

# SAFETY DATA SHEET



Revision date: 04-Aug-2022

Revision Number 8

## Section 1: Identification

### Product identifier

**Product Name** COPPER SULPHATE PENTAHYDRATE

**Product Code(s)** 000031007601

### Other means of identification

**UN number or ID number** 3077

**CAS No.** 7758-99-8

**Synonyms** Copper sulfate pentahydrate; Cupric sulphate pentahydrate; Blue vitriol; Blue copperas; Bluestone.

### Recommended use of the chemical and restrictions on use

**Recommended use** Mining chemical.

**Uses advised against** No information available.

### Details of manufacturer or importer

#### Supplier

IXOM Operations Pty Ltd  
ABN: 51 600 546 512  
Level 8, 1 Nicholson Street  
Melbourne 3000  
Australia

Telephone Number: +61 3 9906 3000

### Emergency telephone number

Emergency telephone number **1 800 033 111 (ALL HOURS)**

Please ensure you refer to the limitations of this Safety Data Sheet as set out in the "Other Information" section at the end of this Data Sheet.

## Section 2: Hazard identification

Classified as a hazardous substance in accordance with the criteria of Safe Work Australia - Globally Harmonized System (GHS).  
Classified as Dangerous Goods by the criteria of the Australian Dangerous Goods Code (ADG Code) for Transport by Road and Rail; DANGEROUS GOODS.

Environmentally Hazardous Substances meeting the descriptions of UN 3077 or UN 3082 are not subject to the provisions of the Australian Code for the Transport of Dangerous Goods by Road and Rail when transported by road or rail in: packagings that do not incorporate a receptacle exceeding 500 kg(L); or IBCs.

### GHS Classification

<b>Acute toxicity - Oral</b>	Category 4
<b>Serious eye damage/eye irritation</b>	Category 1

Acute aquatic toxicity	Category 1
Chronic aquatic toxicity	Category 1

**Label elements**

Corrosion  
Exclamation mark  
Environment

**Signal word**

DANGER

**Hazard statements**

H302 - Harmful if swallowed  
H318 - Causes serious eye damage  
H410 - Very toxic to aquatic life with long lasting effects  
Causes serious eye irritation.

**Precautionary Statements - Prevention**

Wash hands thoroughly after handling.  
Do not eat, drink or smoke when using this product.  
Wear eye/face protection.  
Avoid release to the environment.  
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or doctor/physician.  
IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell.  
Rinse mouth.  
Collect spillage.

**Precautionary Statements - Storage**

No storage statements.

**Precautionary Statements - Disposal**

Dispose of contents/container in accordance with local, regional, national, and international regulations as applicable.

**Other hazards which do not result in classification****Section 3: Composition and information on ingredients**

Chemical name	CAS No.	Weight-%
Copper sulfate pentahydrate	7758-99-8	>=98
Impurities	-	to 100

**Section 4: First aid measures****Description of first aid measures****General advice**

For advice, contact a Poisons Information Centre (e.g. phone Australia 13 11 26; New Zealand 0800 764 766) or a doctor. Show this safety data sheet to the doctor in attendance.

**Inhalation**

IF INHALED: Remove to fresh air and keep at rest in a position comfortable for breathing. If breathing is difficult, (trained personnel should) give oxygen. Get medical attention immediately if symptoms occur.

<b>Eye contact</b>	Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Call a physician.
<b>Skin contact</b>	Wash skin with soap and water. (Call a physician if symptoms occur).
<b>Ingestion</b>	Clean mouth with water and drink afterwards plenty of water. Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Call a physician.
<b>Self-protection of the first aider</b>	Avoid contact with eyes. Use personal protective equipment as required. See section 8 for more information.

**Most important symptoms and effects, both acute and delayed**

<b>Symptoms</b>	Irritation/Corrosion. May cause redness and tearing of the eyes.
<b>Effects of Exposure</b>	No information available.

**Indication of any immediate medical attention and special treatment needed**

<b>Note to physicians</b>	Treat symptomatically. Can cause corneal burns.
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**Section 5: Firefighting measures****Suitable Extinguishing Media**

<b>Suitable extinguishing media</b>	Dry chemical, CO2, water spray or regular foam.
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<b>Unsuitable extinguishing media</b>	No information available.
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**Specific hazards arising from the chemical**

<b>Specific hazards arising from the chemical</b>	Environmentally hazardous. Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations. Non-combustible.
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**Special protective actions for fire-fighters**

<b>Special protective equipment and precautions for fire-fighters</b>	Firefighters should wear self-contained breathing apparatus and full firefighting turnout gear.
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<b>Hazchem code</b>	2Z
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**Section 6: Accidental release measures****Personal precautions, protective equipment and emergency procedures**

