

**FERRIC CHLORIDE SOL'N PHOTO ENGRAVING GRADE****MSDS ID: MI0598****1. PRODUCT AND COMPANY IDENTIFICATION**

PRODUCT NAME : FERRIC CHLORIDE SOL'N PHOTO ENGRAVING GRADE  
MSDS ID : MI0598  
CHEMICAL NAME SYNONYMS : Iron (III) Chloride Solution  
CAS NUMBER : MIXTURE  
CHEMICAL FAMILY : Inorganic Salt Solution  
FORMULA : FeCl<sub>3</sub>

DISTRIBUTED BY:  
Hydrite Chemical Co.  
300 N. Patrick Blvd.  
Brookfield, WI 53008-0948  
(262) 792-1450

EMERGENCY RESPONSE NUMBERS:  
24 Hour Emergency # - (414) 277-1311  
CHEMTREC Emergency # - (800) 424-9300

MANUFACTURED BY: PVS Technologies

**2. COMPOSITION/INFORMATION ON INGREDIENTS**

| COMPONENT         | CAS NUMBER | OSHA HAZARD | % BY WT.  |
|-------------------|------------|-------------|-----------|
| Ferric Chloride   | 7705-08-0  | YES         | 37 - 45 % |
| Hydrogen Chloride | 7647-01-0  | YES         | <= 1 %    |

**3. HAZARDS IDENTIFICATION**

PHYSICAL STATE: Liquid.  
COLOR : Reddish brown.  
ODOR : Slight iron/acid odor.

\*\*\*EMERGENCY OVERVIEW\*\*\*: DANGER! Causes eye burns. DANGER! Corrosive to most metals. Reacts with most metals to form explosive/flammable hydrogen gas. May cause skin and respiratory irritation. Harmful or fatal if swallowed.

**POTENTIAL HEALTH EFFECTS**

ROUTES OF EXPOSURE:  
Eyes. Ingestion. Inhalation. Skin.

TARGET ORGANS:  
Eyes. Gastrointestinal Tract. Liver. Respiratory System. Skin.

EYE CONTACT:  
May be corrosive to the eyes. Severe irritation and burns may result.  
May cause: irritation. tearing. tissue discoloration. Permanent eye damage may result from contact with this product.

SKIN CONTACT:  
May cause mild to moderate irritation.  
Contact may cause: drying. discomfort. irritation. rash. Prolonged and repeated exposure may cause: sensitization.

SKIN ABSORPTION:

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**3. HAZARDS IDENTIFICATION (Cont.)**

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No absorption hazard expected under normal use.

**INHALATION:**

May cause moderate irritation.  
Vapors or mists may irritate: mucous membranes. respiratory tract.  
throat.

**INGESTION:**

May cause severe irritation.  
Harmful or fatal if swallowed. May cause damage to the: kidneys. liver.

**MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE TO PRODUCT:**

None known.

**OTHER:**

None known.

**CANCER INFORMATION:**

This product does not contain greater than 0.1% of the known or potential carcinogens listed in NTP, IARC, or OSHA.

**POTENTIAL ENVIRONMENTAL EFFECTS:**

See Section 12.

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**4. FIRST AID MEASURES**

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**EYE CONTACT:**

Immediately flush eyes with plenty of water for at least 15 minutes while holding eyelids open. Tilt head to avoid contaminating unaffected eye. Get immediate medical attention.

**SKIN CONTACT:**

Flush skin with plenty of water while removing contaminated clothing and shoes. Do not reuse clothing or shoes until cleaned. If irritation develops or persists, get medical attention.  
Do not apply oils or ointments unless ordered by the physician.

**INHALATION:**

Remove to fresh air. If breathing is difficult, administer oxygen. If not breathing, give artificial respiration, preferably mouth-to-mouth. GET MEDICAL ATTENTION IMMEDIATELY.

**INGESTION:**

If fully conscious, drink a quart of water. DO NOT induce vomiting. CALL A PHYSICIAN IMMEDIATELY. If unconscious or in convulsions, take immediately to a hospital or a physician. NEVER induce vomiting or give anything by mouth to an unconscious victim. If vomiting occurs spontaneously, keep head below hips to prevent aspiration of liquid into the lungs.

NOTE TO PHYSICIANS: None.

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**5. FIRE FIGHTING MEASURES**

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FLASH POINT: None.  
FLAMMABILITY LIMITS: LEL: N.A. UEL: N.A.  
AUTOIGNITION TEMPERATURE: N.A.

EXTINGUISHING MEDIA:

For fires in area use appropriate media. For example: Water spray. Carbon dioxide. Dry chemical. Fog. Foam.

FIRE FIGHTING METHODS:

Evacuate area of unprotected personnel. Wear protective clothing including NIOSH-approved self-contained breathing apparatus. Remain upwind of fire to avoid hazardous vapors and decomposition products. Use water spray to cool fire-exposed containers and disperse vapors. Run-off from fire control may cause pollution. Neutralize run-off with Lime, Soda Ash, etc., to prevent corrosion of metals and formation of Hydrogen gas. Keep out of low areas where gases (fumes) can accumulate.

FIRE AND EXPLOSION HAZARDS:

Product may react with some metals (ex.: Aluminum, Zinc, Tin, etc.) to release flammable hydrogen gas.  
Heat can cause evolution of gaseous Hydrogen Chloride.

HAZARDOUS COMBUSTION PRODUCTS:

Hydrogen Chloride gas. Chlorine-containing gases.

