

Safety Data Sheet ZINC SULFATE Heptahydrate

SDS no. 7NTFCG9U • Version 1.0 • Date of issue: 2024-10-10

SECTION 1: Identification

GHS Product identifier

Product name ZINC SULFATE Heptahydrate

Other means of identification

Product Product Code

ZINC SULFATE Heptahydrate AR ZA012

ZINC SULFATE Heptahydrate TG ZT012

ZINC SULFATE Heptahydrate USP ZP012

Zinc vitriol, White vitriol, White copperas, Zincate, Sulfuric acid zinc salt heptahydrate

Recommended use of the chemical and restrictions on use

Rayon manufacture, agriculture sprays, pharmaceutical industry (supplement for humans, animals and plants with zinc deficiency), galvanising, electroplating, in sewage against animal pathogenic bacteria, cosmetics, paper bleaching, fireproofing agent, animal feeds, synthesis of organic products, analytical 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

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- Acute toxicity, oral, Cat. 4
- Serious eye damage/eye irritation, Cat. 1
- 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)

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

Precautionary statement(s)

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/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.
P391 Collect spillage.
P501 Dispose of contents/container to an approved waste disposal facility

SECTION 3: Composition/information on ingredients

Mixtures

Molecular weight: 287.54

Components

Component	CAS no.	Concentration
Zinc sulfate Heptahydrate	7446-20-0	<= 100 % (weight)
CLASSIFICATIONS: Acute toxicity, oral, Cat. 4; Hazardous to the aquatic environment, long-term (chronic), Cat. 1; Hazardous to the aquatic environment, short-term (acute), Cat. 1; Serious eye damage/eye irritation, Cat. 1. HAZARDS: H302 - Harmful if swallowed; H318 - Causes serious eye damage; H400 - Very toxic to aquatic life; H410 - Very toxic to aquatic life with long lasting effects.		

SECTION 4: First-aid measures

Description of necessary first-aid measures

General advice

First Aid Facilities: Maintain eyewash fountain 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. Get medical aid if cough or other symptoms appear.

In case of skin contact

Wash skin with water using soap if available. If persistent irritation occurs, obtain medical attention.

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In case of eye contact	Immediately irrigate with copious quantity of water for at least 15 minutes. Eyelids to be held open. Obtain medical attention immediately.
If swallowed	Rinse mouth thoroughly with water immediately, repeat until all traces of product have been removed. DO NOT INDUCE VOMITING. Seek medical advice if effects persist.

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, contact the National Poisons Information Centre (Phone Australia 13 11 26; New Zealand 0800 764 766) or a doctor.

SECTION 5: Fire-fighting measures

Suitable extinguishing media

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

Large fire: Use water spray, fog or foam.

If safe to do so, move undamaged containers from fire area. Cool containers with flooding quantities of water until well after the fire is out.

Specific hazards arising from the chemical

Hazards from Combustion Products: May liberate toxic fumes in fire (sulfur oxides).

Material may burn but not ignite readily. Fire or heat may produce irritating, poisonous and/or corrosive gases. Containers may explode when heated. Runoff may pollute waterways.

Special protective actions for fire-fighters

Wear SCBA and structural firefighter's uniform.

SECTION 6: Accidental release measures

Personal precautions, protective equipment and emergency procedures

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

Do NOT touch or walk through spilled material. Stop leak if safe to do so. Prevent entry into waterways, drains, confined areas. Prevent dust cloud. Water spray may be used to knock down or divert vapour clouds. Sweep up (avoid generating dust) and remove to a suitable, clearly labelled container for disposal in accordance with local regulations.

SECTION 7: Handling and storage

Precautions for safe handling

Avoid generation or accumulation of dusts. Avoid prolonged or repeated contact with skin and eyes. Wash hands and face thoroughly after working with material. Use with adequate ventilation. In case of insufficient ventilation, wear suitable respiratory equipment.

Conditions for safe storage, including any incompatibilities

Keep containers closed at all times. Store in a cool, dry place. Store in well ventilated area. Store away from heat. Keep dry - reacts with water; may lead to drum rupture.

SECTION 8: Exposure controls/personal protection

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

Clean impervious clothing should be worn. Clothing for protection against chemicals should comply with AS 3765 Clothing for Protection Against Hazardous Chemicals.

Hand Protection: Ensure hand protection complies with AS 2161, Occupational protective gloves - Selection, use and maintenance.

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	Colourless to white crystals, small needles, or granular powder.
Color	No data available.
Odor	Odourless.
Odor threshold	No data available.
Melting point/freezing point	100 °C, loses water at 280 °C (heptahydrate)
Boiling point or initial boiling point and boiling range	> 500 °C (heptahydrate)
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 - 6.0 (50 g/L, H ₂ O, 20 °C)
Kinematic viscosity	No data available.
Solubility	Solubility in Water: Soluble. Solubility in Organic Solvents: Soluble in glycerol. Insoluble in alcohol.
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: 1.96 (heptahydrate); 3.2 (monohydrate)
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: Astringent, metallic taste.

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

Reacts with water to form sulfuric acid.

Conditions to avoid

Exposure to moisture. Strong heating. Incompatibles.

Incompatible materials

Water, lead, calcium, strontium salts, borax, alkali carbonates and hydroxides, silver proteins, strong oxidizing agents and tannins.

Hazardous decomposition products

Oxides of sulfur and zinc.

SECTION 11: Toxicological information

Information on toxicological effects

Acute toxicity

Acute Toxicity - Oral: In a study carried out using OECD Test Guideline (TG) 423, zinc sulfate heptahydrate had an LD50 between 1000 to 2000 mg/kg bw in rats of both sexes. Reported signs of toxicity include hunched posture, lethargy, ataxia, piloerection, splayed gait, laboured respiration, emaciation, red-brown staining around the eyes and diarrhoea (EU RAR, 2004; REACH).

