Safety Data Sheet FERROUS SULFATE

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SECTION 1: Identification

GHS Product identifier

Product name	FERROUS SULFATE

Other means of identification

Iron (II) Sulfate Heptahydrate (Ferrous sulfate)	FA001
Iron(II) Sulfate Heptahydrate LR (Ferrous sulfate)	FL001
Iron(II) Sulfate Dried LR (Ferrous sulfate)	FL036
Iron(II) Sulfate Dried BP (Ferrous sulfate)	FP036
Iron(II) Sulfate Heptahydrate TG (Ferrous sulfate)	FT001

Recommended use of the chemical and restrictions on use

Iron oxide pigment; other iron salts; ferrites; water and sewage treatment; catalyst, especially for synthetic ammonia; fertiliser; feed additive; flour enrichment; reducing agent; herbicide; wood preservative; process engraving and electroplating; analytical reagent; laboratory reagent,

Additional information: When used for laboratory chemical analysis, it has no poison schedule. If this compound is used in human or animal application then it may acquire a poison schedule of S6, S5, S4 or S2. {refer to 'Standard for the Uniform Scheduling of drugs and Poisons, No. 16'}

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

Not 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
- Serious eye damage/eye irritation, Cat. 2A
- Skin corrosion/irritation, Cat. 2

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
Precautionary statement(s)	
P264	Wash hands thoroughly after handling.
P270	Do not eat, drink or smoke when using this product.
P280	Wear protective gloves/protective clothing/eye protection/face protection.
P301+P312	IF SWALLOWED: Call a POISON CENTER/doctor/physcian 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.
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.
P501	Dispose of contents/container to an approved waste disposal facility

SECTION 3: Composition/information on ingredients

Mixtures

Molecular weight: 278.021519116991

Components

Component	CAS no.	Concentration
Ferrous sulfate (EC no.: 231-753-5; Index no.: 026-003-01-4)	**7782-63-0**	**90 - 100 % (weight)**
CLASSIFICATIONS: Acute toxicity, oral, Cat. 4; Skin corrosion/irritation, Cat. 2; Serious eye damage/eye irritation, Cat. 2A. HAZARDS: H302 - Harmful if swallowed; H315 - Causes skin irritation; H319 - Causes serious eye irritation. [SCLs/M-factors/ATEs]: Skin Irrit. 2; H315: C ≥ 25 %		

SECTION 4: First-aid measures

Description of necessary first-aid measures

General advice	First Aid Facilities: Maintain eyewash fountain in work area.
If inhaled	Remove victim to fresh air. Keep warm and at rest. Employ artificial respiration if indicated. Seek medical advice if effects persist.

In case of skin contact	Remove contaminated clothing and wash affected skin with soap and water. If persistent irritation occurs, obtain medical attention.
In case of eye contact	Immediately irrigate with copious quantity of water for at least 15 minutes. Eyelids to be held open. Seek immediate medical assistance.
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 the fire area. Cool containers with flooding quantities of water until well after the fire is out.

Specific hazards arising from the chemical
May librate toxic fumes in fire such as sulfur and iron oxides.

Material does not burn. 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 inhalation and ingestion. Avoid contact with skin, eyes and clothing. Wear protective clothing specified for normal operations (see 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.

SECTION 7: Handling and storage

Precautions for safe handling
Air and moisture sensitive.

Avoid generating and inhaling dust.

Conditions for safe storage, including any incompatibilities
Ferrous salts are subject to oxidation. Sensitive to air.
Store at room temperature (15 to 25 °C recommended).

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
Recommendation: Rubber or plastic gloves.

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	Light blue-green or yellow-brown crystals or granules.
Color	No data available.
Odor	Odourless.
Odor threshold	No data available.
Melting point/freezing point	Heptahydrate: 64 °C. Dried: 300 °C (release of crystalline water).
Boiling point or initial boiling point and boiling range	Heptahydrate: Loses 7H2O by 300 °C
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	Heptahydrate: pH 3 - 4 (50 g/l, H2O, 20 °C). Dried: pH 2.5 - 3.8 (50 g/l, H2O, 20 °C).
Kinematic viscosity	No data available.
Solubility	Solubility in Water: Heptahydrate: soluble (400 g/l @ 20 °C). Dried: soluble (256 g/l @ 20 °C). Solubility in Organic Solvents: 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: Heptahydrate: 1.89. Dried: 2.97.

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: Taste: astringent.

SECTION 10: Stability and reactivity

Reactivity
None under normal use conditions.

Chemical stability
Loses water in dry air and oxidises upon exposure to moisture, forming a brown coating of extremely corrosive basic ferric sulfate. Hygroscopic.

Possibility of hazardous reactions
Hazardous catalytic reactions involving iron compounds have been reported, for example ethylene oxide polymerises explosively in the presence of ferric chloride. Care should also be taken when ferrous salts are mixed or reacted with oxidizing agents.
Ferrous sulfate heptahydrate reacts in moist air to form ferric sulfate.

Conditions to avoid
Exposure to moisture.

Avoid storing in direct sunlight and avoid extremes of temperature.

Incompatible materials
Alkalis, soluble carbonates, acids and oxidising materials.

Hazardous decomposition products
Sulfur and iron oxides.

SECTION 11: Toxicological information

Information on toxicological effects

Acute toxicity
Acute Toxicity - Oral: Oral LD50 (rat): 319 mg/kg (anhydrous)
LD50 (mouse): 1520 mg/kg

Ingestion: Harmful if swallowed. Low toxicity in small quantities. Symptoms of the ingestion of larger dosages may be delayed for several hours and can include of nausea, vomiting, diarrhea, intestinal disorders, black stool, epigastric pain, heamatemesis and possible ciculatory failure. Pink urine discolouration is a strong indicator of iron poisoning. Liver damage, depression of the CNS, respiration and cardiovascular system, coma and death from iron poisoning has been recorded. Hours or days after apparent recovery metabolic acidiosis, convulsions and coma may occur. If the patient survives, symptoms of acute liver necrosis may develop and could lead to death due to heptic coma. Smaller doses are much more toxic to children.

Inhalation: Inhalation of dust may cause irritation to the upper respiratory system. Symptoms may include of coughing and shortness of breath.

Skin corrosion/irritation
Skin contact may cause irritation, redness, itching and pain to the skin.

Serious eye damage/irritation
May be harmful if in contact with the eyes. Symptoms include of irritation, redness, tearing, stinging, pain amd blurred vision.

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: Continued ingestion of medicinal amounts of iron salts may cause constipation. Repeared or prolonged inhalation may aggravate existing respiratory disorders. Severe or chronic ferrous sulfate poisonings may damage blood vessels, and increase iron levels in the liver and spleen effects. Large chronic doses cause rickets in infants. Chronic exposure may cause liver effects. Prolonged exposure of the eyes may cause discoloration.

Ferrous sulfate: NIH: rat LD50 oral 319mg/kg (319mg/kg) Journal of Pediatrics. Vol. 69, Pg. 663, 1966.

SECTION 12: Ecological information

Toxicity
Acute Toxicity - Fish: The following applies to dissolved iron compounds in general:
Fish: toxic as from 0.9 mg/l @ pH 6.5 - 7.5 lethal as from 1 mg/l @ pH 5.5-6.7
50mg/l iron upper limit for fish life.

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)
Not dangerous goods

IMDG
Not dangerous goods

IATA
Not dangerous goods

SECTION 15: Regulatory information

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

Australia SUSMP
Poison Schedule: NS

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 fot 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 Airbourne 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)