Safety Data Sheet FERRIC CHLORIDE Solution

SDS no. F0UAHJA3 • Version 1.0 • Date of issue: 2024-02-14

SECTION 1: Identification

GHS Product identifier

Product name	FERRIC CHLORIDE Solution

Other means of identification

ron (III) chloride solution

IRON(III) CHLORIDE 40% w/w Solution	FT021

Recommended use of the chemical and restrictions on use

Manufacture of pigments and ink, etchant for metals, catalyst in organic reactions and clinical 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.

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

- Corrosive to metals, Cat. 1

- Acute toxicity, oral, Cat. 4
- Serious eye damage/eye irritation, Cat. 1
- Skin corrosion/irritation, Cat. 2

GHS label elements, including precautionary statements

Pictograms

Signal word	**Danger**

Hazard statement(s)

H290	May be corrosive to metals
H302	Harmful if swallowed
H315	Causes skin irritation
H318	Causes serious eye damage

Precautionary statement(s)

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.
P310	Immediately call a POISON CENTER/doctor/physcian
P332+P313	If skin irritation occurs: Get medical advice/attention.
P362+P364	Take off contaminated clothing and wash it before reuse.
P390	Absorb spillage to prevent material-damage.
P406	Store in a corrosive resistant/… container with a resistant inner liner.
P501	Dispose of contents/container to an approved waste disposal facility

SECTION 3: Composition/information on ingredients

Mixtures

Components

Component	CAS no.	Concentration
Iron(III) chloride (EC no.: 231-729-4)	**7705-08-0**	**30 - 60 % (weight)**
CLASSIFICATIONS: Corrosive to metals, Cat. 1; Acute toxicity, oral, Cat. 4; Serious eye damage/eye irritation, Cat. 1; Skin corrosion/irritation, Cat. 2. HAZARDS: H290 - May be corrosive to metals; H302 - Harmful if swallowed; H315 - Causes skin irritation; H318 - Causes serious eye damage.		
Water/Aqua/Eau	**7732-18-5**	**40 - 70 % (weight)**
CLASSIFICATIONS: No data available. HAZARDS: No data available.		

SECTION 4: First-aid measures

Description of necessary first-aid measures

General advice	Advice to Doctor: Treat symptomatically as for acidic material and iron salts. Symptoms may be delayed for hours or days.

If inhaled	If inhaled, remove from contaminated area to fresh air immediately, avoid becoming a casualty. Make patient comfortable, keep warm and at rest until fully recovered. If breathing is difficult (or develops a bluish skin discolouration), supply oxygen by a qualified person. Apply artificial respiration with a respiratory medical device if not breathing. Do not use mouth to mouth resuscitation. Immediately medical attention is required.
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 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. In all cases of eye contamination it is a sensible precaution to seek medical advice.
If swallowed	Rinse mouth thoroughly with water immediately, repeat until all traces of product have been removed. Give water to drink. DO NOT INDUCE VOMITING. Seek medical advice if symptoms 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 in an emergency, contact a Poisons Information Centre (Phone Australia 131 126) or a doctor at once.

SECTION 5: Fire-fighting measures

Suitable extinguishing media
Small fire: Use dry chemical, CO2 or water spray.
Large fire: Use dry chemical, CO2, foam or water spray - Do NOT use water jets.
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. Avoid getting water inside the containers.

Specific hazards arising from the chemical
Hazards from Combustion Products: May evolve toxic fumes in fire such as hydrogen chloride and iron oxides.

Material does not burn. Fire or heat will produce toxic gases. Containers may explode when heated. Some may ignite combustibles (wood, paper, clothing, etc.) Contact with metals may evolve flammable hydrogen gas.

Special protective actions for fire-fighters
Wear SCBA and chemical splash suit. Fully encapsulating, gas-tight suits should be worn for maximum protection. Structural firefighter's uniform is NOT effective for these materials.