<b>Personal precautions</b>	Avoid contact with skin, eyes or clothing. Evacuate personnel to safe areas. Do not touch or walk through spilled material. Use personal protective equipment as required. See section 8 for more information.
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<b>Other information</b>	Refer to protective measures listed in Sections 7 and 8.
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<b>For emergency responders</b>	Use personal protection recommended in Section 8.
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**Environmental precautions**

<b>Environmental precautions</b>	Prevent further leakage or spillage if safe to do so. Keep out of drains, sewers, ditches and waterways. Refer to protective measures listed in Sections 7 and 8.
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**Methods and material for containment and cleaning up**

<b>Methods for containment</b>	Do not touch or walk through spilled material. Keep out of drains, sewers, ditches and waterways.
<b>Methods for cleaning up</b>	Use appropriate personal protective equipment (PPE). Carefully shovel or sweep up spilled material and place in suitable container. Avoid generating dust. Prevent product from entering drains.

**Section 7: Handling and storage****Precautions for safe handling**

**Advice on safe handling** Use personal protection equipment. Avoid generation of dust. Avoid contact with skin, eyes or clothing. Handle in accordance with good industrial hygiene and safety practice.

**General hygiene considerations** Do not eat, drink or smoke when using this product. Avoid contact with skin, eyes or clothing. Wear suitable gloves and eye/face protection. Wash hands before breaks and immediately after handling the product. Regular cleaning of equipment, work area and clothing is recommended.

**Conditions for safe storage, including any incompatibilities**

**Storage Conditions** Keep containers tightly closed in a dry, cool and well-ventilated place. Protect from moisture. Store away from foodstuffs. Keep out of the reach of children. Keep container closed when not in use.

**Incompatible materials** Steel. Hydrazine. Finely powdered metals. Air. Nitromethane. hydroxylamine. magnesium.

**Section 8: Exposure controls and personal protection****Control parameters**

**Exposure Limits** No value assigned for this specific material by Safe Work Australia. However, Workplace Exposure Standard(s) for constituent(s):

Chemical name	Australia	New Zealand	ACGIH TLV
Copper sulfate pentahydrate 7758-99-8	-	TWA: 0.01 mg/m <sup>3</sup>	TWA: 1 mg/m <sup>3</sup> Cu dust and mist

Chemical name	European Union	United Kingdom	Germany DFG
Copper sulfate pentahydrate 7758-99-8	-	TWA: 1 mg/m <sup>3</sup> STEL: 2 mg/m <sup>3</sup>	TWA: 0.01 mg/m <sup>3</sup> Peak: 0.02 mg/m <sup>3</sup>

Copper dusts & mists (as Cu): 8hr TWA = 1 mg/m<sup>3</sup>

Copper (fume): 8hr TWA = 0.2 mg/m<sup>3</sup>

As published by Safe Work Australia Workplace Exposure Standards for Airborne Contaminants.

TWA - The time-weighted average airborne concentration of a particular substance when calculated over an eight-hour working day, for a five-day working week.

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.

**Appropriate engineering controls**

<b>Engineering controls</b>	<p>Eyewash stations. Apply technical measures to comply with the occupational exposure limits.</p> <p>If in the handling and application of this material, safe exposure levels could be exceeded, the use of engineering controls such as local exhaust ventilation must be considered and the results documented. If achieving safe exposure levels does not require engineering controls, then a detailed and documented risk assessment using the relevant Personal Protective Equipment (PPE) (refer to PPE section below) as a basis must be carried out to determine the minimum PPE requirements. Apply technical measures to comply with occupational exposure limits.</p>
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#### Individual protection measures, such as personal protective equipment

The selection of PPE is dependent on a detailed risk assessment. The risk assessment should consider the work situation, the physical form of the chemical, the handling methods, and environmental factors.

OVERALLS, SAFETY SHOES, CHEMICAL GOGGLES, GLOVES, DUST MASK.



<b>Eye/face protection</b>	Tight sealing safety goggles.
<b>Skin and body protection</b>	Wear suitable protective clothing. Boots. Overalls.
<b>Hand protection</b>	Wear suitable gloves.
<b>Respiratory protection</b>	If determined by a risk assessment an inhalation risk exists, wear a dust mask/respirator meeting the requirements of AS/NZS 1715 and AS/NZS 1716.
<b>Environmental exposure controls</b>	No information available.
<b>Thermal hazards</b>	No information available.

