

## Safety Data Sheet 1,10-PHENANTHROLINE Monohydrate

SDS no. FKDVV4M3 • Version 1.0 • Date of issue: 2023-09-02

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### SECTION 1: Identification

#### GHS Product identifier

Product name 1,10-PHENANTHROLINE Monohydrate

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

Redox indicator: oxidised (faint blue) to reduced (red) - forms a complex compound with ferrous ions, determination of nickel, ruthenium, silver and other metals, drier in coatings industry and analytical 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](http://www.chemsupply.com.au)

#### Emergency phone number

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

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### 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. 3
- Hazardous to the aquatic environment, long-term (chronic), Cat. 1
- Hazardous to the aquatic environment, short-term (acute), Cat. 1

#### GHS label elements, including precautionary statements

##### Pictograms



**Signal word**

**Danger**

**Hazard statement(s)**

H301

Toxic if swallowed

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.

P273

Avoid release to the environment.

P301+P310

IF SWALLOWED: Immediately call a POISON CENTER/doctor/phycsian

P391

Collect spillage.

P405

Store locked up.

P501

Dispose of contents/container to an approved waste disposal facility

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**SECTION 3: Composition/information on ingredients**

**Mixtures**

Molecular weight: 198.23

**Components**

Component	CAS no.	Concentration
<b>O-PHENANTHROLINE MONOHYDRATE</b>	<b>5144-89-8</b>	<b>100 % (weight)</b>
CLASSIFICATIONS: Acute toxicity, oral, Cat. 3; Hazardous to the aquatic environment, long-term (chronic), Cat. 1; Hazardous to the aquatic environment, short-term (acute), Cat. 1. HAZARDS: H301 - Toxic if swallowed; H400 - Very toxic to aquatic life; H410 - Very toxic to aquatic life with long lasting effects.		

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**SECTION 4: First-aid measures**

**Description of necessary first-aid measures**

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 immediate 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.  
Seek medical advice if effects persist

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.

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**SECTION 5: Fire-fighting measures****Suitable extinguishing media**

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**

May liberate toxic fumes under fire conditions including combustion products such as oxides of carbon and nitrogen.

May burn but do not ignite readily. Runoff may pollute waterways. Fire or heat may produce irritating, poisonous and/or corrosive gases.

**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.

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**SECTION 6: Accidental release measures****Personal precautions, protective equipment and emergency procedures**

Evacuate the area of all non-essential personnel. Avoid substance contact. Avoid generation of dusts: do not inhale dusts. Ensure supply of fresh air in enclosed rooms.

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

**Methods and materials for containment and cleaning up**

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.

Avoid release to the environment.

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

Avoid generation or accumulation of dusts. Do not breathe dust. Do not get in eyes, on skin, on clothing. Avoid prolonged or repeated exposure. Keep material away from sparks, flames and other ignition sources.

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

Store in cool place and out of direct sunlight. Store in well ventilated area. Store away from sources of heat or ignition. Store away from oxidizing agents. Keep containers closed at all times.

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**SECTION 8: Exposure controls/personal protection****Appropriate engineering controls**

When making up indicator solution, do so in the fume cupboard.

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

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#### 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: Rubber or plastic gloves.

#### Body protection

Suitable protective workwear, e.g. cotton overalls buttoned at neck and wrist is recommended. Chemical resistant apron is recommended where large quantities are handled.

#### 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.

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## SECTION 9: Physical and chemical properties

#### Basic physical and chemical properties

Physical state	Solid
Appearance	White to colourless crystalline powder.
Color	No data available.
Odor	Odourless.
Odor threshold	No data available.
Melting point/freezing point	93 - 94°C
Boiling point or initial boiling point and boiling range	No data available.
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 ~4.0 (50 g/l, H <sub>2</sub> O @ 20 °C)
Kinematic viscosity	No data available.
Solubility	Solubility in Water: Soluble Solubility in Organic Solvents: Soluble in alcohol, benzene and acetone.
Partition coefficient n-octanol/water (log value)	LogP (o/w): 1.78
Vapor pressure	No data available.
Evaporation rate	No data available.
Density and/or relative density	Specific Gravity: 1.636
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: Sensitivity to iron = 1:10,000,000.

A heterocyclic compound.

