



MATERIAL SAFETY DATA SHEET

FERROUS CHLORIDE SOLUTION
FeCl₂ 4H₂O

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MSDS 009/R4
2012-02-23

Reg. No. 2001/019171/07

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1. PRODUCT IDENTIFICATION

TRADE NAME	Ferrous Chloride
CHEMICAL FAMILY	Inorganic Chloride Solution
CHEMICAL NAME	Iron (II) Chloride Solution
SYNONYMS	Iron chloride tetrahydrate, Ferrous dichloride tetrahydrate, Iron dichloride tetrahydrate
MOLECULAR FORMULA	FeCl ₂ 4H ₂ O
CHEMICAL ABSTRACTS No.	13478-1019
NIOSH No.	N05400000 (FeCl ₂)
UN No.	1760(Corrosive liquids, n.o.s.)
HAZCHEM CODE	2R

2. COMPOSITION

HAZARDOUS COMPONENTS	Ferrous Chloride
EEC CLASSIFICATION	Not available
RISK PHRASES	R22: Harmful if swallowed R34: Causes burns.
SAFETY PHRASES	S1/2: Keep locked up and out of reach of children. S7/8: Keep container tightly closed and dry. S26: In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. S28: After contact with skin, wash immediately with plenty of water. S36/37/39: Wear suitable protective clothing, wear suitable gloves and wear eye/ face protection. S45: In case of accident or if you feel unwell, seek medical advice immediately, show label where possible.

3. HAZARD IDENTIFICATION

MAIN HAZARDS

Primary routes of exposure: Skin or eye contact, inhalation.

Mists are extremely corrosive to the nose, throat, and mucous membranes. Prolonged exposure may result in severe irritation and tissue damage.

Liquid and mists may severely irritate, burn or damage the eyes.

Brief contact with liquid will cause irritation. Prolonged or repeated exposure may cause burns.

Swallowing the liquid burns the tissues, causes severe abdominal pain, nausea, vomiting, and collapse.



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NFPA (704) HAZARD RATING

- FIRE** 0 Material that will not burn
- HEALTH** 2 Material which on exposure would cause irritation, discomfort, rash, skin burns or ulceration.
- REACTIVITY** 0 Material which in themselves are normally stable even under fire exposure conditions and which are not reactive with water

EXPOSURE LIMITS - TLV, 8 h TWA (ACGIH) : 1 mg/m³, Iron Salts, Soluble, as Fe

HEALTH EFFECTS - EYES

Eye contact may cause discoloration of eye tissues; eye irritation with discomfort, tearing, or blurring of vision; or eye corrosion with corneal or conjunctival ulceration.

HEALTH EFFECTS - SKIN

Skin contact may cause skin irritation with discomfort or rash; or skin burns or ulceration. The compound has been infrequently associated with skin sensitization in humans.

HEALTH EFFECTS - INGESTION

Ingestion may cause corrosive damage to the gastrointestinal tract. Repeated ingestion of sub-lethal doses can lead to excessive deposition of iron in the tissues with liver and pancreatic damage.

Higher ingestion exposures may lead to abnormal liver function with nausea or vomiting, reduced appetite, or abdominal pain; lethargy, nausea, vomiting, tarry stools, diarrhoea, fast and weak pulse, hypotension, dehydration, acidosis and coma.

HEALTH EFFECTS - INHALATION

Inhalation overexposure may cause irritation of the upper respiratory passages with coughing.

ADDITIONAL MEDICAL INFORMATION

Individuals with pre-existing diseases of the liver may have increased susceptibility to the toxicity of excessive exposures.

CARCINOGENICITY

No data is available.

MUTAGENICITY

No data is available

REPRODUCTIVE HAZARDS

No data is available.



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4. FIRST AID MEASURES

PRODUCT IN EYE

In case of contact, immediately flush eyes with plenty of water for at least 30 minutes, lifting the upper and lower eyelids occasionally.
Get immediate medical attention.

PRODUCT ON SKIN

In case of contact, immediately wash skin with running water for 15 minutes. Remove contaminated clothing and shoes; wash before reuse. Get immediate medical attention.

PRODUCT INGESTED

If swallowed, do not induce vomiting. If conscious, give lots of water or milk, or milk of magnesia to drink. Do not give anything by mouth to an unconscious or convulsing person. Get immediate medical attention

PRODUCT INHALED

If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give medical oxygen. Get immediate medical attention.

5. FIRE FIGHTING MEASURES

EXTINGUISHING MEDIA

Ferrous Chloride solutions will not burn or support combustion. Use media appropriate for surrounding material

SPECIAL HAZARDS

May generate flammable, potentially explosive hydrogen gas on contact with metals.

PROTECTIVE CLOTHING

Fire fighters should wear self- contained breathing apparatus and full protective clothing.

