Infosafe No™	1CHH9	Issue Date : February 2019	RE-ISSUED by ABS

Product Name : **FERRIC CHLORIDE Solution**

Classified as hazardous

1. Identification

GHS Product Identifier FERRIC CHLORIDE Solution

Company Name AUSTRALIAN CHEMICAL REAGENTS (ACR) (ABN 19 008 264 211)

Address 38 - 50 Bedford Street Gillman
S.A. 5013 Australia

Telephone/Fax Number Tel: (08) 8440 2000
Fax: (08) 8440 2001

Recommended use of the chemical and restrictions on use Manufacture of pigments and ink, etchant for metals, catalyst in organic reactions and clinical reagent.

Other Names

Name	Product Code
Ferric Chloride 40% w/v	4622
Ferric Chloride 60% w/v AR	0465
Ferric Chloride 60% w/v Tech	0466
Ferric Chloride 42° Baume	5060

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.

Other Information EMERGENCY CONTACT NUMBER: +61 08 8440 2000
Business hours: 8:30am to 5:00pm, Monday to Friday.

Australian Chemical Reagents (ACR) 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 Australian Chemical Reagents (ACR) 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 Australian Chemical Reagents (ACR) 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
Corrosive to Metals: Category 1
Acute Toxicity - Oral: Category 4
Eye Damage/Irritation: Category 1
Skin Corrosion/Irritation: Category 1B

Signal Word (s) DANGER

Hazard Statement (s)
H290 May be corrosive to metals.
H302 Harmful if swallowed.
H314 Causes severe skin burns and eye damage.

Pictogram (s) Corrosion, Exclamation mark

Precautionary statement – Prevention
P234 Keep only in original container.
P260 Do not breathe dust/fume/gas/mist/vapours/spray.
P264 Wash thoroughly after handling.
P270 Do not eat, drink or smoke when using this product.
P280 Wear protective gloves/protective clothing/eye protection/face protection.

Precautionary statement – Storage
P405 Store locked up.
P406 Store in corrosive resistant/... container with a resistant inner liner.

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

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3. Composition/information on ingredients

Chemical Characterization Liquid

Ingredients

Name	CAS	Proportion	Hazard Symbol	Risk Phrase
Iron (III) chloride	7705-08-0	40-60 %		
Water to make total of 100%		-		

4. First-aid measures

Inhalation 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.

Ingestion 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.

Skin 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.

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.

First Aid Facilities Maintain eyewash fountain and safety shower in work area.

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

Other Information Treat symptomatically as for acidic material and iron salts. Symptoms may be delayed for hours or days. For advice, contact the National Poisons Information Centre (Phone Australia 13 11 26; New Zealand 0800 764 766) or a doctor.

5. Fire-fighting measures

Hazards from Combustion Products May evolve toxic fumes in fire such as hydrogen chloride and iron oxides.

Specific Methods Use extinguishing media most appropriate for the surrounding fire.
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 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.

Hazchem Code 2X

Precautions in connection with Fire 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.

6. Accidental release measures

Spills & Disposal 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.

Personal Precautions Evacuate the area of all non-essential personnel. Avoid inhalation, contact with skin, eyes and clothing.

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

Clean-up Methods - Small Spillages Absorb or contain liquid with sand, earth or spill control material. Shovel up using non sparking tools and place in a labelled, sealable container for subsequent safe disposal. Put leaking containers in a labelled drum or overdrum.

Clean-up Methods - Large Spillages Seek expert advice on handling and disposal.

Environmental Precautions Prevent contamination of soil and water.

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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 incompatabilities
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.

Corrosiveness
Corrosive to most metals.

Storage Regulations
Refer Australian Standard AS 3780 - 1994 'The storage and handling of corrosive substances'.

8. Exposure controls/personal protection

Occupational exposure limit values

Name	STEL		TWA		
	mg/m3	ppm	mg/m3	ppm	Footnote
Iron (III) chloride			1		Iron salts, soluble (as Fe)

Other Exposure Information
These Workplace Exposure Standards are guides to be used in the control of occupational health hazards. All atmospheric contamination should be kept to as low a level as is workable. These workplace exposure standards should not be used as fine dividing lines between safe and dangerous concentrations of chemicals. They are not a measure of relative toxicity.
A time weighted average (TWA) has been established for Iron salts, soluble (as Fe) (Safe Work Australia) of 1 mg/m³ and for Hydrogen chloride (Safe Work Australia) of 7.5 mg/m³ - Peak limitation, 5 ppm. The exposure value at the TWA is the average airborne concentration of a particular substance when calculated over a normal 8 hour working day for a 5 day working week.
PEAK LIMITATION: For some rapidly acting substances and irritants, averaging of airborne concentration over an eight hour period is inappropriate. These substances may induce acute effects after relatively brief exposure to high concentrations and so the exposure standard for these substances represents a maximum or peak concentration to which workers may be exposed.

