

SAFETY DATA SHEET

Copper Sulphate Pentahydrate – Mining Grade

SECTION 01 - IDENTIFICATION

Product identifier	Copper Sulphate Pentahydrate
Other means of identification	Blue Stone, Copper Sulphate Pentahydrate, Cupric Sulphate, $CuSO_4 \cdot 5H_2O$
Recommended use of chemical	Flotation Agent
Supplier name	Ixom Operations Pty Limited trading as LogiChem
Supplier address	Lot 33 Bulong Road Parkeston-Kalgoorlie, Australia PO Box 878 Kalgoorlie WA 6433 Australia
Supplier phone	1800 033 111 / Int. +61 (0) 3 9663 2130
24 Hour emergency phone	1800 033 111

SECTION 02 – HAZARD(S) IDENTIFICATION

Classification	Acute Toxicity (Oral) - Category 4 Skin Corrosion/Irritation - Category 2 Serious Eye Damage/Irritation - Category 2A Acute Hazard To The Aquatic Environment - Category 1 Long-term Hazard To The Aquatic Environment - Category 1
Signal word	Warning
Hazard statements	H302 - Harmful if swallowed H315 - Causes skin irritation H319 - Causes serious eye irritation H410 - Very toxic to aquatic life with long lasting effects
Precautionary statements	General P102 - Keep out of reach of children Prevention P273 - Avoid release to the environment P280 - Wear protective gloves/eye protection/face protection 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 P337 / P313 - If eye irritation persists: Get medical advice/attention Disposal P501 - Dispose of contents/container in accordance with local / regional / national / international regulations



SECTION 03 – COMPOSITION / INFORMATION ON INGREDIENTS

<u>Chemical Components</u>	<u>Cas No:</u>	<u>Proportion</u>
Copper Sulphate Pentahydrate	7758-99-8	100%

SECTION 04 – FIRST AID MEASURES

Description of necessary first aid measures	Eye – Wash immediately with plenty of water for at least 15 minutes. Seek immediate medical advice. Ingestion - If swallowed SEEK URGENT MEDICAL ATTENTION. Inhalation – If over exposure occurs leave exposure area immediately. If other than minor symptoms are displayed seek immediate medical attention.
---	---

SAFETY DATA SHEET

Copper Sulphate Pentahydrate – Mining Grade

	<i>Skin</i> - Remove contaminated clothing and gently flush affected areas with water. Seek medical attention if irritation develops. Launder clothing before reuse.
Medical attention / special treatment	Therapy: Gastric lavage with milk-albumin solution, If the copper level in blood is high use chelants, penicillamine if the oral via is practicable otherwise CaEDTA intravenous and BAL intramuscular; for the remainder symptomatic therapy.
Symptoms caused by exposure	Most important symptoms and effects, both acute and delayed: May cause pain in mouth and pharynx, nausea, watery and bloody diarrhoeas and/or decrease of blood pressure. Desaturation of protein with damage at mucosa level, hepatic and renal damage and of the central nervous system, hemolysis. Vomiting with emission of green coloured material, gastric burning, haematic diarrhea, abdominal pain, hemolytic jaundice, hepatic and renal insufficiency, convulsion, collapse. Fever from metal inhalation. Possible eyes and skin irritation.

SECTION 05 – FIRE FIGHTING MEASURES

Suitable extinguishing media	Non flammable. Prevent contamination of drains or waterways, absorb runoff with sand or similar. vapours when heated to decomposition. Use extinguishing media appropriate for surrounding fire (micronized water, CO2, foam).
Specific hazards arising from the chemical	Non flammable. No fire or explosion hazard exists. Will evolve toxic sulphur oxide
Special protective equipment & precautions for fire fighters	Fire fighters should wear a positive-pressure self-contained breathing apparatus (SCBA) and protective fire fighting clothing (includes fire fighting helmet, coat, trousers, boots and gloves).

SECTION 06 – ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures	If spilt (bulk), wear dust-proof goggles, PVC/rubber gloves, a Class P1 (Particulate) respirator and coveralls.
Environmental precautions	Toxic to aquatic organisms in very low concentrations. Do not flush residues to sewer. Absorb all residues.
Methods and materials for containment and cleaning up.	Collect spill and place in sealable containers for disposal. Avoid generating dust.