OTHER INFORMATION

Use water spray to cool nearby containers and structures exposed to fire.

6. ACCIDENTAL RELEASE MEASURES

PERSONAL PRECAUTIONS

Restrict access to area until completion of the cleanup. Ensure cleanup is conducted by trained personnel only. Wear acid-resistant slicker suit and complete protective equipment including suitable eye protection, rubber gloves, rubber boots, and a self-contained breathing apparatus in the pressure demand mode or a supplied-air respirator.

If the spill or leak is small, a full face- piece air-purifying cartridge respirator equipped for acid gases may be satisfactory.



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ENVIRONMENTAL PRECAUTIONS

Keep non-neutralized material out of sewers, storm drains, surface waters, and soil.

CLEAN-UP METHODS

Small Spills

Contain; neutralize spill with lime or soda ash. Mop or wipe up and dispose of in approved waste containers. Flush area with water.

Large spills

Contain by diking with soil or other non-combustible absorbent material and carefully neutralize with soda ash or lime. If soda ash is used, provide adequate ventilation to dissipate the carbon dioxide gas produced.

Dispose of contaminated product and materials used in cleaning up spills or leaks in a manner approved for this material. Consult appropriate state and local regulatory agencies to ascertain proper disposal procedures.

Flush area with water to waste treatment system.

7. HANDLING AND STORAGE

SUITABLE MATERIALS

Store in PVC, HDPE, PP, Hasteloy C, PTFE or rubber-lined stainless steel tanks.

UNSUITABLE MATERIALS

Do not store in containers constructed of aluminium/aluminium alloys, carbon steel, stainless steel, copper/copper alloys or nylon.

HANDLING/STORAGE PRECAUTIONS

Store in a cool, dry, well ventilated place, away from all other chemicals and potential sources of contamination. Keep containers tightly closed when not in use. Do not use pressure to empty containers.

Wash thoroughly after handling. Do not get in eyes, on skin, or on clothing. Do not cut, grind, weld, or drill on or near this container.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

OCCUPATIONAL EXPOSURE STANDARDS

HSE	No data available.
MAK	No data available.
ACGIH	TLV: 1 mg/m ³ , Iron Salts, Soluble, as Fe - 8 h TWA

ENGINEERING CONTROL MEASURES

Use local mechanical exhaust ventilation capable of minimizing emissions at the point of use to keep employee exposure below recommended exposure limits.



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PERSONAL PROTECTION - RESPIRATORY

Wear a NIOSH/MSHA approved air purifying respirator with an acid gases /mist cartridge or canister if there is potential for exposure to mists in excess of applicable limits. Under severe conditions a self-contained breathing apparatus in the pressure demand mode, or a supplied-air respirator may be necessary.

PERSONAL PROTECTION - HAND

Avoid contact with this chemical. Wear rubber gloves.

PERSONAL PROTECTION - EYE

Wear safety glasses with side shields. Wear a face shield/chemical splash goggle combination if there is any possibility of eye or face contact due to splashing or spraying of the material.

PERSONAL PROTECTION - SKIN

Wear rubber gloves, boots, apron, and acid resistant trousers and jacket.

PERSONAL PROTECTION.-INGESTION

Restrict access to unauthorized persons. Wash hands after contact.

OTHER PROTECTIVE MEASURES

An eyewash and safety shower should be nearby and ready for use

9. PHYSICAL AND CHEMICAL PROPERTIES

APPEARANCE	Green/Brown liquid
ODOUR	Slightly acrid
pH	< 1.0
BOILING POINT/RANGE	~106°C
MELTING POINT/RANGE	~ - 50°C
FLASH POINT	Not applicable
FLAMMABILITY	Not applicable
AUTOFLAMMABILITY	Not applicable
EXPLOSIVE PROPERTIES	Not applicable
OXIDISING PROPERTIES	Readily oxidizes
VAPOUR PRESSURE	~ 40mm Hg at 35°C
EVAPORATION RATE	Similar to water
SPECIFIC GRAVITY	1.30 (min)
SOLUBILITY - WATER	105.7g/100ml @ 100°C
SOLUBILITY – SOLVENT	

10. STABILITY AND REACTIVITY

STABILITY

Stable.



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CONDITIONS TO AVOID

Alkalis and metals

INCOMPATIBLE MATERIALS

Rapidly corrodes most metals; may generate flammable, potentially explosive hydrogen gas. Avoid contact with nylon, aluminium/aluminium alloys, carbon steel, stainless steel, and copper/copper alloys.

HAZARDOUS DECOMPOSITION PRODUCTS

Thermal decomposition may liberate hydrogen gas and hydrogen chloride gas.

POLYMERIZATION

Will not occur.

