# Safety Data Sheet IRON (Filings, Powder, Wire)

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## SECTION 1: Identification

### GHS Product identifier

| | |
|---|---|
| Product name | IRON (Filings, Powder, Wire) |

### Other means of identification

| Product | Product Code |
|---|---|
| IRON Powder | IT013 |
| IRON FILINGS Fine | IT014 |
| IRON Wire | IT015 |

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

Powder metallurgy products, magnets, high-frequency cores, auto parts, catalyst in ammonia synthesis and medicine.

### Supplier's details

| | |
|---|---|
| Name | ChemSupply Australia Pty Ltd |
| Address | 38-50 Bedford Street<br>5013 Gillman South Australia<br>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 non-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

Not a hazardous substance or mixture.

### GHS label elements, including precautionary statements

Not a hazardous substance or mixture.

### Other hazards which do not result in classification

Not a hazardous substance or mixture.

## SECTION 3: Composition/information on ingredients

**Substances**

| | |
|---|---|
| **Molecular weight** | 55.85 |

| Component | Identification | Weight % |
|---|---|---|
| Iron (wire) | CAS no.: 7439-89-6<br>EC no.: 231-096-4 | <= 100 % |

## 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 | Rinse with plenty of water. Get medical attention if irritation develops and persists. |
| In case of 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. |
| 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**
Treat symptomatically based on judgement of doctor and individual reactions of the patient.

## SECTION 5: Fire-fighting measures

**Suitable extinguishing media**
Material does not burn. This product in sufficient quantity and reduced particle size is capable of creating a dust explosion.
Small fire: Use dry sand, powdered graphite, powdered salt, or powdered limestone. DO NOT use water, carbon dioxide, or dry chemical.
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 fire is out.

**Specific hazards arising from the chemical**
Hazards from Combustion Products: Oxides of iron.

**Special protective actions for fire-fighters**

Wear SCBA and chemical splash suit. Structural firefighter's uniform may provide limited protection.

**Further information**
The materials themselves are non-flammable but the fine metallic dust produced as a result of their breakdown or removed from metallic components during cleaning or surface treatments can present both fire and explosion hazards.

## SECTION 6: Accidental release measures

**Personal precautions, protective equipment and emergency procedures**
Avoid dust formation. Avoid breathing vapours, mist or gas. For personal protection see section 8.

**Environmental precautions**
When iron ions flocculate in an alkaline medium, mechanical damage occurs in aquatic organisms. Due to the poor solubility of the product, no harmful effects on aquatic organisms are to be expected when handled and used with due care and attention.

**Methods and materials for containment and cleaning up**
ELIMINATE all ignition sources (no smoking, flares, sparks or flames) within at least 25m. Do not touch or walk through spilled material. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Stop leak if safe to do so - Prevent entry into waterways, drains or confined areas.

## SECTION 7: Handling and storage

**Precautions for safe handling**
Avoid contact with skin and eyes. Do not eat, drink or smoke while handling. Wash hands with soap and water after handling. For precautions see section 2.

**Conditions for safe storage, including any incompatibilities**
Corrosiveness: Corrosive in water.

Unsuitable Materials: Polystyrene.

Keep container tightly closed in a dry and well-ventilated place.

## 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.

**Body protection**
Footwear: Safety boots in industrial situations is advisory, foot protection should comply with AS 2210, Occupational protective footwear - Guide to selection, care and use.

Body Protection: Clean clothing or protective clothing should be worn, preferably with and apron. Clothing for protection against chemicals should comply with AS 3765 Clothing for Protection Against Hazardous Chemicals.

**Respiratory protection**

If engineering controls are not effective in controlling airborne exposure then an approved respirator with a replaceable vapor/ mist filter should be used. Refer to relevant regulations for further information concerning respiratory protective requirements. Reference should be made to Australian Standards AS/ NZS 1715, Selection, Use and Maintenance of Respiratory Protective Devices; and AS/ NZS 1716, Respiratory Protective Devices, in order to make any necessary changes for individual circumstances.

## SECTION 9: Physical and chemical properties

**Basic physical and chemical properties**

| | |
|---|---|
| Physical state | Solid |
| Appearance | Grey-black filings, grey powder or black-brown wire. |
| Color | No data available. |
| Odor | Odourless. |
| Odor threshold | No data available. |
| Melting point/freezing point | 1300 - 1500 °C (depending upon composition) |
| Boiling point or initial boiling point and boiling range | 2730 - 2750 °C |
| Flammability | No data available. |
| Lower and upper explosion limit/ flammability limit | No data available. |
| Flash point | No data available. |
| Explosive properties | Moderate explosion hazard in the form of a dust when exposed to heat, flame or static discharge. |
| Auto-ignition temperature | 100 °C - 700 °C - powder<br>Minimum ignition temperature, iron dust cloud: 430 °C |
| Decomposition temperature | No data available. |
| Oxidizing properties | No data available. |
| pH | No data available. |
| Kinematic viscosity | No data available. |
| Solubility | Solubility in Water: Insoluble, can react with water. Solubility in Organic Solvents: Insoluble. |
| Partition coefficient n-octanol/ water (log value) | No data available. |
| Vapor pressure | 1 mm Hg @ 1787 °C |
| Evaporation rate | No data available. |
| Density and/or relative density | Specific Gravity: 7.86 @ 20 °C |
| Relative vapor density | No data available. |
| Particle characteristics | +212 µm: 0%, +100 µm: 21%, +45 µm: 79%. |

**Supplemental information regarding physical hazard classes**

No data available.