### **Section 9: Physical and chemical properties**

#### Information on basic physical and chemical properties

<b>Physical state</b>	Solid
<b>Appearance</b>	Crystalline
<b>Color</b>	Blue
<b>Odor</b>	Odourless
<b>Odor threshold</b>	No information available

<u>Property</u>	<u>Values</u>	<u>Remarks • Method</u>
<b>pH</b>	3.7-4.5 (50 g/L, 25°C)	None known
<b>pH (as aqueous solution)</b>	No data available	None known
<b>Melting point / freezing point</b>	110°C	
<b>Boiling point / boiling range</b>	No data available	
<b>Flash point</b>	No data available	None known
<b>Evaporation rate</b>	No data available	None known
<b>Flammability (solid, gas)</b>	No data available	None known
<b>Flammability Limit in Air</b>		None known
<b>Upper flammability or explosive limits</b>	No data available	

<b>Lower flammability or explosive limits</b>	No data available	
<b>Vapor pressure</b>	9.7 hPa @25°C	
<b>Vapor density</b>	No data available	
<b>Relative density</b>	2.284	
<b>Water solubility</b>	No data available	
<b>Solubility(ies)</b>	Soluble in water	None known
<b>Partition coefficient</b>	No data available	None known
<b>Autoignition temperature</b>	No data available	
<b>Decomposition temperature</b>	No data available	
<b>Kinematic viscosity</b>	No data available	None known
<b>Dynamic viscosity</b>	No data available	None known

Other information**Section 10: Stability and reactivity**Reactivity

**Reactivity** Slowly effloresces in air.

Chemical stability

**Stability** Stable under normal conditions.

Explosion data

**Sensitivity to mechanical impact** None.

**Sensitivity to static discharge** None.

Possibility of hazardous reactions

**Possibility of hazardous reactions** None under normal processing.

**Hazardous polymerization** Hazardous polymerization does not occur.

Conditions to avoid

**Conditions to avoid** Exposure to air. dust formation. Protect from moisture. Do not contaminate food or feed stuffs. Dust formation.

Incompatible materials

**Incompatible materials** Steel. Hydrazine. Finely powdered metals. Air. Nitromethane. hydroxylamine. magnesium.

Hazardous decomposition products

**Hazardous decomposition products** Oxides of copper. Oxides of sulfur.

**Section 11: Toxicological information**Information on likely routes of exposure

**Product Information** No adverse health effects expected if the chemical is handled in accordance with this Safety Data Sheet and the chemical label. Symptoms or effects that may arise if the chemical is mishandled and overexposure occurs are:

**Inhalation** May cause irritation. Breathing in fumes from heating may produce symptoms of 'metal fume fever'. This condition is characterised by influenza type symptoms occurring a few hours after exposure and lasting up to 48 hours. Symptoms may include chills, fever,

headache, tightness of the chest, coughing, weakness, dryness of nose and mouth, muscular pain, nausea, and vomiting.

**Eye contact** Causes serious eye damage.

**Skin contact** May cause irritation.

**Ingestion** Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea. Harmful if swallowed.

**Symptoms** Irritation/Corrosion. May cause redness and tearing of the eyes.

**Acute toxicity**

**Numerical measures of toxicity - Product Information**

Chemical name	Oral LD50	Dermal LD50	Inhalation LC50
Copper sulfate pentahydrate	= 960 mg/kg ( Rat )	> 8 g/kg ( Rabbit )	-

See section 16 for terms and abbreviations

**Delayed and immediate effects as well as chronic effects from short and long-term exposure**

**Skin corrosion/irritation** No information available.

**Serious eye damage/eye irritation** Causes serious eye damage.

**Respiratory or skin sensitization** No information available.

**Germ cell mutagenicity** No information available.

**Carcinogenicity** Not listed as carcinogenic according to IARC.  
(IARC - International Agency for Research on Cancer).

**Reproductive toxicity** No information available.

**STOT - single exposure** No information available.

**STOT - repeated exposure** No information available.

**Aspiration hazard** No information available.

**Section 12: Ecological information**

**Ecotoxicity**

**Aquatic ecotoxicity**

Keep out of waterways. Very toxic to aquatic life with long lasting effects.

Chemical name	Algae/aquatic plants	Fish	Toxicity to microorganisms	Crustacea
Copper sulfate pentahydrate	-	LC50: 0.66 - 1.15mg/L (96h, Lepomis macrochirus) LC50: 0.96 - 1.8mg/L (96h, Lepomis macrochirus) LC50: 0.1478 - 0.165mg/L (96h, Oncorhynchus mykiss) LC50: 0.09 - 0.19mg/L (96h, Oncorhynchus mykiss) LC50: =0.6752mg/L (96h, Pimephales promelas)	-	EC50: 0.147 - 0.227mg/L (48h, Daphnia magna)

**Terrestrial ecotoxicity**

There is no data for this product.