11. TOXICOLOGICAL INFORMATION

ACUTE TOXICITY

No human oral toxicity data available.

SKIN AND EYE CONTACT

No human data available.
In animals, this compound is a skin and eye irritant.

CARCINOGENICITY

No data is available.

MUTAGENICITY

No data is available.

REPRODUCTIVE TOXICITY

No data is available.

12. ECOLOGICAL INFORMATION

AQUATIC TOXICITY - FISH	No data available
AQUATIC TOXICITY - DAPHNIA	No data available
AQUATIC TOXICITY - ALGAE	No data available
BIODEGRADABILITY	No data available
BIO-ACCUMULATION	No data available
MOBILITY	No data available

13. DISPOSAL CONSIDERATIONS

DISPOSAL METHODS



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This material is highly corrosive. Disposal must be made in accordance with the applicable Government regulations at approved chemical dump sites.

DISPOSAL OF PACKAGING

Empty containers can contain residues, gases and mists and are subject to proper waste disposal.

Always obey hazard warnings and handle empty containers as if they were full.

14. TRANSPORT INFORMATION

UN No.	1760 (Corrosive liquids, n.o.s.)
SUBSTANCE IDENTITY No.	
ADR/RID CLASS	8, Corrosive
ADR/RID ITEM No.	Not available
ADR/RID HAZARD IDENTITY No.	Not available
IMDG - SHIPPING NAME	Ferrous Chloride Solution
IMDG - CLASS	8, Corrosive
IMDG - PACKAGING GROUP	III
IMDG - MARINE POLLUTANT	Corrosive
IMDG - EMS No.	Not available
IMDG - MFAG TABLE No.	Not available
IATA - SHIPPING NAME	Ferrous Chloride Solution
IATA - CLASS	8
IATA - SUBSIDIARY RISK(S)	Corrosive, Packaging Group III
ADNR - CLASS	Not available
UK - DESCRIPTION	Not available
UK - EMERGENCY ACTION CODE	Not available
UK - CLASSIFICATION	Not available
TREMCARD No.	

15. REGULATORY INFORMATION

EEC HAZARD CLASSIFICATION Not available

RISK PHRASES
R22: Harmful if swallowed
R34: Causes burns.

S PHRASES
S1/2: Keep locked up and out of reach of children.
S7/8: Keep container tightly closed and dry.
S26: In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
S28: After contact with skin, wash immediately with plenty of water.
S36/37/39: Wear suitable protective clothing, wear suitable gloves and wear eye/ face protection.
S45: In case of accident or if you feel unwell, seek medical advice immediately, show label where possible.



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NATIONAL LEGISLATION

Hazardous Substances Act 15 of 1973 and Regulations,
Occupational Health and Safety Act 85 of 1993,

16.

OTHER INFORMATION

CAS No.	13478-10-9
EINECS No.	Not available
EEC ANNEX 1 No.	Not available
MITI No.	Not available
FDA LIST No.	

APPENDIX

MSDS REVISION DATE	2003-08-19
REVISED BY	D D LIEBENBERG
MSDS SERIAL No.	MSDS 009/R2

MSDS REVISION DATE	2009-07-06
REVISED BY	H H MARINGA
MSDS SERIAL No.	MSDS 009/R3

MSDS REVISION DATE	2012-02-23
REVISED BY	H H MARINGA
MSDS SERIAL No.	MSDS 009/R4

APPROVED BY	VIC VAN ZYL – MANUFACTURING DIRECTOR
DATE OF APPROVAL	2012-02-27

SOURCES OF INFORMATION

1. Precious versions of the Hazard Data Sheet of this substance.
2. Material Safety Data Sheets & CHEMINFO; CCOHS
3. MSDS - Canadian Centre for Occupational Health and Safety Record No. 3365 and references contained therein.

EXCLUSION OF LIABILITY

“All information and instructions provided in this Material Safety Data Sheet (“MSDS”) in respect of the substance is given solely in terms of the provisions of the Occupational Health and Safety Act No 85 of 1993 and Regulations (“the Act”), is based on scientific and technical knowledge as at the date indicated on this MSDS, and is presented in good faith to be correct.

The information and instructions provided in this MSDS apply only to the substance in its present form and not to any formulation or mix, in which event it is the sole responsibility of the user of the substance as formulated and/or mixed to investigate and establish any danger which may arise out of its use, wherever such user may be situated.

It is the sole responsibility of the person in receipt of this MSDS, wherever such recipient may be situated, to ensure that the information provided is communicated to and understood by any person who may come in contact with the substance in any place and in any manner whatsoever. If such recipient produces formulations or mixes using the substance, then it is such recipient's sole responsibility to comply with the



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provisions of the Act in respect of the provision of the necessary MSDS, or to comply with any other applicable legislation.”