**Further safety characteristics (supplemental)**
Other Information: Tensile strength: 30,000 psi
Brinell hardness: 60
Magnetic permeability 88,400 gauss @ 25 °C
Dissolves in nonoxidising acids (sulfuric and hydrochloric acid) and in cold dilute nitric acid.

## SECTION 10: Stability and reactivity

**Reactivity**
Stable under normal conditions of storage and handling.

**Chemical stability**
Stable to ignition temperature of 700C (1291F). Sensitive to moisture. Stable in dry air but readily oxidizes in moist air forming rust. Ultrafine (ca. 5 microns) powder forms are very unstable and can ignite spontaneously in air.

**Possibility of hazardous reactions**
None under normal use conditions.

May form combustible dust concentrations in air

**Conditions to avoid**
Heat, flame, ignition sources, dusting and incompatibles.

**Incompatible materials**
Strong oxidizers, water (including humid atmospheres), acids, aldehydes, halogen-halogen compounds, hydrogen peroxide, hydrogen sulfide, nitrogen dioxide, nitryl compounds, oils (heat). Solid or powdered iron ignites or explodes on contact with acetaldehyde, ammonium peroxodisulfate, chloroformamidinium, chloric acid, ammonium nitrate, halogens, dinitrogen tetraoxide, nitryl fluoride, polystyrene, sodium acetylide, potassium dichromate and peroxyformic acid. Hot iron wire burns in chlorine gas. Chlorine trifluoride reacts with iron with incandescence.

**Hazardous decomposition products**
Toxic iron oxide fumes.

## SECTION 11: Toxicological information

**Information on toxicological effects**

**Acute toxicity**
Ingestion: After swallowing, symptoms may include nausea, vomiting and diarrhoea. Extremely large oral dosages may produce gastrointestinal disturbances. An overdose of iron may cause vomiting, abdominal pain, bloody diarrhoea, vomiting blood, lethargy, cardiac dysrhythmia, drop in blood pressure and shock. In severe cases, toxicity may progress and develop into an increase in acidity in the blood, bluish skin discoloration, fever, liver damage and possibly death.

Inhalation: Irritation symptoms in the respiratory tract. Symptoms may include coughing and shortness of breath.

**Skin corrosion/irritation**
No adverse effects expected.

**Serious eye damage/irritation**
May cause irritation, transient irritation, redness and pain. Eye contact may cause conjunctivitis and deposition of iron particles can leave a <qt>rust ring<qt> or brownish stain on the cornea.

**Respiratory or skin sensitization**
Not classified based on available information.

**Germ cell mutagenicity**

Not classified based on available information.

**Carcinogenicity**
Iron and steel founding is evaluated in the IARC Monographs (Exposure circumstances) (Vol. 34, Suppl. 7; 1987) as Group 1: Carcinogenic to humans.

Not classified based on available information.

**Reproductive toxicity**
Not classified based on available information.

**Specific target organ toxicity (STOT) - single exposure**
Not classified based on available information.

**Specific target organ toxicity (STOT) - repeated exposure**
Not classified based on available information.

**Aspiration hazard**
Not classified based on available information.

**Additional information**
Chronic Effects: Long-term inhalation exposure to iron has resulted in mottling of the lungs, a condition referred to as siderosis. This is considered a benign pneumoconiosis and does not ordinarily cause significant physiological impairment. Ingestion of greater than 50 to 100 mg of iron per day may result in pathological iron deposition in body tissues. Repeated iron ingestion can produce cardiac toxicity.

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Iron (wire): child TDLo oral 77mg/kg (77mg/kg) BEHAVIORAL: IRRITABILITY

GASTROINTESTINAL: NAUSEA OR VOMITING

BLOOD: NORMOCYTIC ANEMIA Journal of Toxicology, Clinical Toxicology. Vol. 25, Pg. 251, 1987.
Link to PubMed
guinea pig LD50 oral 20gm/kg (20000mg/kg) Indian Journal of Pharmacy. Vol. 13, Pg. 240, 1951.
rabbit LDLo intraperitoneal 20mg/kg (20mg/kg) National Technical Information Service. Vol. PB158-508,
rat LD50 oral 30gm/kg (30000mg/kg) Indian Journal of Pharmacy. Vol. 13, Pg. 240, 1951.

## SECTION 12: Ecological information

**Toxicity**
Information on Ecological Effects: Due to the poor solubility of the product, no harmful effects on aquatic organisms are to be expected when handled and used with due care and attention.

## 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

**Canadian Domestic Substances List (DSL)**
Chemical name: Iron
CAS: 7439-89-6

## 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 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)