# Chemical Name: Quinine Sulfate

## 1. Identification

### GHS Product Identifier

<table>
<thead>
<tr>
<th>Company Name</th>
<th>Address</th>
<th>Telephone/Fax Number</th>
<th>Fax Number</th>
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<tbody>
<tr>
<td>CHEM-SUPPLY PTY LTD (ABN 19 008 264 211)</td>
<td>38 - 50 Bedford Street GILLMAN</td>
<td>Tel: (08) 8440-2000</td>
<td>Fax: (08) 8440-2001</td>
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### Quinine is listed as a Schedule 4 poison for human therapeutic use except when the maximum recommended daily dose is 50 mg or less of quinine in the 'Standard for the Uniform Scheduling of Drugs and Poisons No. 22', Commonwealth Department of Health and Ageing, Commonwealth of Australia, Canberra 2007.

### Additional Information

- **Name**: QUININE SULFATE LR
- **Product Code**: QL000

### Other Information

- **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

### GHS classification of the substance/mixture

- **Acute Toxicity - Dermal**: Category 2
- **Eye Damage/Irritation**: Category 2A
- **Specific Target Organ Toxicity - Single Exposure Category 3**: (respiratory tract irritation)

### Hazard Statement(s)

- H314 Causes severe skin burns and eye damage.
- H319 Causes serious eye irritation.
- H335 May cause respiratory irritation.

### Pictogram(s)

- Exclamation mark

### Precautionary statement – Prevention

- P261 Avoid breathing dust/fume/gas/mist/vapours/spray.
- P264 Wash thoroughly after handling.
- P271 Use only outdoors or in a well-ventilated area.
- P280 Wear protective gloves/protective clothing/eye protection/face protection.

### Precautionary statement – Response

- P302+P352 IF ON SKIN: Wash with plenty of soap and water.
- P332+P313 If skin irritation occurs: Get medical advice/attention.
- P362 Take off contaminated clothing and wash before reuse.
- P304+P340 IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
- P312 Call a POISON CENTER or doctor/physician if you feel unwell.
- 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.
Safety Data Sheet

Product Name: QUININE SULFATE

Precautionary statement – Storage
P403+P233 Store in a well-ventilated place. Keep container tightly closed.
P405 Store locked up.

Precautionary statement – Disposal
P501 Dispose of contents/container to an approved waste disposal plant.

3. Composition/information on ingredients

Chemical Characterization
Information on Composition
Finely ground cinchona bark mixed with lime is extracted with hot, high-boiling paraffin oil. The solution is filtered, shaken with dilute sulfuric acid and the latter neutralised while still hot with sodium carbonate. On cooling, quinine sulfate crystallises out.

Ingredients

<table>
<thead>
<tr>
<th>Name</th>
<th>CAS</th>
<th>Proportion</th>
<th>Hazard Symbol</th>
<th>Risk Phrase</th>
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</thead>
<tbody>
<tr>
<td>Quinine sulfate dihydrate</td>
<td>6119-70-6</td>
<td>100 %</td>
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4. First-aid measures

Inhalation: If inhaled, remove from contaminated area to fresh air immediately. Apply artificial respiration if not breathing. If breathing is difficult, give oxygen. Consult a physician.

Ingestion: Rinse mouth thoroughly with water immediately, repeat until all traces of product have been removed. DO NOT INDUCE VOMITING. Seek immediate medical advice.

Skin: Wash affected area thoroughly with copious amounts of running water. Remove contaminated clothing and wash before reuse. Seek medical attention if irritation develops or persists.

Eye contact: If contact with the eye(s) occurs, wash with copious amounts of water for approximately 15 minutes holding eyelid(s) open. Take care not to rinse contaminated water into the non-affected eye. If persistent irritation occurs, obtain medical attention.

First Aid Facilities: Maintain eyewash fountain and drench facilities in work area.

Advice to Doctor: Treat symptomatically based on judgement of doctor and individual reactions of the patient.

Other Information: For advice, contact a Poisons Information Centre (Phone eg Australia 13 1126; New Zealand 0800 764 766) or a doctor.

5. Fire-fighting measures

Hazard from Combustion Products: Irritating and highly toxic gases, including carbon monoxide, nitrogen oxides (NOx), sulfur oxides (SOx) and carbon dioxide.

Specific Methods: Small fire: Use dry chemical, CO2, water spray or foam.

