

MATERIAL SAFETY DATA SHEET

Copper Sulphate Solution

SECTION 01 – PRODUCT AND COMPANY INFORMATION

Product Name Copper Sulphate Solution
Synonyms Cupric Sulphate Solution, Aqueous Copper Sulphate, Liquid Blue Vitriol
Appearance Blue Liquid
Product Use..... Used in the flotation of mineral products
Supplier Name..... LogiChem Pty Ltd incorporating Jostek Chemicals
Address..... 13 Brinsden Road, off Craig Road, West Kalgoorlie, Australia
 PO Box 878 Kalgoorlie WA 6433 Australia
Phone (08) 9091-7708
Fax (08) 9091-7709
24 Hour Emergency Phone..... (08) 9091-7708

SECTION 02 – COMPOSITION

Chemical Components	Cas No.	Proportion by weight
Copper Sulphate Pentahydrate	7758-99-8	20%
Water	7732-18-5	80%

SECTION 03 –HEALTH HAZARDS IDENTIFICATION

Hazardous According to Criteria of Worksafe Australia

Risk Phrases:

R22 Harmful if swallowed
 R36/38 Irritating to eyes and skin
 R50 Very toxic to aquatic organisms
 R53 May cause long-term adverse effects in the aquatic environment.

Summary

Moderate toxicity - irritant. Use safe work practices to avoid skin or eye contact and vapour inhalation. Chronic over exposure may cause kidney/ liver and blood damage. Potential skin sensitising agent.

Eye Irritant. Contact may result in lacrimation, irritation, pain, redness and conjunctivitis. Prolonged contact – corneal burns and possible permanent damage.

Inhalation Irritant. Over exposure to vapours or mists may result in upper respiratory tract irritation, nausea and headache. Due to the low vapour pressure of this product an inhalation hazard is not anticipated unless sprayed.

Skin Irritant. Contact may result in itching, pain, redness, rash and dermatitis. Prolonged contact may result in sensitisation and burns.

Ingestion Moderately toxic. Ingestion may result in nausea, vomiting, abdominal pain and diarrhoea. Large doses may result in kidney/liver and blood damage.

Poison Schedule S6

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SECTION 04 – FIRST AID MEASURES

- Ingestion** If victim is conscious and can swallow, dilute stomach contents with 2 to 4 cupfuls of water or milk. Do not induce vomiting. Ingestion of cupric sulfate normally leads to spontaneous vomiting. When vomiting occurs naturally, rinse mouth and repeat administration of water. Seek medical attention immediately and bring a copy of this MSDS. Never give anything by mouth to an unconscious person.
- Eye** Immediately flush with warm, running water, including under the eyelids, for at least 15 minutes. Seek medical attention immediately.
- Skin** Remove contaminated clothing and wash affected area with soap and warm water. Seek medical attention if irritation develops or persists. Wash contaminated clothing before reuse.
- Inhalation** Remove victim from exposure area to fresh air immediately. If breathing has stopped, give artificial respiration. Medical oxygen may be administered, if available, where breathing is difficult. Seek immediate medical attention.

SECTION 05 – FIRE FIGHTING MEASURES

- Flammability** Copper sulphate solution is not flammable or combustible.
- Extinguishing Media** Use any means of extinction appropriate for surrounding fire conditions such as water spray, carbon dioxide, dry chemical, or foam. Do not release runoff from fire control methods to sewers or waterways.
- Fire fighting procedures** Fire fighters must be fully trained and wear full protective clothing including an approved, self-contained breathing apparatus which supplies a positive air pressure within a full face-piece mask.