Appropriate engineering controls
In industrial situations maintain the concentrations values below the TWA. This may be achieved by process modification, use of local exhaust ventilation, capturing substances at the source, or other methods. These methods should be used in preference to personal protective equipment.

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.

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.
RECOMMENDATION: Excellent: Nitrile and Neoprene.

Personal Protective Equipment
Personal protective equipment should not solely be relied upon to control risk and should only be used when all other reasonably practicable control measures do not eliminate or sufficiently minimise risk. Guidance in selecting personal protective equipment can be obtained from Australian, Australian/New Zealand or other approved standards.

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 an apron. 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
Liquid

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Appearance	Reddish or yellow liquid.
Odour	Odourless or faint odour of hydrogen chloride.
Solubility in Water	Soluble.
Solubility in Organic Solvents	Soluble in glycerol; practically insoluble in ethyl acetate
Specific Gravity	1.49
pH	pH ~ 1.5; Acidic.
Flammability	Non combustible material.

10. Stability and reactivity

Chemical Stability	Stable under normal use conditons.
Conditions to Avoid	Incompatibles.
Incompatible Materials	Oxidising agents, cyanides, allyl chloride, metals (sodium and potassium).
Hazardous Decomposition Products	Hydrogen chloride and iron oxides.
Possibility of hazardous reactions	Can liberate flammable hydrogen gas upon contact with most metals. Toxic hydrogen chloride is produced upon hydrolysis.
Hazardous Polymerization	Will not occur.

11. Toxicological Information

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	Inhalation of mists or aerosols can produce respiratory irritation. 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	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.
Eye	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!
Carcinogenicity	Not listed in the IARC Monographs.
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.
Mutagenicity	No evidence of mutagenic effects.

12. Ecological information

Ecotoxicity	Quantitative data on the ecological effect of this product are not available.

13. Disposal considerations

Disposal Considerations	Whatever cannot be saved for recovery or recycling should be handled as hazardous waste and disposed of according to relevant local, state and federal government regulations.

14. Transport information

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Transport Information	Dangerous goods of Class 8 (Corrosive) are incompatible in a placard load with any of the following: Class 1, Class 4.3, Class 5, Class 6, if the Class 6 dangerous goods are cyanides and the Class 8 dangerous goods are acids, Class 7; and are incompatible with food and food packaging in any quantity.
U.N. Number	2582
UN proper shipping name	FERRIC CHLORIDE SOLUTION
Transport hazard class(es)	8
Hazchem Code	2X
Packing Group	III
EPG Number	8A1
IERG Number	37

15. Regulatory information

Regulatory Information	Listed in the Australian Inventory of Chemical Substances (AICS). 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. Lewis, Richard J. Sr. 'Hawley's Condensed Chemical Dictionary 13th. Ed.', Rev., John Wiley and Sons, Inc., NY, 1997. National Road Transport Commission, 'Australian Code for the Transport of Dangerous Goods by Road and Rail 7th. Ed.', 2007. Safe Work Australia, 'National Code of Practice fot the Preparation of Safety Data Sheets for Hazardous Chemicals', 2011. Standards Australia, 'SAA/SNZ HB 76:2010 Dangerous Goods - Initial Emergency Response Guide', Standards Australia/Standards New Zealand, 2010. Safe Work Australia, 'Approved Criteria for Classifying Hazardous Substances [NOHSC:1008 (2004)]'. Safe Work Australia, 'Hazardous Chemical Information System, 2005'. Safe Work Australia, 'National Code of Practice for the Labelling of Safe Work Hazardous Substances (2011)'. Safe Work Australia, 'National Exposure Standards for Atmospheric Contaminants in the Occupational Environment [NOHSC:1003(1995) 3rd Edition]'.
Contact Person/Point	Paul McCarthy Ph. (08) 8440 2000 DISCLAIMER STATEMENT: 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. Australian Chemical Reagents (ACR) 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.
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