Specific hazards arising from the chemical Decomposition Temp.: May burn but do not ignite readily. Runoff may pollute waterways. Fire may produce irritating, poisonous and/or corrosive fumes. > 235 °C

6. Accidental release measures

Personal Precautions: Avoid substance contact. Avoid generation of dusts: do not inhale dusts. Ensure supply of fresh air in enclosed rooms.

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

Clean-up Methods - Small Spillages: 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.

7. Handling and storage

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 container tightly closed. Ensure good ventilation at the workplace. In case of insufficient ventilation, wear suitable respiratory equipment.

If you feel unwell, seek medical attention and show the label when possible. Wash thoroughly after handling. Wear suitable protective clothing. Wash contaminated clothing before reuse.

Conditions for safe storage, including any incompatibilities: Store in tightly closed, light-resistant containers, in a cool, dry, well-ventilated area, away from incompatible substances. Quinine sulfate darkens on exposure to light.
QUININE SULFATE

Classified as hazardous

8. Exposure controls/personal protection

Other Exposure Information
No exposure standards have been established for this product by Safe Work Australia, however, the TWA exposure standard for dusts not otherwise specified is 10 mg/m³.

Appropriate engineering controls
In industrial situations maintain the concentration 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.

Personal Protective Equipment
Final choice of personal protective equipment will depend on individual circumstances and/or according to risk assessments undertaken.

Body Protection
Clean clothing or protective clothing should be worn. 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
White or almost white fine, needle-like, white crystals which are usually lusterless and make a light and readily compressible mass, or crystalline powder. Becomes brownish on exposure to light.

Odour
Odourless.

Decomposition Temperature
> 235 °C

Melting Point
205 °C; ~225 °C (decomposes); 233-235 °C.

Boiling Point
Decomposes

Solubility in Water
Slightly soluble in water, sparingly soluble in boiling water (1 g/ 810 mL water (20 °C)).

Solubility in Organic Solvents
Sparingly soluble in ethanol. Soluble in methanol. Solubilities of approximately 8.3 mg/ml in alcohol at 25 °C. Partially soluble in diethyl ether.

pH
5.7 - 6.1 (1 % suspension in water)

Volatile Component
0 %vol @ 21 °C

Flammability
Combustible.

Explosion Properties
Fine dust dispersed in air in sufficient concentrations, and in the presence of an ignition source is a potential dust explosion hazard.

Molecular Weight
782.95

Other Information
Taste: A persistent, very bitter taste. Specific Rotation: -237° to -245°.

10. Stability and reactivity

Chemical Stability
Stable in sealed containers, under normal temperatures and pressures. Light sensitive - darkens and may decompose when exposed to light. Loses water with heat.

Conditions to Avoid
Heat, dust generation, exposure to light and incompatible materials.

Incompatible Materials
Acetates, ammonia, alkalies, benzoates, citrates, iodides, iodines, light, limewater, oxidizing agents, salicylates, tannic acid and tartrates.

Hazardous Decomposition Products
Irritating and highly toxic gases, including carbon monoxide, nitrogen oxides (NOx), sulfur oxides (SOx) and carbon dioxide.
Classified as hazardous

Possibility of hazardous reactions
Reactive with strong oxidizers.

Hazardous Polymerization
Will not occur.

