Infosafe No™	1CH2B	Issue Date : March 2019	RE-ISSUED by CHEMSUPP

Product Name : **COPPER (II) SULFATE Pentahydrate**

Classified as hazardous

1. Identification

GHS Product Identifier	COPPER (II) SULFATE Pentahydrate
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	Used in agriculture as a soil additive, pesticide, fungicide, bactericide, algicide and herbicide, Bordeaux mixture, feed and fertiliser additive, germicide, textile mordant, tanning leather, preserving hides, pigments, dyes, electric batteries, electroplated coatings, medicine, wood and pulp preservative, engraving, lithography, ore flotation, steel manufacture, synthetic rubber, asphalt treatment, petroleum refining, copper salts, pyrotechnic compositions, antirusting compositions for radiator and heating systems, water-resistant adhesives for wood, analytical reagent and laboratory reagent.

Other Names

Name	Product Code
Blue copperas, Blue stone, Blue vitriol, Copper sulfate, Cupric sulfate, Copper monosulfate pentahydrate, Copper vitriol pentahydrate	
COPPER (II) SULFATE Pentahydrate Fine Granular LR	CL068
COPPER (II) SULFATE Pentahydrate Fine Granular AR	CA068
COPPER (II) SULFATE Pentahydrate Fine Granular TG	CT068
COPPER (II) SULFATE Pentahydrate Fine Granular	CP068

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 Eye Damage: Category 1 Acute Toxicity - Oral: Category 4
Signal Word (s)	DANGER
Hazard Statement (s)	H302 Harmful if swallowed. H318 Causes serious eye damage. H400 Very toxic to aquatic life. H410 Very toxic to aquatic life with long lasting effects.
Pictogram (s)	Corrosion, Exclamation mark, Environment

Precautionary statement – Prevention	P264 Wash thoroughly after handling. P270 Do not eat, drink or smoke when using this product. P273 Avoid release to the environment. P280 Wear protective gloves/protective clothing/eye protection/face protection.
Precautionary statement – Response	P301+P312 IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell. P330 Rinse mouth. 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 or doctor/physician. 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
Information on Composition	May contain traces of sulfuric acid as an impurity.

Ingredients

Name	CAS	Proportion	Hazard Symbol	Risk Phrase
Copper (II) sulfate pentahydrate	7758-99-8	98-100 %		

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. Give water to drink. DO NOT INDUCE VOMITING. Seek medical advice if symptoms persist.
Skin	Immediately remove contaminated clothing and wash affected area with water for at least 15 minutes. Ensure contaminated clothing is washed before re-use. Seek medical advice /attention depending on the severity.
Eye contact	Immediately irrigate with copious quantity of water for at least 15 minutes. Eyelids to be held open. Seek immediate medical assistance.
First Aid Facilities	Maintain eyewash fountain and safety shower in work area. Maintain eyewash fountain and drench facilities in work area.
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

Suitable extinguishing media	Use appropriate fire extinguisher for surrounding environment.
Hazards from Combustion Products	Oxides of sulfur, oxides of copper and copper fume.
Specific Methods	Small fire: Use dry chemical, CO2, water spray or foam. Large fire: Use water spray, fog or foam.
Specific hazards arising from the chemical	Runoff may pollute waterways.
Hazchem Code	2Z
Precautions in connection with Fire	Wear SCBA and structural firefighter's uniform.

6. Accidental release measures

Personal Precautions	Avoid inhalation, contact with skin, eyes and clothing. Evacuate the area of all non-essential personnel.
Personal Protection	Wear protective clothing specified for normal operations (see Section 8)
Clean-up Methods - Small Spillages	Sweep up (avoid generating dust) and using clean non-sparking tools transfer to a clean, suitable, clearly labelled container for disposal in accordance with local regulations.
Clean-up Methods - Large Spillages	Seek expert advice on handling and disposal.
Environmental Precautions	Prevent from entering into drains, ditches or rivers.

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. Minimize dust generation and accumulation. Keep containers closed when not in use. Work in fumehood and use only 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. Contaminated clothing should be removed and washed before re-use. Wash hands and face thoroughly after working with material. Keep container dry. Ensure a high level of personal hygiene is maintained when using this product. That is; always wash hands before eating, drinking, smoking or using the toilet.
Conditions for safe storage, including any incompatabilities	Store in a cool,dry place. Keep containers closed at all times. Do not store in unsuitable, unlabelled or incorrectly labelled containers. Air sensitive, hygroscopic.
Corrosiveness	Solutions are corrosive to steel.

