

SAFETY DATA SHEET

1. Identification

Product identifier: FERRIC CHLORIDE SOLUTION

Other means of identification

SDS number: 000100000108

Recommended use and restriction on use

Recommended use: Not available.

Restrictions on use: Not known.

Emergency telephone number: For emergency assistance Involving chemicals

call CHEMTREC day or night at: 1-800-424-9300.

2. Hazard(s) identification

Hazard classification

Health hazards

Acute toxicity (Oral) Category 4

Acute toxicity (Dermal) Category 4

Skin corrosion/irritation Category 2

Serious eye damage/eye irritation Category 2A

Environmental hazards Acute hazards to the aquatic environment Category 2

Label elements

Hazard symbol



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|--------------------------------|--|
| Signal word | Danger |
| Hazard statement | Corrosive. May be corrosive to metals. Aspiration hazard if swallowed - can enter lungs and cause damage. Causes skin irritation. Toxic if inhaled. Harmful to aquatic life. |
| Precautionary statement | |
| Prevention | Wear protective gloves/protective clothing/eye protection/face protection. Wash thoroughly after handling. Do not eat, drink or smoke when using this product. |
| Response | If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention. IF ON SKIN: Wash with plenty of water. If skin irritation occurs: Get medical advice/attention. IF SWALLOWED: Call a POISON CENTER/doctor/ if you feel unwell. Rinse mouth. Call a POISON CENTER/doctor if you feel unwell. Specific treatment (see this label). Wash contaminated clothing before reuse. |
| Storage | Keep container tightly closed. |
| Disposal | Dispose of contents/container to an appropriate treatment and disposal facility in accordance with applicable laws and regulations, and product characteristics at time of disposal. |

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| Unsuitable extinguishing media: | No data available. |
| Specific hazards arising from the chemical: | No data available. |
| Special protective equipment and precautions for firefighters | |
| Special fire fighting procedures: | No data available. |
| Special protective equipment for fire-fighters: | No data available. |

6. Accidental release measures

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| Personal precautions, protective equipment and emergency procedures: | No data available. |
| Methods and material for containment and cleaning up: | Absorb spillage with non-combustible, absorbent material. Dike for later disposal. Prevent runoff from entering drains, sewers, or streams. |

7. Handling and storage

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| Precautions for safe handling: | Use personal protective equipment as required. Use only with adequate ventilation. Avoid breathing mists or vapors. Store away from incompatible materials. |
| Conditions for safe storage, including any incompatibilities: | No data available. |

8. Exposure controls/personal protection

Control parameters

Occupational exposure limits

| Chemical identity | Type | Exposure Limit values | Source |
|--------------------------------|------------|---------------------------|--|
| Ferric Chloride - as Fe | TWA | 1 mg/m ³ | US. ACGIH Threshold Limit Values (03 2013) |
| | REL | 1 mg/m ³ | US. NIOSH: Pocket Guide to Chemical Hazards (2010) |
| | TWA | 1 mg/m ³ | US. OSHA Table Z-1-A (29 CFR 1910.1000) (1989) |
| | TWA | 1 mg/m ³ | US. Tennessee. OELs. Occupational Exposure Limits, Table Z1A (06 2008) |
| Ferric Chloride - Particulate. | AN ESL | 1 µg/m ³ | US. Texas. Effects Screening Levels (Texas Commission on Environmental Quality) (02 2013) |
| | ST ESL | 10 µg/m ³ | US. Texas. Effects Screening Levels (Texas Commission on Environmental Quality) (02 2013) |
| Ferric Chloride - as Fe | TWA PEL | 1 mg/m ³ | US. California Code of Regulations, Title 8, Section 5155. Airborne Contaminants (02 2012) |
| Hydrochloric acid | Ceiling | 2 ppm | US. ACGIH Threshold Limit Values (03 2013) |
| | Ceil_Tim e | 5 ppm 7 mg/m ³ | US. NIOSH: Pocket Guide to Chemical Hazards (2010) |
| | Ceiling | 5 ppm 7 mg/m ³ | US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006) |
| | Ceiling | 5 ppm 7 mg/m ³ | US. OSHA Table Z-1-A (29 CFR 1910.1000) (1989) |
| | Ceiling | 5 ppm 7 mg/m ³ | US. Tennessee. OELs. Occupational Exposure Limits, Table Z1A (06 2008) |
| | AN ESL | 8.4 µg/m ³ | US. Texas. Effects Screening Levels (Texas Commission on Environmental Quality) (02 2013) |
| | ST ESL | 190 µg/m ³ | US. Texas. Effects Screening Levels (Texas Commission on Environmental |