11. Toxicological Information

Ingestion
May be harmful if swallowed. Cinchonism may occur following ingestion. Adverse signs and symptoms at therapeutic doses may include headaches, abdominal pain, nausea, vomiting, diarrhoea, tinnitus and reversible hearing loss. In higher doses, visual changes (including temporary blindness) may occur and more severe toxicity such as cardiotoxicity may be seen with still higher doses. Skin rashes and haemolytic uremic syndrome may occur in sensitive individuals even at therapeutic doses. Causes gastrointestinal irritation with nausea, vomiting and diarrhoea. Signs and symptoms may include headache, deafness, vomiting, abdominal pain, tachycardia, ataxia, paressthesias, blindness, prolonged PR, QRS and QT intervals, dysrhythmias, hypotension, syncope, respiratory arrest, coma, heart failure and death. Cardiovascular effects typically occur within 8 hours of ingestion. Cardiotoxicity which may be delayed until 25 hours after ingestion has been reported. ECG changes closely reflect relative tissue levels. Decreased visual acuity and visual field constriction may progress to sudden blindness with non-reactive, dilated pupils. Fixed dilated pupils are seen frequently in children following ingestion. Tinnitus (ringing in the ears) and concentration-dependent hearing impairment are frequent. Cardiotoxicity typically appears within 8 hours following ingestion of quinine. Respiratory depression may occur. CNS depression and seizures may occur. Central nervous system toxicity seems to be more marked in children than adults; children frequently present with seizures following an overdose. May cause systemic toxic effects on the heart, liver, and kidneys. Exposure may cause anaemia and other blood abnormalities. Immune-mediated pancytopenia and coagulopathy may occur at therapeutic doses of quinine. This may be associated with renal failure and the haemolytic uremic syndrome. Thrombocytopenia may result. Haemolytic anaemia may occur in patients with G6PD deficiency. Acute interstitial nephritis has been reported. May cause acute hepatic failure. Dermatologic effects may include photosensitivity reactions and dermatitis. Hypoglycaemia has been reported. Produces lethargy, drowsiness, irritability and dizziness. May cause acute pulmonary oedema, cardiomyopathy including infarction, flaccid paralysis without anesthesia and aranulocytosis. Hypersensitivity reactions may include skin rashes, drug fever, angioedema and acute renal failure. Death has occurred following doses greater than 4 g.

Inhalation
Harmful if inhaled. May cause irritation to the respiratory tract. Symptoms may include coughing and shortness of breath. Can be route for absorption in the body. May cause effects similar to those described for ingestion.

Skin
May cause skin irritation. May have some absorption. May be harmful if absorbed through the skin. May cause an allergic reaction in certain individuals.

Eye
May cause eye irritation, redness and pain.

Carcinogenicity
Not listed in the IARC Monographs.

Reproductive Toxicity
Adverse reproductive effects have been reported in animals. Anhydrous quinine sulfate shows reproductive effects in rats and mutagenic effects in bacteria. (RTECS) Quinine passes through the placenta. Use of quinine as an abortifacient can produce poisoning in the foetus with frequent infant deafness (Dannenberg et al., 1983). Numerous malformations and foetal anomalies have been reported. Other suspected teratogenic effects of quinine include blindness and physical malformation. It passes into breast milk (Ellenhorn, M.J. and D.G. Barceloux. Medical Toxicology - Diagnosis and Treatment of Human Poisoning. New York, NY: Elsevier Science Publishing Co., Inc. 1988., p. 392). It has been reported to decrease male reproductive capacity.

Chronic Effects
Repeated or prolonged exposure to the substance can produce damage to the eyes, and liver, blood effects, stomach pains, vomiting, and diarrhoea. May produce central nervous system depression which may lead to cardiac and respiratory dysfunction. Prolonged or repeated skin contact may cause sensitization dermatitis and possible destruction and/or ulceration.

Mutagenicity
Quinine: DNA damage system-mammal (species unspecified); lym 100 mmol/L ('Dangerous Properties of Industrial Materials', 7th Ed., by N. Irving Sax and Richard J. Lewis).

12. Ecological information

Environmental Fate
Quinine is chief alkaloid of cinchona, the bark of cinchona tree indigenous to certain regions of South America.

Environmental Protection
Do not allow to enter waters, waste water, or soil!

13. Disposal considerations
Safety Data Sheet

Product Name: QUININE SULFATE

14. Transport information

Transport Information
Not classified as a Dangerous Good according to the Australian Code for the Transport of Dangerous Goods by Road and Rail.

15. Regulatory information

Regulatory Information
Not listed under WHS Regulation 2011, Schedule 10 - Prohibited carcinogens, restricted carcinogens and restricted hazardous chemicals.

Poisons Schedule
Not Scheduled

16. Other Information

Literature References
'Standard for the Uniform Scheduling of Medicines and Poisons.', Commonwealth of Australia.
Safe Work Australia, 'Approved Criteria for Classifying Hazardous Substances [NOHSC:1008 (2004)]'.
Safe Work Australia, 'Hazardous Substances Information System, 2005'.
Safe Work Australia, 'National Code of Practice for the Labelling of Safe Work Hazardous Substances (2011)'.

Contact Person/Point
Paul McCarthy Ph. (08) 8440 2000

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Empirical Formula & Structural Formula
(C20H24N2O2)•H2SO4•2H2O

...End Of MSDS...