

Safety Data Sheet **COPPER (II) SULFATE Anhydrous**

SDS no. R2KXTRFK • Version 1.0 • Date of issue: 2024-02-03

SECTION 1: Identification

GHS Product identifier

Product name COPPER (II) SULFATE Anhydrous

Other means of identification

Copper (II) Sulfate Anhydrous LR (Cupric Sulfate Anhydrous) CL071-500G

Copper sulfate anhydrous

Cupric sulfate anhydrous

Copper vitriol anhydrous

Copper monosulfate anhydrous

Recommended use of the chemical and restrictions on use

Dehydrating agent for detection and removal of trace amounts of water from organic compounds including alcohol) and laboratory reagent.

Supplier's details

Name ChemSupply Australia Pty Ltd
Address 38-50 Bedford Street
5013 Gillman South Australia
Australia

Telephone 08 8440 2000
email www.chemsupply.com.au

Emergency phone number

CHEMCALL 1800 127 406 (Australia) / +64-4-917-9888 (International)

SECTION 2: Hazard identification

General hazard statement

Classified as dangerous goods according to the Australian Dangerous Goods Code (ADG).

Classified as Hazardous according to the Globally Harmonised System of classification and labelling of Chemicals (GHS) including Work, Health and Safety regulations, Australia.

Classification of the substance or mixture

GHS classification in accordance with: UN GHS revision 7

- Acute toxicity, oral, Cat. 4

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- Serious eye damage/eye irritation, Cat. 2A
- Skin corrosion/irritation, Cat. 2
- Hazardous to the aquatic environment, short-term (acute), Cat. 1
- Hazardous to the aquatic environment, long-term (chronic), Cat. 1

GHS label elements, including precautionary statements

Pictograms



Signal word

Warning

Hazard statement(s)

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

Precautionary statement(s)

P264	Wash hands 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.
P301+P312	IF SWALLOWED: Call a POISON CENTER/doctor/phycian if you feel unwell,
P302+P352	IF ON SKIN: Wash with plenty of water/soap
P305+P351+P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P321	Specific treatment (see ... on this label).
P330	Rinse mouth.
P332+P313	If skin irritation occurs: Get medical advice/attention.
P337+P313	If eye irritation persists: Get medical advice/attention.
P362+P364	Take off contaminated clothing and wash it before reuse.
P391	Collect spillage.
P501	Dispose of contents/container to an approved waste disposal facility

SECTION 3: Composition/information on ingredients

Mixtures

Molecular weight: 159.6

Components

Component	CAS no.	Concentration
Copper sulfate (anhydrous) (EC no.: 231-847-6; Index no.: 029-023-00-4)	7758-99-8	98 - 100 % (weight)
CLASSIFICATIONS: Acute toxicity, oral, Cat. 4; Hazardous to the aquatic environment, short-term (acute), Cat. 1; Hazardous to the aquatic environment, long-term (chronic), Cat. 1; Serious eye damage/eye irritation, Cat. 2A; Skin corrosion/irritation, Cat. 2. HAZARDS: 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. [SCLs/M-factors/ATEs]: M=10		

SECTION 4: First-aid measures

Description of necessary first-aid measures

General advice	First Aid Facilities: Maintain eyewash fountain and drench facilities in work area.
If inhaled	If inhaled, remove from contaminated area to fresh air immediately. Apply artificial respiration if not breathing. If breathing is difficult, give oxygen. Immediately obtain medical aid if cough or other symptoms appear.
In case of skin contact	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.
In case of eye contact	Immediately irrigate with copious quantity of water for at least 15 minutes. Eyelids to be held open. In all cases of eye contamination it is a sensible precaution to seek medical advice.
If swallowed	Rinse mouth thoroughly with water immediately, repeat until all traces of product have been removed. DO NOT INDUCE VOMITING. Seek immediate medical advice.

Most important symptoms/effects, acute and delayed

The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11

Indication of immediate medical attention and special treatment needed, if necessary

For advice in an emergency, contact a Poisons Information Centre (Phone Australia 131 126) or a doctor at once.

SECTION 5: Fire-fighting measures

Suitable extinguishing media

Use extinguishing media appropriate for surrounding fire.

Specific hazards arising from the chemical

irritating, toxic and corrosive fumes and vapours, including oxides of carbon, oxides of sulfur and copper fumes. Contact with incompatibles such as hydroxylamine may cause ignition; contact with magnesium produces flammable hydrogen gas; contact with acetylene forms dangerous acetylides.

Special protective actions for fire-fighters

Fire fighters should wear full protective clothing and self-contained breathing apparatus (SCBA) operated in positive pressure mode. Fight fire from safe location.