SECTION 6: Accidental release measures

Personal precautions, protective equipment and emergency procedures
Evacuate the area of all non-essential personnel. Avoid inhalation, contact with skin, eyes and clothing.
Wear protective clothing specified for normal operations (see Section 8)

Methods and materials for containment and cleaning up
Do NOT touch or walk through this product. 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, confined areas.

Cover with DRY earth, sand or other non-combustible material followed by plastic sheet to minimise spreading or contact with rain.

SECTION 7: Handling and storage

Precautions for safe handling
Do not breathe vapour. Avoid contact with eyes, skin and clothing. Avoid prolonged or repeated exposure. Wash hands and face thoroughly after working with material. Keep away from incompatibles.
Use in well ventilated areas away from all ignition sources. In case of insufficient ventilation, wear suitable respiratory equipment.

Conditions for safe storage, including any incompatibilities
Corrosiveness: Corrosive to most metals.

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

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
Hand protection should comply with AS 2161, Occupational protective gloves - Selection, use and maintenance.
RECOMMENDATION: Excellent: Nitrile and Neoprene.

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 vapours or mists. Select and use respirators in accordance with AS 1716 - Respiratory Protective Devices and be selected in accordance with AS 1715 - Selection, Use and Maintenance of Respiratory Protective Devices. When mists or vapours exceed the exposure standards then the use of the following is recommended: Approved respirator with organic vapour and dust/mist filters. Filter capacity and respirator type depends on exposure levels.

SECTION 9: Physical and chemical properties

Basic physical and chemical properties

Physical state	Liquid
Appearance	Reddish or yellow liquid.
Color	No data available.
Odor	Odourless or faint odour of hydrogen chloride.
Odor threshold	No data available.
Melting point/freezing point	No data available.
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 ~ 1.5; Acidic.
Kinematic viscosity	No data available.
Solubility	Solubility in Water: Soluble. Solubility in Organic Solvents: Soluble in glycerol; practically insoluble in ethyl acetate
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: 1.49
Relative vapor density	No data available.
Particle characteristics	No data available.

Supplemental information regarding physical hazard classes
No data available.

Further safety characteristics (supplemental)
No data available.

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
Can liberate flammable hydrogen gas upon contact with most metals. Toxic hydrogen chloride is produced upon hydrolysis.

Conditions to avoid
Incompatibles

Incompatible materials
Oxidising agents, cyanides, allyl chloride, metals (sodium and potassium).

Hazardous decomposition products
Hydrogen chloride and iron oxides.

SECTION 11: Toxicological information

Information on toxicological effects

Acute toxicity
Acute Toxicity - Oral: LD50 (rat): 316 mg/kg - Ferric chloride anhydrous.
LD50 (rat): ~1160 mg/kg - (40% solution)

Ingestion: Corrosive. Harmful if swallowed. Swallowing can cause severe burns of the mouth, throat, pharynx, oesophagus and stomach. Can cause sore throat, vomiting, diarrhea, abdominal pain and circulatory collapse. Can cause corrosive damage to stomatch and small intestine. Low systemic toxicity in small quantities but larger doses may cause systemic effects. Pink urine discoloration is a strong indicator of iron poisoning. Liver damage, coma and death may follow, sometimes delayed as long as three days.

Inhalation: May be harmful if inhaled. Material is extremely destructive to tissue of the mucous membranes and upper respiratory tract. Inhalation may result in spasm, inflammation and edema of the larynx and bronchi, chemical pneumonitis, and pulmonary edema. Symptoms of exposure may include burning sensation, coughing, wheezing, laryngitis, shortness of breath, headache, nausea, and vomiting.

Skin corrosion/irritation
Corrosive. Causes burns. Material is extremely destructive to tissue of the mucous membranes and skin. May be harmful if absorbed through the skin. Symptoms are characterised by pain, itching, scaling, reddening and occasional blistering and burns can occur.

