engineering controls as determined by appropriate risk assessments. Avoid skin contact when removing gloves from hands, do not touch the gloves outer surface. Dispose of gloves as hazardous waste.

Personal Protective Equipment
Personal protective equipment should not solely be relied upon to control risk and should only be used when all other reasonably practicable control measures do not eliminate or sufficiently minimise risk. Guidance in selecting personal protective equipment can be obtained from Australian, Australian/New Zealand or other approved standards.

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 an apron. Clothing for protection against chemicals should comply with AS 3765 Clothing for Protection Against Hazardous Chemicals.

Hygiene Measures
Always wash hands before smoking, eating or using the toilet. Wash contaminated clothing and other protective equipment before storing or re-using.

9. Physical and chemical properties

Form Solid

Appearance Distinctive reddish coloured powder.

Odour Odourless.

Melting Point 1083 °C

Boiling Point 2580 - 2595 °C

Solubility in Water Insoluble.

Solubility in Organic Solvents Slowly soluble in ammonia water, slightly soluble in diluted acid.

Specific Gravity 8.94

Vapour Pressure 1 mm Hg @ 1628 °C

Flammability Combustible.

Molecular Weight 63.55

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.

10. Stability and reactivity

Chemical Stability	Stable under normal use conditons. 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.
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.
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).
Hazardous Polymerization	Will not occur.

11. Toxicological Information

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	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.
Eye	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 sensitisation	Not classified based on available information.
Skin Sensitisation	Not classified based on available information.
Germ cell mutagenicity	Not classified based on available information.
Carcinogenicity	Not classified as a human carcinogen.
Reproductive Toxicity	Not classified based on available information.

Classified as hazardous

STOT-single exposure	Not classified based on available information.
STOT-repeated exposure	Not classified based on available information.
Aspiration Hazard	Not classified based on available 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.
Mutagenicity	No evidence of mutagenic properties.

12. Ecological information

Ecological Information	Due to the poor solubility of the product, no harmful effects on plants and/or aquatic organisms are to be expected when handled and used with due care and attention.
Ecotoxicity	Quantitative data on the ecological effect of this product are not available.
Persistence and degradability	Not degradable in water.

13. Disposal considerations

Disposal Considerations	Whatever cannot be saved for recovery or recycling should be disposed of according to relevant local, state and federal government regulations.

14. Transport information

Transport Information	- Class 4. 1 Flammable solids - Class 4. 2 Spontaneously combustible substances - Class 4. 3 Dangerous when wet substances - Class 5. 2 Organic peroxides - Class 6 Poisonous (toxic) substances (capable of igniting/burning
U.N. Number	3089
UN proper shipping name	METAL POWDER, FLAMMABLE, N.O.S. - (COPPER POWDER)
Transport hazard class(es)	4.1
Hazchem Code	1Z
Packing Group	II
EPG Number	4A1
IERG Number	29

15. Regulatory information

Regulatory Information	Listed in the Australian Inventory of Chemical Substances (AICS). Not listed under WHS Regulation 2011, Schedule 10 - Prohibited carcinogens, restricted carcinogens and restricted hazardous chemicals.
Poisons Schedule	Not Scheduled

16. Other Information

Literature References	'Standard for the Uniform Scheduling of Medicines and Poisons .', Commonwealth of Australia. Lewis, Richard J. Sr. 'Hawley's Condensed Chemical Dictionary 13th. Ed.', Rev., John Wiley and Sons, Inc., NY, 1997. National Road Transport Commission, 'Australian Code for the Transport of Dangerous Goods by Road and Rail 7th. Ed.', 2007. Safe Work Australia, 'National Code of Practice fot the Preparation of Safety Data Sheets for Hazardous

Chemicals', 2011.
Standards Australia, 'SAA/SNZ HB 76:2010 Dangerous Goods - Initial Emergency Response Guide', Standards Australia/Standards New Zealand, 2010.
Safe Work Australia, 'Approved Criteria for Classifying Hazardous Substances [NOHSC:1008 (2004)]'.
Safe Work Australia, 'Hazardous Chemical Information System, 2005'.
Safe Work Australia, 'National Code of Practice for the Labelling of Safe Work Hazardous Substances (2011)'.
Safe Work Australia, 'National Exposure Standards for Atmospheric Contaminants in the Occupational Environment [NOHSC:1003(1995) 3rd Edition]'.

Contact Person/Point Paul McCarthy Ph. (08) 8440 2000 DISCLAIMER STATEMENT:
All information provided in this data sheet or by our technical representatives is compiled from the best knowledge available to us. However, since data, safety standards and government regulations are subject to change and the conditions of handling and use, or misuse, are beyond our control, we make no warranty either expressed or implied, with respect to the completeness or accuracy to the information contained herein. Chem-Supply accepts no responsibility whatsoever for its accuracy or for any results that may be obtained by customers from using the data and disclaims all liability for reliance on information provided in this data sheet or by our technical representatives.

Empirical Formula & Structural Formula Cu

Other Information December 2014 changed to a dangerous good Class 4.1 Fammable solid.

...End Of MSDS...