



Infosafe No™	1CH2B	Issue Date : March 2014	RE-ISSUED by CHEMSUPP
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Product Name : **COPPER (II) SULFATE Pentahydrate**

Classified as hazardous

**1. Identification**

<b>GHS Product Identifier</b>	COPPER (II) SULFATE Pentahydrate	
<b>Company Name</b>	CHEM-SUPPLY PTY LTD (ABN 19 008 264 211)	
<b>Address</b>	38 - 50 Bedford Street GILLMAN SA 5013 Australia	
<b>Telephone/Fax Number</b>	Tel: (08) 8440-2000 Fax: (08) 8440-2001	
<b>Recommended use of the chemical and restrictions on use</b>	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.	
<b>Other Names</b>	<u>Name</u>	<u>Product Code</u>
	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
<b>Other Information</b>	EMERGENCY CONTACT NUMBER: +61 08 8440 2000 Business hours: 8:30am to 5:00pm, Monday to Friday.	

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**

<b>GHS classification of the substance/mixture</b>	Hazardous to the Aquatic Environment - Acute Hazard: Category 1 Hazardous to the Aquatic Environment - Long-Term Hazard: Category 1 Eye Damage/Irritation: Category 2A Acute Toxicity - Oral: Category 4 Skin Corrosion/Irritation: Category 2
<b>Signal Word (s)</b>	WARNING
<b>Hazard Statement (s)</b>	H302 Harmful if swallowed. H315 Causes skin irritation. H319 Causes serious eye irritation. H400 Very toxic to aquatic life. H410 Very toxic to aquatic life with long lasting effects.
<b>Pictogram (s)</b>	Environment, Exclamation mark



<b>Precautionary statement – Prevention</b>	P273 Avoid release to the environment. P280 Wear protective gloves/protective clothing/eye protection/face protection.
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**Precautionary statement – Response** P301+P312 IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell.  
P302+P352 IF ON SKIN: Wash with plenty of soap and water.  
P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.  
P330 Rinse mouth.  
P332+P313 If skin irritation occurs: Get medical advice/attention.  
P337+P313 If eye irritation persists: Get medical advice/attention.

**Other Information** Copper salts may decrease the toxicity of molybdenum. Zinc salts may decrease the toxicity of copper salts.

**3. Composition/information on ingredients**

**Chemical Characterization** Solid

**Information on Composition** May contain traces of sulfuric acid as an impurity.

<b>Ingredients</b>	<b>Name</b>	<b>CAS</b>	<b>Proportion</b>	<b>Hazard Symbol</b>	<b>Risk Phrase</b>
	Copper (II) sulfate pentahydrate	7758-99-8	98-100 %	N	R51/53

**4. First-aid measures**

**Inhalation** Remove victim to fresh air. Employ artificial respiration if indicated. If symptoms persist, obtain medical attention.

**Ingestion** Rinse mouth thoroughly with water immediately. Give plenty of water to drink. Do not induce vomiting. Seek immediate medical assistance.

**Skin** Wash affected areas with copious quantities of water immediately. Remove contaminated clothing and wash before re-use. Seek medical attention.

**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 drench facilities in work area.

**Advice to Doctor** Treat symptomatically or consult a Poisons Information Centre.

**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, CO<sub>2</sub>, 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.

**Personal Protection** Wear protective clothing specified for normal operations (see Section 8)

**Clean-up Methods - Small Spillages** Absorb or contain liquid with sand, earth or spill control material. Shovel up using non sparking tools and place in a labelled, sealable container for subsequent safe disposal. Put leaking containers in a labelled drum or overdrum.

**Environmental Precautions** Prevent from entering into drains, ditches or rivers.

**7. Handling and storage**



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**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 incompatibilities** Store in a cool, dry place. Keep containers closed at all times. Do not store in unsuitable, unlabelled or incorrectly labelled containers.