8. Exposure controls/personal protection

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. A time weighted average (TWA) has been established for Copper, dusts and mists (as Cu) (Worksafe Aust) of 1 mg/m³ and for Copper (fume) (Safe Work Australia) of 0.2 mg/m³. 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	In industrial situations 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. These methods should be used in preference to personal protective equipment.
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	Hand protection should comply with AS 2161, Occupational protective gloves - Selection, use and maintenance. Recommendation: Excellent: Nitrile, Neoprene, PVC. Poor: NR latex.
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	Blue granules; blue crystals; light blue powder.
Odour	Odourless.
Melting Point	Loses 2H2O @ 30 °C; loses a further 2H2O @ 110 °C; becomes anhydrous by 250 °C; decomposes @ 560 °C (anhydrous).
Solubility in Water	Very soluble (317 g/L @ 20 °C).
Solubility in Organic Solvents	Soluble in ethanol, methanol and glycerol. Practically insoluble in most organic solvents.
Specific Gravity	2.28

pH	3.5 - 4.5 (50 g/L, H2O, 20 °C)
Flammability	Non combustible material.
Molecular Weight	249.68
Other Information	Dielectricity constant: 6.60 (20 °C) Taste: Nauseous; metallic taste

10. Stability and reactivity

Chemical Stability	Stable. Slowly efflorescent in air.
Conditions to Avoid	Exposure to moisture. Heat, direct sunlight, open flames or other sources of ignition. Incompatibles.
Incompatible Materials	Acetylene gas; finely powdered metals, eg. magnesium metal; sodium hypobromite solutions; plain steel; galvanised pipes; strong reducing agents; hydroxylamine; strong oxidising agents.
Possibility of hazardous reactions	Copper salts may react with acetylene to form explosive acetylides.
Hazardous Polymerization	Will not occur.

11. Toxicological Information

Acute Toxicity - Oral	LD50 (rat): 482 mg/kg (OECD Test Guidline 401)
Acute Toxicity - Dermal	LD50 (rat): >2000 mg/kg.
Ingestion	Harmful by ingestion. May cause burning pain in the mouth, throat, oesophagus and stomach, diarrhea, nausea, abdominal pain and ulceration of the gastrointestinal tract. If vomiting does not occur immediately, systemic copper poisoning may occur. Symptoms may include repeated vomiting, nausea, diarrhea, salvation, headache, cold sweat, weak pulse and metallic taste. Prolonged exposure to this material may lead to corrosion and necrosis of the gastrointestinal tract, with possible perforation (may occur due to copper sulfate). Copper poisoning leads to capillary damage, kidney and liver damage, central nervous excitation followed by depression, jaundice, convulsions, blood effects (i.e. bleeding of the GI tract), paralysis and coma. Death may occur from shock or renal failure.
Inhalation	Irritating to the respiratory tract. Symptoms may include coughing, wheezing, sore throat and shortness of breath. May result in ulceration and perforation of respiratory tract. Ulceration of the nasal septum is possible, due to trace sulfuric acid impurities. 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.
Skin	Irritating to skin. May cause redness and itching.
Eye	Causes serious eye damage, irritation, local inflammation, conjunctivitis, ulceration, clouding of the cornea, tissue destruction, corneal opacity and adhesion of the eyelid to the eye. Traces of sulfuric acid impurity may contribute to these effects.
Carcinogenicity	No significant ingredient is classified as carinogenic by Safe Work Australiia. No significant ingredient is classified as carinogenic by International Agency for Reseach on Cancer.
Chronic Effects	Chronic ingestion may cause liver, brain, muscle and kidney disfunction. Prolonged or repeated skin exposure may cause dermatitis. 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, and atrophic changes and irritation of the mucous membranes.

12. Ecological information

Persistence and degradability	Methods for the determination of biodegradability are not applicable to inorganic substances.
Information on Ecological Effects	Severe marine pollutant - IMDG Code. Very toxic to aquatic life.
Short Summary of Assessment of Environmental Impact	When released into the soil, this material is not expected to biodegrade and may leach into ground water. When released into the water, this material is not expected to biodegrade or evaporate significantly. This material is expected to bioaccumulate significantly.
Environmental Protection	Contain spillage. Prevent entry to waterways and drains. When released into the soil, this material may leach into ground water. Highly toxic to aquatic organisms. May cause long-term adverse effects in the aquatic organisms.
Acute Toxicity - Daphnia	EC50 (Daphnia magna): 0.02 mg/l/48h.

13. Disposal considerations

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

14. Transport information

Transport Information	Dangerous goods of Class 9 (Miscellaneous Dangerous Goods) are incompatible in a placard load with any of the following: Class 1, Class 5, if the Class 9 dangerous goods are fire risk substances.
U.N. Number	3077
UN proper shipping name	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S.
Transport hazard class(es)	9
Hazchem Code	2Z
Packaging Method	3.8.9
Packing Group	III
EPG Number	9C1
IERG Number	47
Other Information	The Special Provision AU01 of the ADG Code are peculiar to this Code and are therefore not applicable to international transport, or to air or sea transport within Australia. SP AU01 Environmentally Hazardous Substances meeting the descriptions of UN 3077 or UN 3082 are not subject to this Code when transported by road or rail in; (a) packagings; (b) IBCs; or (c) any other receptacle not exceeding 500 kg(L).

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	S6

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	$CuSO_4.5H_2O$

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