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## **SECTION 10: Stability and reactivity**

### **Reactivity**

Stable under normal conditions of storage and handling.

### **Chemical stability**

Stable under recommended storage conditions.

### **Possibility of hazardous reactions**

Hazardous Polymerization: Will not occur.

May form combustible dust concentrations in air

### **Conditions to avoid**

Dust generation. Heat, flames, ignition sources and incompatibles.

### **Incompatible materials**

Strong oxidising agents and nitric acid.

### **Hazardous decomposition products**

Oxides of nitrogen and carbon.

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## **SECTION 11: Toxicological information**

### **Information on toxicological effects**

#### **Acute toxicity**

Oral: LD50 (rat): 132 mg/kg

Ingestion: Toxic if swallowed. May cause gastrointestinal irritation with nausea, vomiting and diarrhea.

Inhalation: Harmful if inhaled. Irritating to mucous membranes and respiratory tract.

#### **Skin corrosion/irritation**

May be Irritating to skin.

#### **Serious eye damage/irritation**

May be irritating to eyes.

#### **Respiratory or skin sensitization**

No data available

#### **Germ cell mutagenicity**

No data available

#### **Carcinogenicity**

No data available

#### **Reproductive toxicity**

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

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O-PHENANTHROLINE MONOHYDRATE: ROUTE OF EXPOSURE

Skin Contact: May cause skin irritation.

Skin Absorption: May be harmful if absorbed through the skin.

Eye Contact: May cause eye irritation.

Inhalation: Material may be irritating to mucous membranes and upper respiratory tract. May be harmful if inhaled.

Ingestion: Toxic if swallowed.

#### TOXICITY DATA

Oral

Rat

132 mg/kg

LD50

#### CHRONIC EXPOSURE - MUTAGEN

Species: Mouse

Dose: 5 UMOL/L

Cell Type: Ascites tumor

Mutation test: DNA inhibition

#### \*TOXICITY:

typ. dose mode specie amount units other

LD50 orl rat 132 mg/kg

LD50 ipr mus 75 mg/kg

LD50 ivn mus 18 mg/kg

\*AQTX/TLM96: Not available

#### \*SAX TOXICITY EVALUATION:

THR: Not available

\*CARCINOGENICITY: Not available

#### \*MUTATION DATA:

test lowest dose | test lowest dose

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Not available |

#### \*TERATOGENICITY:

Reproductive Effects Data:

TDLo: ipr-mus 30 mg/kg (8D preg)

#### \*STANDARDS, REGULATIONS & RECOMMENDATIONS:

OSHA: None

ACGIH: None

NIOSH Criteria Document: None

NFPA Hazard Rating: Health (H): None

Flammability (F): None

Reactivity (R): None

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#### \*OTHER TOXICITY DATA:

Status: EPA TSCA Chemical Inventory, 1986

Meets criteria for proposed OSHA Medical Records Rule

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## SECTION 12: Ecological information

#### Toxicity

No data available on product

#### Bioaccumulative potential

Not expected. Log Pow: 1.78.

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## 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.

##### Sewage disposal

Not expected. Log Pow: 1.78.

##### Other disposal recommendations

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

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## SECTION 14: Transport information

#### ADG (Road and Rail)

UN Number: 2811

Class: 6.1

Packing Group: III

Proper Shipping Name: TOXIC SOLID, ORGANIC, N.O.S. (1,10-PHENANTHROLINE MONOHYDRATE)

#### Hazchem emergency action code (EAC)

2X

#### IMDG

UN Number: 2811

Class: 6.1

Packing Group: III

EMS Number:

Proper Shipping Name: TOXIC SOLID, ORGANIC, N.O.S. (1,10-PHENANTHROLINE MONOHYDRATE)

#### IATA

UN Number: 2811

Class: 6.1

Packing Group: III

Proper Shipping Name: TOXIC SOLID, ORGANIC, N.O.S. (1,10-PHENANTHROLINE MONOHYDRATE)

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## SECTION 15: Regulatory information

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

##### Australia SUSMP

Poison Schedule: NS

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## **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](https://hcis.safeworkaustralia.gov.au)

IATA, Dangerous Goods Regulations (DGR)

IMO, International Maritime Dangerous Goods Code (IMDG)