**Corrosiveness** Solutions are corrosive to steel.

**8. Exposure controls/personal protection**

**Other Exposure Information** A time weighted average (TWA) has been established for Copper, dusts and mists (as Cu) (Worksafe Aust) of 1 mg/m<sup>3</sup> and for Copper (fume) (Worksafe Aust) of 0.2 mg/m<sup>3</sup>. 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.

**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.

**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 2H<sub>2</sub>O @ 30 °C; loses a further 2H<sub>2</sub>O @ 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, H<sub>2</sub>O, 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.



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**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): 960 mg/kg.**Acute Toxicity - Dermal** LD50 (rat): >2000 mg/kg.**Ingestion** Toxic 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, salivation, 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** Dust particles may cause 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.**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 - Fish** The following applies to copper compounds: copper ions toxic for fish at concentrations below 1 mg/l. LC50 (Pimephales promelas): 0.039 mg/l/96h.**Acute Toxicity - Daphnia** EC50 (Daphnia magna): 0.02 mg/l/48h.**Acute Toxicity - Algae** The following applies to copper compounds: copper ions toxic for algae at concentrations below 1 mg/l. EC50 (Selenastrum capricornatum - green algae): 85 ug/l/14h.**Acute Toxicity - Bacteria** The following applies to copper compounds: copper ions toxic for bacteria at concentrations below 1 mg/l.**Acute Toxicity - Other Organisms** The following applies to copper compounds: copper ions toxic for other organisms at concentrations below 1 mg/l.

Mussels: 0.55 mg/l lethal in 12h; oysters: 0.1 mg/l toxic.

**13. Disposal considerations**



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<b>Disposal Considerations</b>	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.
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**14. Transport information**

<b>Transport Information</b>	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.
<b>U.N. Number</b>	3077
<b>UN proper shipping name</b>	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S.
<b>Transport hazard class(es)</b>	9
<b>Hazchem Code</b>	2Z
<b>Packaging Method</b>	3.8.9
<b>Packing Group</b>	III
<b>EPG Number</b>	9C1
<b>IERG Number</b>	47
<b>Other Information</b>	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**

<b>Regulatory Information</b>	Listed in the Australian Inventory of Chemical Substances (AICS).
<b>Poisons Schedule</b>	S6

**16. Other Information**

<b>Literature References</b>	'Standard for the Uniform Scheduling of Medicines and Poisons No. 4', Commonwealth of Australia, June 2013. 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. 'Labelling of Hazardous Workplace Chemicals, Code of Practice' Safe Work Australia. Standards Australia 'AS 1940-2004 The Storage and Handling of Flammable and Combustible Liquids. Standards Australia, 'SAA/SNZ HB 76:2010 Dangerous Goods - Initial Emergency Response Guide', Standards Australia/Standards New Zealand, 2010. Worksafe Australia, 'Approved Criteria for Classifying Hazardous Substances [NOHSC:1008(2004)]'. Worksafe Australia, 'Hazardous Substances Information System, 2005'. Worksafe Australia, 'National Code of Practice for the Labelling of Workplace Hazardous Substances (2011)'. Worksafe Australia, 'National Exposure Standards for Atmospheric Contaminants in the Occupational Environment [NOHSC:1003(1995)]'. Paul McCarthy Ph. (08) 8440 2000 <b>DISCLAIMER STATEMENT:</b> 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.
<b>Contact Person/Point</b>	
<b>Empirical Formula &amp; Structural Formula</b>	CuSO <sub>4</sub> .5H <sub>2</sub> O
<b>Other Information</b>	Previously labelled as: R22 Harmful if swallowed.



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# Safety Data Sheet

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R36/38 Irritating to eyes and skin.

R50/53 Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

S22 Do not breathe dust.

S60 This material and its container must be disposed of as hazardous waste.

S61 Avoid release to the environment. Refer to special instructions/safety data sheet.

...End Of MSDS...

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