SECTION 6: Accidental release measures

Personal precautions, protective equipment and emergency procedures

Avoid inhalation, contact with skin, eyes and clothing.
Use personal protective equipment listed in Section 8.

Methods and materials for containment and cleaning up

Sweep up (avoid generating dust) and remove to a suitable, clearly labelled container for disposal in accordance with local regulations. Prevent from entering into drains, ditches, rivers or the sea.

SECTION 7: Handling and storage

Precautions for safe handling

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Avoid generation or accumulation of dusts. Avoid contact with eyes. Avoid contact with skin. Avoid ingestion and inhalation of material. Keep container tightly closed when not in use. Use in well ventilated areas. In case of insufficient ventilation, wear suitable respiratory equipment. Wear suitable protective clothing. Keep away from incompatibles.

Conditions for safe storage, including any incompatibilities

Store in a cool, dry place. Store in well ventilated area. Keep containers closed at all times. Isolate from incompatible substances. Solutions are strongly corrosive to iron and galvanized iron.

SECTION 8: Exposure controls/personal protection

Control parameters

CAS: (not specified)

Copper, dusts and mists (as Cu)
AU/SWA (Australia): 1 mg/m³ TWA inhalation

Appropriate engineering controls

Use ventilation adequate to keep exposures (airborne levels of dust, fume, vapor, gas, etc.) below recommended exposure limits.

Individual protection measures, such as personal protective equipment (PPE)

Eye/face 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.

Skin 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.

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.

SECTION 9: Physical and chemical properties

Basic physical and chemical properties

Physical state	Solid
Appearance	Grayish-white to greenish-white rhombic crystals or amorphous powder.
Color	No data available.
Odor	Odourless.
Odor threshold	No data available.
Melting point/freezing point	>200 °C slowly decomposes
Boiling point or initial boiling point and boiling range	No data available.

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Flammability	No data available.
Lower and upper explosion limit/flammability limit	No data available.
Flash point	No data available.
Explosive properties	No data available.
Auto-ignition temperature	No data available.
Decomposition temperature	No data available.
Oxidizing properties	No data available.
pH	pH 4 (50 g/L, H ₂ O, 20 °C)
Kinematic viscosity	No data available.
Solubility	Solubility in Water: Soluble in water (203 g/L @ 20 °C). Solubility in Organic Solvents: Soluble in methanol; practically insoluble in ethanol. Readily dissolves in aqueous ammonia and excess alkali metal cyanides.
Partition coefficient n-octanol/water (log value)	No data available.
Vapor pressure	No data available.
Evaporation rate	No data available.
Density and/or relative density	Specific Gravity: 3.6
Relative vapor density	No data available.
Particle characteristics	No data available.

Supplemental information regarding physical hazard classes

No data available.

Further safety characteristics (supplemental)

Other Information: Dielectricity constant: 10.3 (17-22 °C)

SECTION 10: Stability and reactivity

Reactivity

Stable under normal conditions of storage and handling.

Chemical stability

Hygroscopic. Slowly effloresces in air.

Possibility of hazardous reactions

Copper salts may react with acetylene to form explosive acetylides. Anhydrous copper sulfate can cause ignition upon contact with hydroxylamine due to the heat of coordination. Exothermic dissolution process with water. Copper sulfate can react with magnesium to evolve flammable hydrogen gas. Copper sulfate may react with acetylene to form dangerous acetylides.

Hazardous Polymerization: Will not occur.

Conditions to avoid

Exposure to moisture.

Avoid storing in direct sunlight and avoid extremes of temperature.

Incompatible materials

Acetylene, hydroxylamine, alkalis, phosphates, magnesium, strong reducing agents, powdered metals, hydrazine and nitromethane.

Hazardous decomposition products

No data available.

SECTION 11: Toxicological information

Information on toxicological effects

Acute toxicity

Ingestion: Harmful if swallowed. Symptoms may include repeated vomiting. May cause burning pain in the mouth, throat, esophagus 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 capillary damage, headache, cold sweat, weak pulse, kidney and liver damage, central nervous excitation followed by depression, jaundice, convulsions, blood effects, paralysis and coma. Death may occur from shock or renal failure. Fatalities have occurred as a result of ingesting gram quantities of copper sulfate.

Inhalation: May be harmful if inhaled. Inhalation of copper dust and fumes causes irritation to the mucous membranes and respiratory tract (nose, throat, lungs) and mucous membranes. Symptoms may include coughing, sore throat, wheezing, metallic taste, high temperature, and shortness of breath. May result in harmful corrosive effects including lesions, ulcerations and perforation of the nasal septum and respiratory tract, delayed pulmonary edema, pneumonitis and emphysema. When heated this compound may give off copper fume, which may cause 'fume metal fever' with symptoms similar to the common cold, including chills and stiffness of the head as well as high temperatures, nausea, coughing and general weakness.