**Persistence and degradability****Persistence and degradability**

No information available.

**Bioaccumulative potential****Bioaccumulation**

There is no data for this product.

**Mobility****Mobility**

No information available.

**Other adverse effects****Other adverse effects**

No information available.

**Section 13: Disposal considerations****Waste treatment methods****Waste from residues/unused products**

Class 9 chemical, if the chemical, or if it contains a component that is bio-accumulative and not rapidly degradable, then any component that is bio-accumulative and not rapidly degradable must be removed. The product may only be discharged into the environment if an environmental exposure limit has been set for the chemical (or a component of the chemical); and the discharge does not, after reasonable mixing, result in the concentration of the substance in an environmental medium exceeding the environmental exposure limit.

**Contaminated packaging**

Empty containers should be taken to an approved waste handling site for recycling or disposal.

See section 8 for more information

**Section 14: Transport information**



<b><u>ADG</u></b>	Classified as Dangerous Goods by the criteria of the Australian Dangerous Goods Code (ADG Code) for Transport by Road and Rail; DANGEROUS GOODS.
	Environmentally Hazardous Substances meeting the descriptions of UN 3077 or UN 3082 are not subject to the provisions of the Australian Code for the Transport of Dangerous Goods by Road and Rail when transported by road or rail in: packagings that do not incorporate a receptacle exceeding 500 kg(L); or IBCs.
<b>UN number or ID number</b>	3077
<b>Proper shipping name</b>	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (COPPER SULPHATE PENTAHYDRATE)
<b>Transport hazard class(es)</b>	9
<b>Packing group</b>	III
<b>Hazchem code</b>	ZZ
<b><u>IATA</u></b>	Classified as Dangerous Goods by the criteria of the International Air Transport Association (IATA) Dangerous Goods Regulations for transport by air; DANGEROUS GOODS.
<b>UN number</b>	3077
<b>UN proper shipping name</b>	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (COPPER SULPHATE PENTAHYDRATE)
<b>Transport hazard class(es)</b>	9
<b>Packing group</b>	III
<b><u>IMDG</u></b>	Classified as Dangerous Goods by the criteria of the International Maritime Dangerous Goods Code (IMDG Code) for transport by sea; DANGEROUS GOODS.
<b>UN number</b>	3077
<b>UN proper shipping name</b>	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (COPPER SULPHATE PENTAHYDRATE)
<b>Transport hazard class(es)</b>	9
<b>Packing group</b>	III
<b>IMDG EMS Fire</b>	F-A
<b>IMDG EMS Spill</b>	S-F
<b>Marine pollutant</b>	P
<b>Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code</b>	No information available

## Section 15: Regulatory information

### Safety, health and environmental regulations/legislation specific for the substance or mixture

#### National regulations

##### Australia

Classified as a hazardous substance in accordance with the criteria of Safe Work Australia - Globally Harmonized System (GHS).  
Classified as Dangerous Goods by the criteria of the Australian Dangerous Goods Code (ADG Code) for Transport by Road and Rail; DANGEROUS GOODS.

Environmentally Hazardous Substances meeting the descriptions of UN 3077 or UN 3082 are not subject to the provisions of the Australian Code for the Transport of Dangerous Goods by Road and Rail when transported by road or rail in: packagings that do not incorporate a receptacle exceeding 500 kg(L); or IBCs.

See section 8 for national exposure control parameters

**Standard for Uniform Scheduling of Medicines and Poisons (SUSMP)**

Classified as a scheduled poison according to the Standard for Uniform Scheduling of Medicines and Poisons (SUSMP)

**Poison Schedule Number** 6**Australian Industrial Chemicals Introduction Scheme (AICIS)**

Contact supplier for inventory compliance status

Chemical name	Australian Industrial Chemicals Introduction Scheme (AICIS)	Additional information
Copper sulfate pentahydrate - 7758-99-8	Present	-

**Illicit Drug Precursors/Reagents**

This product does not contain any substance(s) on the Illicit Drug Precursors/Reagents list.