| | | | |
|--|---------|---------------|--|
| | | | Quality) (02 2013) |
| | AN ESL | 5.7 ppb | US. Texas. Effects Screening Levels (Texas Commission on Environmental Quality) (02 2013) |
| | ST ESL | 130 ppb | US. Texas. Effects Screening Levels (Texas Commission on Environmental Quality) (02 2013) |
| | Ceiling | 5 ppm 7 mg/m3 | US. California Code of Regulations, Title 8, Section 5155. Airborne Contaminants (02 2012) |

Appropriate engineering controls No data available.

Individual protection measures, such as personal protective equipment

General information: No data available.

Eye/face protection: No data available.

Skin protection

Hand protection: No data available.

Other: No data available.

Respiratory protection: No data available.

Hygiene measures: No data available.

9. Physical and chemical properties

Physical state: Liquid

Form: No data available.

Color: No data available.

Odor: No data available.

Odor threshold: No data available.

pH: No data available.

Melting point/freezing point: No data available.

Initial boiling point and boiling range: 178 - 212 °F

Flash Point: Not Applicable

Evaporation rate: No data available.

Flammability (solid, gas): No data available.

Upper/lower limit on flammability or explosive limits

Flammability limit - upper (%): No data available.

Flammability limit - lower (%): No data available.

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| Explosive limit - upper (%): | No data available. |
| Explosive limit - lower (%): | No data available. |
| Vapor pressure: | No data available. |
| Vapor density: | No data available. |
| Relative density: | No data available. |
| Solubility(ies) | |
| Solubility in water: | No data available. |
| Solubility (other): | No data available. |
| Partition coefficient (n-octanol/water): | No data available. |
| Auto-ignition temperature: | No data available. |
| Decomposition temperature: | No data available. |
| Viscosity: | No data available. |

10. Stability and reactivity

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|--|--------------------|
| Reactivity: | No data available. |
| Chemical stability: | No data available. |
| Possibility of hazardous reactions: | No data available. |
| Conditions to avoid: | No data available. |
| Incompatible materials: | No data available. |
| Hazardous decomposition products: | No data available. |

11. Toxicological information

Symptoms related to the physical, chemical and toxicological characteristics

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|----------------------|--------------------|
| Ingestion: | No data available. |
| Inhalation: | No data available. |
| Skin contact: | No data available. |
| Eye contact: | No data available. |

Information on toxicological effects

Acute toxicity (list all possible routes of exposure)

Oral

Product: ATEmix (): 454.945055 mg/kg

Dermal

Product: ATEmix (): 1,983.602411 mg/kg

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| Inhalation | |
| Product: | No data available. |
| Specified substance(s): | |
| Hydrochloric acid | LC 50 (Rat, 1 h): 3,124 mg/l |
| Repeated dose toxicity | |
| Product: | No data available. |
| Skin corrosion/irritation | |
| Product: | No data available. |
| Serious eye damage/eye irritation | |
| Product: | No data available. |
| Respiratory or skin sensitization | |
| Product: | No data available. |
| Carcinogenicity | |
| Product: | No data available. |
| IARC Monographs on the Evaluation of Carcinogenic Risks to Humans: | |
| No carcinogenic components identified | |
| US. National Toxicology Program (NTP) Report on Carcinogens: | |
| No carcinogenic components identified | |
| US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050): | |
| No carcinogenic components identified | |
| Germ cell mutagenicity | |
| In vitro | |
| Product: | No data available. |
| In vivo | |
| Product: | No data available. |
| Reproductive toxicity | |
| Product: | No data available. |
| Specific target organ toxicity - single exposure | |
| Product: | No data available. |
| Specific target organ toxicity - repeated exposure | |
| Product: | No data available. |
| Aspiration hazard | |
| Product: | No data available. |
| Other effects: | No data available. |

12. Ecological information

Ecotoxicity:

 Acute hazards to the aquatic environment:

Fish**Product:** No data available.**Specified substance(s):**

Ferric Chloride

LC 50 (Western mosquitofish (*Gambusia affinis*), 24 h): 26 mg/l Mortality LC 50 (Guppy (*Poecilia reticulata*), 48 h): 117.18 mg/l Mortality LC 50 (Western mosquitofish (*Gambusia affinis*), 48 h): 26 mg/l Mortality LC 50 (Bluegill (*Lepomis macrochirus*), 96 h): 20.26 mg/l Mortality LC 50 (Fathead minnow (*Pimephales promelas*), 96 h): 20.95 - 22.56 mg/l Mortality

Hydrochloric acid

LC 50 (Western mosquitofish (*Gambusia affinis*), 24 h): 282 mg/l Mortality LC 50 (Western mosquitofish (*Gambusia affinis*), 48 h): 282 mg/l Mortality LC 50 (Western mosquitofish (*Gambusia affinis*), 96 h): 282 mg/l Mortality

Aquatic invertebrates**Product:** No data available.**Specified substance(s):**

Ferric Chloride

EC 50 (Water flea (*Daphnia magna*), 21 d): 5.18 - 6.73 mg/l Intoxication EC 50 (Tubificid worm (*Tubifex tubifex*), 24 h): 102.5 - 123.68 mg/l Intoxication EC 50 (Tubificid worm (*Tubifex tubifex*), 48 h): 91.83 - 111.57 mg/l Intoxication EC 50 (Amphipod (*Crangonyx pseudogracilis*), 48 h): 139 - 184 mg/l Intoxication EC 50 (Water flea (*Daphnia magna*), 48 h): 9.6 mg/l Intoxication

Hydrochloric acid

LC 50 (Green or European shore crab (*Carcinus maenas*), 48 h): 240 mg/l Mortality LC 50 (Common shrimp, sand shrimp (*Crangon crangon*), 48 h): 260 mg/l Mortality

Chronic hazards to the aquatic environment:**Fish****Product:** No data available.**Aquatic invertebrates****Product:** No data available.**Toxicity to Aquatic Plants****Product:** No data available.**Persistence and degradability****Biodegradation****Product:** No data available.**BOD/COD ratio****Product:** No data available.**Bioaccumulative potential****Bioconcentration factor (BCF)****Product:** No data available.

Specified substance(s):

Ferric Chloride Plaice, sand dab (*Pleuronectes platessa*), Bioconcentration factor (BCF): 8 (Not reported)
 Plaice, sand dab (*Pleuronectes platessa*), Bioconcentration factor (BCF): 7,400 (Not reported)
 Plaice, sand dab (*Pleuronectes platessa*), Bioconcentration factor (BCF): 600 (Not reported)
 Plaice, sand dab (*Pleuronectes platessa*), Bioconcentration factor (BCF): 56,400 (Not reported)
 Plaice, sand dab (*Pleuronectes platessa*), Bioconcentration factor (BCF): 5,600 (Not reported)

Partition coefficient n-octanol / water (log Kow)

Product: No data available.

Mobility in soil: No data available.

Known or predicted distribution to environmental compartments

Iron trichloride No data available.
 Water No data available.
 Hydrogen chloride No data available.

Known or predicted distribution to environmental compartments

Iron trichloride No data available.
 Hydrogen chloride No data available.

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| 13. Disposal considerations |
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Disposal instructions: No data available.

Contaminated packaging: No data available.

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| 14. Transport information |
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DOT

UN number: UN 2582
 UN proper shipping name: Ferric chloride solution
 Transport hazard class(es)
 Class: 8
 Label(s): 8
 Packing group: III
 Marine Pollutant: Not regulated.

Special precautions for user: –

IMDG

UN number: UN 2582
 UN proper shipping name: FERRIC CHLORIDE SOLUTION
 Transport hazard class(es)
 Class: 8
 Label(s): 8
 EmS No.: F-A, S-B
 Packing group: III
 Marine Pollutant: Not regulated.
 Special precautions for user: –

IATA

UN number: UN 2582
 Proper Shipping Name: Ferric chloride solution
 Transport hazard class(es):
 Class: 8
 Label(s): 8
 Packing group: III
 Environmental hazards: Not regulated.
 Special precautions for user: –
 Other information
 Passenger and cargo aircraft: Allowed.
 Cargo aircraft only: Allowed.

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| 15. Regulatory information |
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US federal regulations US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

None present or none present in regulated quantities.