SECTION 07 – HANDLING AND STORAGE

Precautions for safe handling	Avoid dust formation. Do not breathe dust. Handle in a well ventilated area or wear adequate respiratory protection (FFP2/P2 filter mask). Avoid contact with skin and eyes wearing working clothes, gloves and protective glasses. Do not eat, smoke or drink during use. After use keep the packaging well closed. See also point 8. Specific end uses: Refer to point 1.2 and at the attached exposure scenario. An exposure scenario need to be requested by the user of this substances indicating the appropriate uses and destination.
Conditions for Safe Storage (Including Any Incompatibles)	Store in cool, dry, well ventilated area, removed from hydroxylamine, magnesium, oxidising agents, acids, metals and foodstuffs. Ensure containers are adequately labelled, protected from physical damage and sealed when not in use.

SECTION 08 – EXPOSURE CONTROLS / PERSONAL PROTECTION

Control parameters – exposure standards, biological monitoring	No exposure standard has been established for this product Safe Work Australia.
Appropriate engineering controls	Incompatible violently with hydroxylamine, magnesium, oxidising agents (eg. hypochlorites, peroxides) and acids (eg. nitric acid). Corrosive to some metals. Do not inhale dust/ powder. Use with adequate natural ventilation. Where a dust inhalation hazard exists, mechanical extraction ventilation is recommended.
Personal protective equipment (PPE)	<i>Clothing</i> – Use appropriate clothes and avoid prolonged contact with skin

SAFETY DATA SHEET

Copper Sulphate Pentahydrate – Mining Grade

Eyes – Avoid contact with eyes. Use protective glasses or total face protection (AS1336/1337).
Footwear – Wear safety footwear (AS3765/2210).
Gloves – Protect the hands using suitable gloves (plastic, rubber or resistant to chemical product). Wash the hands after use (AS2161).
Other – Use a suitable dust mask (FFP2/P2 filter mask) if the product forms dust. Do not breathe dust (AS1715/1716).

SECTION 09 – PHYSICAL AND CHEMICAL PROPERTIES

Appearance	Blue crystalline solid, white when dehydrated
Odour	Odourless
Odour threshold	No available
pH	3.0 - 4.2 5% water solution
Melting point/freezing point	110°C
Specific gravity (water = 1)	2.28
Boiling point and boiling range	150°C
Flash point	Not applicable
Evaporation rate	Not available
Flammability	Not available
Upper/lower flammability or explosive limits	Not available
Vapour pressure (hPa @ 20°C)	Not available
Vapour density	Not available
Relative density	Not available
Solubility(ies) (water)	266 g/100 ml 20°C
Partition coefficient: n-octanol/water	Not available
Auto-ignition temperature	Not available
Decomposition temperature	Not available
Viscosity	Not available
Specific heat value	Not available
Particle size	Not available
Volatile organic compounds content	Not available
% volatile	Not available
Saturated vapour concentration	Not available
Release of invisible flammable vapours and gases	Not available

SECTION 10 – STABILITY AND REACTIVITY

Reactivity	The substance is a water soluble inorganic salt of copper (2+) and sulfate ions. It is not considered to have a high reactivity. Due to the presence of copper (2+) ion the product results corrosive to iron in presence of water or humidity.
Chemical stability	The product is stable under normal ambient and anticipated storage and handling condition. Loss of water of crystallization could change the colour of the product to very light blue to white (anhydrous form).
Conditions to avoid	The product could be corrosive for iron material in presence of humidity.
Incompatible materials	Acetylene gas, aluminium powder, hydroxylamine, magnesium, moist air. Contact with magnesium metal can generate dangerous levels of hydrogen gas.
Hazardous decomposition products	At temperatures >600°C material decomposes to cupric oxide and sulphur dioxide.