**National pollutant inventory**

Subject to reporting requirement

Chemical name	National pollutant inventory
Copper sulfate pentahydrate - 7758-99-8	10 tonne/yr Threshold category 1 2000 tonne/yr Threshold category 2b 60000 MWH Threshold category 2b 20 MW Threshold category 2b

**International Inventories**

<b>AIIC</b>	This material is listed on the Australian Inventory of Industrial Chemicals.
<b>NZIoC</b>	This material is listed on the New Zealand Inventory of Chemicals.
<b>TSCA</b>	Contact supplier for inventory compliance status.
<b>DSL/NDSL</b>	Contact supplier for inventory compliance status.
<b>EINECS/ELINCS</b>	Contact supplier for inventory compliance status.
<b>ENCS</b>	Contact supplier for inventory compliance status.
<b>IECSC</b>	Contact supplier for inventory compliance status.
<b>KECL</b>	Contact supplier for inventory compliance status.
<b>PICCS</b>	Contact supplier for inventory compliance status.

**Legend:****AIIC**- Australian Inventory of Industrial Chemicals**NZIoC** - New Zealand Inventory of Chemicals**TSCA** - United States Toxic Substances Control Act Section 8(b) Inventory**DSL/NDSL** - Canadian Domestic Substances List/Non-Domestic Substances List**EINECS/ELINCS** - European Inventory of Existing Chemical Substances/European List of Notified Chemical Substances**ENCS** - Japan Existing and New Chemical Substances**IECSC** - China Inventory of Existing Chemical Substances**KECL** - Korean Existing and Evaluated Chemical Substances**PICCS** - Philippines Inventory of Chemicals and Chemical Substances**International Regulations****The Montreal Protocol on Substances that Deplete the Ozone Layer** Not applicable**The Stockholm Convention on Persistent Organic Pollutants** Not applicable

The Rotterdam Convention Not applicable

## Section 16: Other information

Supplier Material Safety Data Sheet 09/ 2020

**Reason(s) For Issue:** 5 Yearly Revised Primary SDS

**Prepared By** This Safety Data Sheet has been prepared by IXOM Operations Pty Ltd (Toxicology and SDS Services).

**Revision date:** 04-Aug-2022

**Revision Note:**

The symbol (\*) in the margin of this SDS indicates that this line has been revised.

### Key or legend to abbreviations and acronyms used in the safety data sheet

#### Legend

SVHC: Substances of Very High Concern for Authorization:  
 PBT: Persistent, Bioaccumulative, and Toxic (PBT) Substances  
 vPvB: Very Persistent and very Bioaccumulative (vPvB) Substances  
 STOT: Specific Target Organ Toxicity  
 ATE: Acute Toxicity Estimate  
 LC50: 50% Lethal Concentration  
 LD50: 50% Lethal Dose

#### Legend Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

TWA	TWA (time-weighted average)	STEL	STEL (Short Term Exposure Limit)
Ceiling	Maximum limit value	*	Skin designation
C	Carcinogen		

#### Key literature references and sources for data used to compile the SDS

Agency for Toxic Substances and Disease Registry (ATSDR)  
 U.S. Environmental Protection Agency ChemView Database  
 European Food Safety Authority (EFSA)  
 Environmental Protection Agency  
 Acute Exposure Guideline Level(s) (AEGl(s))  
 U.S. Environmental Protection Agency Federal Insecticide, Fungicide, and Rodenticide Act  
 U.S. Environmental Protection Agency High Production Volume Chemicals  
 Food Research Journal  
 Hazardous Substance Database  
 International Uniform Chemical Information Database (IUCLID)  
 National Institute of Technology and Evaluation (NITE)  
 Australia National Industrial Chemicals Notification and Assessment Scheme (NICNAS)  
 Australian Industrial Chemicals Introduction Scheme (AICIS)  
 NIOSH (National Institute for Occupational Safety and Health)  
 National Library of Medicine's ChemID Plus (NLM CIP)  
 National Library of Medicine's PubMed database (NLM PUBMED)  
 U.S. National Toxicology Program (NTP)  
 New Zealand's Chemical Classification and Information Database (CCID)  
 Organization for Economic Co-operation and Development Environment, Health, and Safety Publications  
 Organization for Economic Co-operation and Development High Production Volume Chemicals Program  
 Organization for Economic Co-operation and Development Screening Information Data Set  
 World Health Organization

#### Disclaimer

This SDS summarises to our best knowledge at the date of issue, the chemical health and safety hazards of the material and general guidance on how to safely handle the material in the workplace. Since IXOM Operations Pty Ltd cannot anticipate or control the conditions under which the product may be used, each user must, prior to usage, assess and control the risks arising from its use of the material.

If clarification or further information is needed, the user should contact their IXOM representative or IXOM Operations Pty Ltd at the contact details on page 1.

IXOM Operations Pty Ltd's responsibility for the material as sold is subject to the terms and conditions of sale, a copy of which is available upon request.

**End of Safety Data Sheet**