CERCLA Hazardous Substance List (40 CFR 302.4):

Ferric Chloride Reportable quantity: 1000 lbs.
 Hydrochloric acid Reportable quantity: 5000 lbs.

Superfund amendments and reauthorization act of 1986 (SARA)**Hazard categories**

Not listed.

SARA 302 Extremely hazardous substance

| Chemical identity | RQ | Threshold Planning Quantity |
|--------------------------|-----------|------------------------------------|
| Hydrochloric acid | 5000 lbs. | 500 lbs. |

SARA 304 Emergency release notification

| Chemical identity | RQ |
|--------------------------|-----------|
| Ferric Chloride | 1000 lbs. |
| Hydrochloric acid | 5000 lbs. |

SARA 311/312 Hazardous chemical

| Chemical identity | Threshold Planning Quantity |
|--------------------------|------------------------------------|
| Hydrochloric acid | 500lbs |
| Ferric Chloride | 500 lbs |

SARA 313 (TRI reporting)

| Chemical identity | Reporting threshold for other users | Reporting threshold for manufacturing and processing |
|--------------------------|--|---|
| Hydrochloric acid | 10000 lbs | 25000 lbs. |

Clean Water Act Section 311 Hazardous Substances (40 CFR 117.3)

| | |
|-------------------|--------------------------------|
| Ferric Chloride | Reportable quantity: 1000 lbs. |
| Hydrochloric acid | Reportable quantity: 5000 lbs. |

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130):

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|-------------------|-------------------------------|
| Hydrochloric acid | Threshold quantity: 15000 lbs |
| Hydrochloric acid | Threshold quantity: 5000 lbs |

US state regulations**US. California Proposition 65**

No ingredient regulated by CA Prop 65 present.

US. New Jersey Worker and Community Right-to-Know Act

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|-----------------|--------|
| Ferric Chloride | Listed |
|-----------------|--------|

US. Massachusetts RTK - Substance List

| | |
|-------------------|--------|
| Ferric Chloride | Listed |
| Hydrochloric acid | Listed |

US. Pennsylvania RTK - Hazardous Substances

| | |
|-----------------|--------|
| Ferric Chloride | Listed |
|-----------------|--------|

US. Rhode Island RTK

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|-----------------|--------|
| Ferric Chloride | Listed |
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|--|--|
| Inventory Status: Australia AICS: | Not in compliance with the inventory. |
| Canada DSL Inventory List: | Not in compliance with the inventory. |
| EU EINECS List: | On or in compliance with the inventory |
| EU ELINCS List: | Not in compliance with the inventory. |
| Japan (ENCS) List: | Not in compliance with the inventory. |
| EU No Longer Polymers List: | Not in compliance with the inventory. |
| China Inv. Existing Chemical Substances: | Not in compliance with the inventory. |
| Korea Existing Chemicals Inv. (KECI): | Not in compliance with the inventory. |
| Canada NDSL Inventory: | Not in compliance with the inventory. |
| Philippines PICCS: | Not in compliance with the inventory. |
| US TSCA Inventory: | On or in compliance with the inventory |
| New Zealand Inventory of Chemicals: | Not in compliance with the inventory. |
| Japan ISHL Listing: | Not in compliance with the inventory. |
| Japan Pharmacopoeia Listing: | Not in compliance with the inventory. |

16. Other information, including date of preparation or last revision

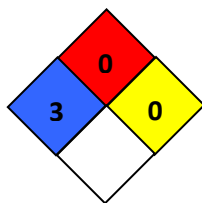
HMIS Hazard ID





| | | |
|----------------------------|--|----------|
| Health | | 2 |
| Flammability | | 0 |
| Physical hazards | | 0 |
| PERSONAL PROTECTION | | B |

B - Safety Glasses & Gloves

Hazard rating: 0 - Minimal; 1 - Slight; 2 - Moderate; 3 - Serious; 4 - Severe; *Chronic health effect

NFPA Hazard ID



| | |
|---|-----------------|
|  | Flammability |
|  | Health |
|  | Reactivity |
|  | Special hazard. |

Hazard rating: 0 - Minimal; 1 - Slight; 2 - Moderate; 3 - Serious; 4 - Severe

| | |
|-----------------------------|--------------------|
| Issue date: | 06/08/2015 |
| Revision date: | No data available. |
| Version #: | 1.1 |
| Further information: | No data available. |