SECTION 11– TOXICOLOGICAL INFORMATION

Information on routes of exposure	Eyes – Irritating to eyes.
-----------------------------------	-----------------------------------

SAFETY DATA SHEET

Copper Sulphate Pentahydrate – Mining Grade

	<p>Ingestion - Toxic. Ingestion may result in symptoms including nausea, vomiting, abdominal pain and diarrhoea. Large doses may result in kidney, liver and blood damage.</p> <p>Inhalation - Inhalation of copper/ copper compounds has been reported to cause lung and liver damage in animals. Inhalation may also result in respiratory difficulties.</p> <p>Skin - Skin contact may result in itching, dermatitis and burns. Sensitisation has been reported, although it is rare. Poisoning may occur via absorption through abraded skin.</p>
Symptoms related to exposure	Could cause sore throat, abdominal pains, diarrhoea, vomiting. Strongly irritating to eyes and irritating to skin and mucosa.
Numerical measures of toxicity	TDLo (Ingestion) - 150 mg/kg (child) LD50 (Ingestion) - 300 mg/kg (rat)
Immediate, delayed and chronic health effects from exposure	Most important symptoms and effects, both acute and delayed: May cause pain in mouth and pharynx, nausea, watery and bloody diarrhoeas and/or decrease of blood pressure. Denaturation of protein with damage at mucosa level, hepatic and renal damage and of the central nervous system, hemolysis. Vomiting with emission of green coloured material, gastric burning, haematic diarrheal, abdominal pain, hemolytic jaundice, hepatic and renal insufficiency, convulsion, collapse. Fever from metal inhalation. Possible eyes and skin irritation.
Exposure levels	Not available
Interactive effects	Not available
Data limitations	Not available

SECTION 12- ECOLOGICAL INFORMATION

Ecotoxicity	Very toxic to aquatic organisms. May cause long-term adverse effects in the aquatic environment.
Persistence and degradability	Copper ions derived from copper sulphate pentahydrate cannot be degraded. The fate of copper ions in the water column was modelled using the Ticket Unit World Model. Removal was also assessed using data from one mesocosm and three field studies. "Rapid" removal was demonstrated, defined as 70% removal within 28 days. Literature data confirm the strong binding of copper ions to sediment, with the formation of stable Cu-S complexes. Re-mobilisation of copper ions to the water column is therefore not expected. Copper does not meet the criteria as "persistent".
Bioaccumulative potential	Aquatic bioaccumulation: The information demonstrates that copper is well regulated in all living organisms and that BCF and BAF values have no meaning for a hazard assessment. The available data demonstrate that waterborne exposure is most the critical exposure route and that copper is not biomagnified in aquatic ecosystems. Terrestrial bioaccumulation: The available information demonstrates that copper is well regulated in all living organisms and that the BCF and BAF values have no meaning for a hazard assessment.
Mobility in soil	Copper sulphate is partly washed down to lower levels, partly bound by soil components, and partly oxidised. Copper accumulates in soils.
Other adverse effects	Not available

SECTION 13 – DISPOSAL CONSIDERATIONS

Safe handling and disposal methods	Precipitate salts with lime or sodium carbonate, absorb with sand or similar. Dispose of in accordance with all local, state and federal regulations.
Disposal of any contaminated packaging	All empty packaging should be disposed of in accordance with Local, State, and Federal Regulations or recycled/reconditioned at an approved facility.
Environmental regulations	Dispose of in accordance with all local, state and federal regulations.

SECTION 14 – TRANSPORT INFORMATION

UN number	NA
-----------	----



SAFETY DATA SHEET

Copper Sulphate Pentahydrate – Mining Grade

Proper shipping name	Copper Sulphate Pentahydrate
Transport hazard class(es)	NA
Subsidiary risk	NA
Packaging group	NA
Environmental hazards	Not available
Special precautions during transport	Not available
Hazchem code	Not available

SECTION 15 – REGULATORY INFORMATION

AICS name	Sulphuric acid, copper(2+) salt (1:1) pentahydrate
Poisons Schedule number	6

SECTION 16 – OTHER INFORMATION

SDS creations date	04 August 2005
Most recent revision date	01 February 2018
Revision number	014 THIS ISSUE NUMBER REPLACES ALL ISSUES
Reason for revision	Annual Update
Contact person	Ixom 1800 033 111

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.

END OF SDS