SECTION 06 – ACCIDENTAL RELEASE MEASURES

- Leak / Spill** Isolate hazard area and deny entry to unprotected personnel. Control source of spillage if possible to do so safely. If spill is small, mop up. For larger spill use absorbent (sand or other inert materials) to soak up spilled material. Place contaminated material and neutralization wastes in suitable containers for recovery or disposal. Treat or dispose of waste material in accordance with applicable regulations. Wash cleaned areas with an excess of water.
- Personal Precautions:** Protective clothing, impervious gloves, and close-fitting safety goggles are recommended for persons responding to an accidental release (see also Section 8). Respiratory protection equipment should be worn where exposure to hazardous levels of mist is possible.
- Environmental Precautions:** This product can pose a threat to the environment. Contamination of soil and water should be prevented. Keep spillage from entering ground, streams or sewers.

SECTION 07 – HANDLING & STORAGE

- Handling / Storage Procedures** Store containers in a dry, cool, well-ventilated area away from

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incompatible materials. Keep container tightly closed. Protect from physical damage. Minimize generation of mist. Do not allow to freeze; if frozen thaw completely and mix prior to use. Always practice good personal hygiene. Refrain from eating, drinking, or smoking in work areas. Thoroughly wash hands before eating, drinking, or smoking in appropriate, designated areas.

SECTION 08 – PERSONAL PROTECTION AND EXPOSURE CONTROLS

Personal Protective Equipment

Protective Clothing Protective clothing, impervious gloves and rubber boots. Eye protection goggles should be worn where any possibility exists that eye contact with splash, spray or mist may occur. An eyewash and quick drench should be provided in work area. Workers should wash immediately when skin becomes contaminated and at the end of each work shift.

Occupational Exposure Limits

No value assigned for this specific material by the National Occupational Health and Safety Commission. However Exposure Standard(s) for constituent(s):

Copper dusts & mists (as Cu) 8hr TWA = 1 mg/m³
Copper Fume 8hr TWA = 0.2 mg/m³

As published by the National Occupational Health and Safety Commission.

TWA – the time-weighted average airborne concentration over an eight-hour working day, for five-day working week over an entire working life.

These 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 exposure standards should not be used as fine dividing lines between safe and dangerous concentration of chemicals. They are not a measure of relative toxicity.

Engineering Controls

Ventilation requirements Local or general ventilation should be used to maintain the working environment below recommended exposure limits

Respiratory Protection Where copper sulphate mists are generated and cannot be controlled to within acceptable levels by engineering means, use appropriate NIOSH-approved respiratory protection equipment (meeting the requirements of AS/NZS 1715 and AS/NZS 1716)

SECTION 09 – PHYSICAL AND CHEMICAL PROPERTIES

Form / Colour / Odour Clear, deep-blue coloured solution with no odour

pH Approximately 1

Water Solubility 100% at 20°C

Specific Gravity (Water = 1) 1.15

Vapour Pressure (hPa @ 20°C) ... Negligible at 20°C

Boiling Point above 100°C

Freezing Point below 0°C

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SECTION 10 – STABILITY AND REACTIVITY

- Stability** This material is stable and not considered reactive under normal temperatures and pressures.
- Incompatibility**..... Avoid contact with alkalis, hydroxylamine, magnesium, ammonia, acetylene, sodium hypobromite, and nitromethane. Can be highly corrosive to most ferrous-based metals.
- Hazardous Decomposition Products:** High temperature operations such as oxy-acetylene cutting, electric arc welding or arc-air gouging on dried residues of this material may generate toxic copper fumes and sulfur dioxide. The fumes will contain copper oxides, which, on inhalation in sufficient quantity, can produce metal fume fever.

SECTION 11 – TOXICOLOGICAL INFORMATION

The major routes of exposure in the industrial setting are skin, eyes, and inhalation of mist. Liquid and mist are strongly irritating to the eyes. Although copper is an essential element, mutagenicity and genotoxicity assays have produced equivocal positive results. When heated this product can release toxic sulfur dioxide gas. Individuals with "Wilson's Disease" are predisposed to accumulate copper and should not be occupationally exposed.