// ----- From the Suggestion report (14/02/2024, 10:13 AM) ----- //

The ATE (oral) of the mixture is: 500 mg/kg bw

// ----- From the Suggestion report (14/02/2024, 10:21 AM) ----- //

The ATE (oral) of the mixture is: 500 mg/kg bw

Skin corrosion/irritation

May cause discolouration of the skin; greenish-black skin. May be harmful if absorbed through the skin. Causes skin irritation, possibly severe, resulting in redness, itching and pain. May cause skin sensitization, an allergic reaction, which becomes evident upon re-exposure to this material. May cause skin burns.

Serious eye damage/irritation

Causes eye irritation with symptoms including redness, itching, pain, stinging, blurred vision, local inflammation, tissue destruction, adhesion of the eyelid to the eyes, discoloration and possible eye damage (permanent corneal opacification, chemical conjunctivitis, ulceration) leading to irreversible eye injury.

Respiratory or skin sensitization

No data available.

Germ cell mutagenicity

No data available.

Carcinogenicity

No data available.

Reproductive toxicity

No data available.

Summary of evaluation of the CMR properties

No data available.

Specific target organ toxicity (STOT) - single exposure

No data available.

Specific target organ toxicity (STOT) - repeated exposure

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No data available.

Aspiration hazard

No data available.

Additional information

Chronic Effects: Prolonged or repeated skin exposure may cause defatting leading to dermatitis. Prolonged or repeated exposure to dusts of copper salts may cause discolouration 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. Effects may be delayed. Individuals with Wilson's disease are unable to metabolize copper. Thus, copper accumulates in various tissues and may result in liver, kidney and brain damage. Chronic copper poisoning is typified by hepatic cirrhosis, brain damage and demyelination, kidney defects, and copper deposition in the cornea as exemplified by humans with Wilson's disease. It has also been reported that copper poisoning has led to hemolytic anemia and accelerates arteriosclerosis. Symptoms of systemic copper poisoning may include: capillary damage, headache, cold sweat, weak pulse, and kidney and liver damage, central nervous system excitation followed by depression, jaundice, convulsions, paralysis, and coma. Death may occur from shock or renal failure. Depending on the intensity and duration of exposure, effects may vary from mild irritation to severe destruction of tissue.

SECTION 12: Ecological information

Toxicity

Acute Toxicity - Fish: Severe marine pollutant - IMDG Code.

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.

Fish: *C. auratus* toxic 0.01 mg/l.

The following applies to copper sulfate toxicity for fish concentrations below 1 mg/L:

LC50 (rainbow trout): 0.1 mg/L/96hr.

LC50 (goldfish): 0.1 mg/L/96hr.

SECTION 13: Disposal considerations

Disposal methods

Product disposal

Waste material must be disposed of in accordance with the national and local regulations. Leave chemicals in original containers.

Other disposal recommendations

Do not discharge this material into waterways, drains and sewers.

SECTION 14: Transport information

ADG (Road and Rail)

UN Number: 3077

Class: 9

Packing Group: III

Proper Shipping Name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (CONTAINS COPPER (II) SULFATE, ANHYDROUS)

Hazchem emergency action code (EAC)

2Z

IMDG

UN Number: 3077

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Class: 9
Packing Group: III
Proper Shipping Name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (CONTAINS COPPER (II) SULFATE, ANHYDROUS)

IATA

UN Number: 3077
Class: 9
Packing Group: III
Proper Shipping Name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (CONTAINS COPPER (II) SULFATE, ANHYDROUS)

SECTION 15: Regulatory information

Safety, health and environmental regulations specific for the product in question

Australia SUSMP

Poison Schedule: S6

Canadian Domestic Substances List (DSL)

Chemical name: Sulfuric acid copper(2++) salt (1:1)
CAS: 7758-98-7

SECTION 16: Other information

Further information/disclaimer

ChemSupply Australia 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 ChemSupply Australia 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 ChemSupply Australia 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.

Preparation information

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Standard for the Uniform Scheduling of Medicines and Poisons, Commonwealth of Australia
National Road Transport Commission, 'Australian Code for the Transport of Dangerous Goods by Road and Rail 7th. Ed.'
Safe Work Australia, 'National Code of Practice for the Preparation of Safety Data Sheets for Hazardous Chemicals', July 2020.
Safe Work Australia, 'National Guide for Classifying Hazardous Chemicals', July 2020.
Safe Work Australia, Workplace Exposure Standards for Airborne Contaminants, December 2019
Safe Work Australia, Hazardous Chemical Information System (HCIS), hcis.safeworkaustralia.gov.au
IATA, Dangerous Goods Regulations (DGR)
IMO, International Maritime Dangerous Goods Code (IMDG)