Serious eye damage/irritation
Corrosive. Causes burns. Material is extremely destructive to tissue of the mucous membranes and eyes. Contact can cause blurred vision, redness, watering, pain and severe tissue burns. 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: Inhalation may result in spasm, inflammation and edema of the larynxand bronchi, chemical pneumonitis, and and pulmonary edema. Repeated ingestion may cause liver and kidney damage. Repeated or prolonged contact with the skin may cause dermatitis. Prolonged exposure of the eyes may cause discoloration. Absorption of large quantities of this material may lead to metabolic acidosis, convulsions, cardiovascular disorders, acute liver necrosis that can result in death due to hepatic coma.

Iron(III) chloride: mouse LD50 intravenous 58mg/kg (58mg/kg) Yakugaku Zasshi. Journal of Pharmacy. Vol. 87, Pg. 677, 1967. Link to PubMed
mouse LD50 oral 895mg/kg (895mg/kg) Kenkyu Nenpo--Tokyo-toritsu Eisei Kenkyusho. Annual Report of Tokyo Metropolitan Research Laboratory of Public Health. Vol. 27, Pg. 159, 1976.

rat LD50 oral 450mg/kg (450mg/kg) Gigiena i Sanitariya. For English translation, see HYSAAV. Vol. 39(5), Pg. 16, 1974.
women LDLo oral 4mL/kg (4mL/kg) LUNGS, THORAX, OR RESPIRATION: DYSPNEA

GASTROINTESTINAL: NAUSEA OR VOMITING Veterinary and Human Toxicology. Vol. 40, Pg. 31, 1998.

*TOXICITY:
typ. dose mode specie amount units other
LD50 orl mus 1278 mg/kg
LD50 ipr mus 68 mg/kg
LD50 ivn mus 142 mg/kg
LD50 orl rat 900 mg/kg
LD50 orl mus 440 mg/kg

*AQTX/TLM96: Not available

*SAX TOXICITY EVALUATION:
THR: HIGH-MODERATE via oral route; HIGH via intraperitoneal route.

*CARCINOGENICITY: Not available

*MUTATION DATA: Not available

*TERATOGENICITY:
Reproductive Data:
TDLo: itt-cat 12976 ug/kg (1D male)
TDLo: ivg-rat 29 mg/kg (1D pre)

*STANDARDS, REGULATIONS & RECOMMENDATIONS:
OSHA: Federal Register (1/19/89) and 29 CFR 1910.1000 Subpart Z
Transitional Limit: PEL-TWA 1 mg(Fe)/m3 [610]
ACGIH: TLV-TWA 1 mg(Fe)/m3 [610]
NIOSH Criteria Document: None
NFPA Hazard Rating: Health (H): None
Flammability (F): None
Reactivity (R): None

*OTHER TOXICITY DATA:
Standards and Regulations: DOT-Hazard: ORM-B; Label: None, anhydrous
DOT-Hazard: Corrosive material; Label: Corrosive
solution
Status: Reported in EPA TSCA Inventory, 1980
EPA TSCA Section 8(e) Status Report 8EHQ-0880-0358
Meets criteria for proposed OSHA Medical Records Rule

SECTION 12: Ecological information

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: 2582
Class: 8
Packing Group: III
Proper Shipping Name: FERRIC CHLORIDE SOLUTION

Hazchem emergency action code (EAC)
2X

IMDG
UN Number: 2582
Class: 8
Packing Group: III
EMS Number:
Proper Shipping Name: FERRIC CHLORIDE SOLUTION

IATA
UN Number: 2582
Class: 8
Packing Group: III
Proper Shipping Name: FERRIC CHLORIDE SOLUTION

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
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
All information provided in this data sheet or by our technical representatives is compiled from the best knowledge available to us. However,since data, safety standards and government regulations are subject to change and the conditions of handling and use, or misuse, are beyond our control, we make no warranty either expressed or implied, with respect to the completeness or accuracy to the information contained herein. ChemSupply Australia Pty Ltd accepts no responsibility whatsoever for its accuracy or for any results that

may be obtained by customers from using the data and disclaims all liability for reliance on information provided in this data sheet or by our technical representatives.

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)