Toxicity Data

No LD50 data available for the product. However, for the constituent, COPPER SULPHATE PENTAHYDRATE: Oral Lowest Lethal Dose (human) : 1088 mg/kg

Acute Health Effects

- Ingestion** Ingestion will cause nausea, vomiting, gastric pain, diarrhea and cramps. Large doses by ingestion may cause renal injury, coma and possibly death.
- Eye / Skin** Liquid and mist are likely to cause moderate to severe eye irritation. Skin contact is likely to cause irritation, with itching and redness of the skin.
- Inhalation** Inhalation of mist is irritating to the lungs and upper respiratory passages. Coughing and difficulty with breathing will occur with brief severe exposure. Mists may also be corrosive to the nose, throat and mucous membranes.

Chronic Health Effects

Repeated inhalation of a copper sulphate mist has resulted in a condition known as "vineyard sprayer's lung". The condition is asymptomatic until later stages, when symptoms include weakness, malaise, loss of appetite and weight, cough and greenish-brown sputum. Greenish tumours may occur in the liver and lungs of affected persons. Copper sulphate is not listed as a carcinogen by OSHA, National Toxicology Program (NTP), International Agency for Research on Cancer (IARC), ACGIH or the EU. Sulphuric acid is not listed as a carcinogen by OSHA, NTP, IARC, ACGIH or the EU. Both IARC and the NTP have concluded that there is sufficient evidence that occupational exposure to strong inorganic acid mists containing sulphuric acid is carcinogenic to humans, resulting in an increased incidence of primarily laryngeal cancers. The ACGIH also list strong inorganic acid mists containing sulfuric acid as a suspect human carcinogen (A2). OSHA and the EU do not list sulfuric acid mist as a carcinogen.

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SECTION 12 – ECOLOGICAL INFORMATION

Copper is accumulated by plants and animals but biomagnification has not been shown to occur in either aquatic or terrestrial food chains. Dissolved copper can be highly toxic to aquatic life at relatively low concentrations with pH, hardness and dissolved organic compounds being factors that regulate the degree of toxicity. In soil, copper can be particularly toxic to invertebrates and phytotoxic to plants at elevated concentrations with soil properties being regulating factors.

SECTION 13 – DISPOSAL CONSIDERATIONS

Dispose of waste consistent with regulatory requirements. Do not wash down drain or allow to reach natural watercourses. Dispose of neutralized waste consistent with regulatory requirements. If neutralized with lime rock or soda ash, good ventilation is required during neutralization because of the release of carbon dioxide gas.

SECTION 14 – TRANSPORTATION INFORMATION

NOT classified as Dangerous Goods According to the Criteria of the Australian Dangerous Goods Code (ADG Code) for transport by Road or Rail. No special transport requirements are necessary.

SECTION 15 – REGULATORY INFORMATION

Classification This material is hazardous according to criteria of NOHSC
Xn: Harmful
Xi: Irritant

Risk Phrases

R22 Harmful if swallowed
R36/38 Irritating to eyes and skin
R50 Very toxic to aquatic organisms
R53 May cause long-term adverse effects in the aquatic environment.

Safety Phrases

S2 Keep out of the reach of children
S23 Do not breathe vapour/mist/aerosol
S24/25 Avoid contact with skin and eyes
S26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice
S35/37/39 Wear suitable protective clothing, gloves and eye/face protection

Poisons Schedule S6 Poison

This material is listed on the Australian Inventory of Chemical Substances (AICS)

SECTION 16 – OTHER INFORMATION

Contact Person Jonty Eales – General Manager
Telephone 08 9091-7708 (24 hours)

Note: The responsibility to provide a safe workplace remains with the user. The user should consider the health hazards and safety information contained herein as a guide and should take those precautions required in an individual operation to instruct employees and develop work practice procedures for a safe work environment. The information contained herein is, to the best of our knowledge and belief, accurate. However, since the conditions of handling and use are beyond our control we make no guarantee of results, and assume no liability for damages incurred by the use of this material. It is the responsibility of the user to comply with all applicable laws and regulations.