Ingestion: Harmful if swallowed. May hydrolyze to acid if swallowed. May cause severe irritation and burns of the mouth, throat and digestive system. Symptoms may include vomiting, diarrhea, burning sensation, coughing, wheezing, shortness of breath, headaches, nausea, inflammation of mucous membranes, stomach pain, cold sweats, leg cramps. Ingestion of material in large doses may cause metallic fume fever.

Inhalation: Inhalation of dust may cause irritation to the mucous membranes of the respiratory tract. Symptoms may cause coughing, shortness of breath, chills, nausea, fever and tightness of the chest. Inhalation may lead to the formation of respiratory edemas.

Skin corrosion/irritation

May cause irritation, redness, itching and pain. Over exposure may cause dermatitis.

Serious eye damage/irritation

Eye contact with material may cause redness, pain, severe irritation and possible mechanical harm. Risk of serious damage to eyes.

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

No data available.

Aspiration hazard

No data available.

Additional information

Chronic Effects: May cause minor, reversible health effects on the lungs. Prolonged or repeated exposure of dust via inhalation or ingestion may lead to an increased pulse rate without blood pressure decrease, blood pressure decrease, acute pulmonary edema/bronchitis/pneumonia with bluish skin, metal fume fever with symptoms including metallic taste, marked thirst, coughing, weakness, muscular pain and nausea followed by fever and chills. Further damage may be caused to cardiovascular system, kidneys, and pancreas. These conditions typically disappears after exposure to material ceases. Prolonged or repeated skin contact can cause severe dermatitis (oxide pox). Repeated eye contact can cause eye effects.

Zinc sulfate Heptahydrate: dog LDLo intravenous 66mg/kg (66mg/kg) "Abdernalden's Handbuch der Biologischen Arbeitsmethoden." Vol. 4, Pg. 1419, 1935.

dog LDLo subcutaneous 78mg/kg (78mg/kg) "Abdernalden's Handbuch der Biologischen Arbeitsmethoden." Vol. 4, Pg. 1419, 1935.
guinea pig LDLo subcutaneous 590mg/kg (590mg/kg) BEHAVIORAL: SOMNOLENCE (GENERAL DEPRESSED ACTIVITY)

BEHAVIORAL: COMA

GASTROINTESTINAL: "HYPERMOTILITY, DIARRHEA" British Medical Journal. Vol. 2, Pg. 217, 1913.

man LDLo unreported 221mg/kg (221mg/kg) "Poisoning; Toxicology, Symptoms, Treatments," 2nd ed., Arena, J.M., Springfield, IL, C.C. Thomas, 1970 Vol. 2, Pg. 73, 1970.

mouse LD50 intraperitoneal 75mg/kg (75mg/kg) Agents and Actions, A Swiss Journal of Pharmacology. Vol. 16, Pg. 580, 1985.
Link to PubMed

mouse LD50 oral 200mg/kg (200mg/kg) Weisheng Dulixue Zazhi. Journal of Health Toxicology. Vol. 5, Pg. 98, 1991.

rabbit LDLo intravenous 44mg/kg (44mg/kg) "Abdernalden's Handbuch der Biologischen Arbeitsmethoden." Vol. 4, Pg. 1419, 1935.

rabbit LDLo oral 1914mg/kg (1914mg/kg) "Abdernalden's Handbuch der Biologischen Arbeitsmethoden." Vol. 4, Pg. 1419, 1935.

rat LD50 intraperitoneal 200mg/kg (200mg/kg) Bulletin de la Societe de Pharmacie de Bordeaux. Vol. 116, Pg. 47, 1977.

rat LD50 oral 1260mg/kg (1260mg/kg) BEHAVIORAL: SLEEP

BEHAVIORAL: ATAXIA

LUNGS, THORAX, OR RESPIRATION: RESPIRATORY STIMULATION Weisheng Dulixue Zazhi. Journal of Health Toxicology. Vol. 5, Pg. 98, 1991.

rat LDLo intravenous 49mg/kg (49mg/kg) "Abdernalden's Handbuch der Biologischen Arbeitsmethoden." Vol. 4, Pg. 1419, 1935.

rat LDLo subcutaneous 330mg/kg (330mg/kg) "Abdernalden's Handbuch der Biologischen Arbeitsmethoden." Vol. 4, Pg. 1419, 1935.

SECTION 12: Ecological information

Toxicity

Acute Toxicity - Fish: LC50 (Onchorhynchus mykiss): 0.43 mg/l/96 h (anhydrous substance)

Toxic to aquatic life. 96-hour LC50 (fish): 1 - 10 mg/L.

[8Y] Acute Toxicity - Daphnia: EC50 (Daphnia magna): 0.15 mg/l/48 h

[8Z] Acute Toxicity - Algae: Bactericidal effect. Hazard for drinking water supplies.
IC50 (Sc. quadricauda): 0.52 mg/l/5 d.

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 ZINC SULPHATE HEPTAHYDRATE)

Hazchem emergency action code (EAC)

2Z

IMDG

UN Number: 3077

Class: 9

Packing Group: III

Proper Shipping Name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Contains ZINC SULPHATE HEPTAHYDRATE)

IATA

UN Number: 3077

Class: 9

Packing Group: III

Proper Shipping Name: ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S. (Contains ZINC SULPHATE HEPTAHYDRATE)

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, zinc salt (1:1), heptahydrate

CAS: 7446-20-0

SECTION 16: Other information

Further information/disclaimer

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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)