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**6. ACCIDENTAL RELEASE MEASURES**

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SPILL CLEAN-UP PROCEDURES:

CORROSIVE MATERIAL. Evacuate unprotected personnel from area. Maintain adequate ventilation. Follow personal protective equipment recommendations found in Section 8. Never exceed any occupational exposure limit. Contain spill, place into drums for proper disposal. Flush remaining area with water and neutralize with Soda Ash or Lime and dispose of properly. Avoid direct discharge to sewers and surface waters. Notify authorities if entry occurs.

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**7. HANDLING AND STORAGE**

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STORAGE:

CORROSIVE MATERIAL. Store in a cool, well ventilated area, out of direct sunlight. Store in a dry location away from heat. Keep away from incompatible materials. Keep containers tightly closed. Do not store in unlabeled or mislabeled containers.  
Highly corrosive to most metals with evolution of hydrogen gas.

HANDLING:

Avoid contact with eyes, skin, and clothing. Use with adequate ventilation. Do not swallow. Avoid breathing vapors, mists, or dust. Do not eat, drink, or smoke in work area. Wash thoroughly after handling.  
Ferric chloride will permanently stain clothing and temporarily stain skin.

**FERRIC CHLORIDE SOL'N PHOTO ENGRAVING GRADE****MSDS ID: MI0598****8. EXPOSURE CONTROLS/PERSONAL PROTECTION****ENGINEERING CONTROLS:**

General room ventilation is required.

Avoid creating dust or mist. Maintain adequate ventilation. Do not use in closed or confined spaces. Keep levels below exposure limits. To determine exposure levels, monitoring should be performed regularly.

**RESPIRATORY PROTECTION:**

Respiratory protection must be worn if ventilation does not eliminate symptoms or keep levels below recommended exposure limits.

If exposure limits are exceeded, wear: NIOSH-Approved respirator. DO NOT exceed limits established by the respirator manufacturer. All respiratory protection programs must comply with OSHA 29 CFR 1910.134 and ANSI Z88.2 requirements and must be followed whenever workplace conditions require a respirator's use.

**EYE/FACE PROTECTION:**

Wear chemical safety goggles while handling this product.

Do not wear contact lenses.

**SKIN PROTECTION:**

Prevent contact with this product. Wear gloves and protective clothing depending on condition of use.

Protective gloves: Impervious. Rubber (latex).

**OTHER PROTECTIVE EQUIPMENT:**

Eye-wash station. Safety shower. Rubber apron. Chemical safety shoes.

Rubber boots. Protective clothing.

**GENERAL HYGIENE CONSIDERATIONS:**

Wash with soap and water before meal times and at the end of each work shift.

**EXPOSURE GUIDELINES:**

| COMPONENT         | -----OSHA----- |            | -----ACGIH----- |            |
|-------------------|----------------|------------|-----------------|------------|
|                   | PEL            | STEL/C     | TWA             | STEL/C     |
| Ferric Chloride   | * 1 mg/m3+     | Not Estab. | * 1 mg/m3       | Not Estab. |
| Hydrogen Chloride | Not Estab.     | C 5ppm     | Not Estab.      | C 2 ppm    |

NOTE: \* Exposure Limit for Iron Salts, soluble, as Fe. + Vacated 1989 OSHA PEL(s). C = Denotes Ceiling Limit.

**9. PHYSICAL AND CHEMICAL PROPERTIES**

|                          |            |                   |            |
|--------------------------|------------|-------------------|------------|
| BOILING POINT (DEG. F) : | 230        | SPECIFIC GRAVITY: | 1.40 @ 25C |
| FREEZING POINT (DEG. F): | -58        | % VOLATILE (WT%): | N.D.       |
| MELTING POINT (DEG. F) : | N.D.       | EVAPORATION RATE: | 1          |
| VAPOR PRESSURE (MM HG) : | Negligible | (nBuAc=1)         |            |
| VAPOR DENSITY (AIR=1) :  | N.A.       | VOC (WT%) :       | N.A.       |
| SOLUBILITY IN WATER :    | Complete   | VOC (LBS/GAL) :   | N.A.       |
| pH :                     | < 2.0      |                   |            |

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**10. STABILITY AND REACTIVITY**

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STABILITY:

Stable under normal conditions.

CONDITIONS TO AVOID:

Avoid elevated temperatures.

INCOMPATIBILITY:

Strong Alkalies. Alkali metals. Metals.

HAZARDOUS DECOMPOSITION PRODUCTS:

Hydrogen chloride. Chlorine-containing gases. May react with certain metals to produce flammable hydrogen gas.

HAZARDOUS POLYMERIZATION:

Will not occur under normal conditions.

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**11. TOXICOLOGICAL INFORMATION**

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LD50 ORAL : No Data  
LD50 SKIN : No Data  
LC50 INHALATION: No Data

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**12. ECOLOGICAL INFORMATION**

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ECOTOXICOLOGICAL INFORMATION:

Fat Head Minnows: LC50 > 1000 ppm; Daphnia Magna: LC50 > 1000 ppm

CHEMICAL FATE INFORMATION:

No data available.

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**13. DISPOSAL CONSIDERATIONS**

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HAZARDOUS WASTE NUMBER: D002

DISPOSAL METHOD:

Dispose of in a permitted hazardous waste management facility following all local, state and federal regulations.  
If approved, neutralize material and flush to sewer. Since emptied containers retain product residue, follow label warnings even after container is emptied. DO NOT pressurize, cut, weld, solder, drill, grind or expose empty containers to heat, flame, sparks or other sources of ignition.

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**14. TRANSPORT INFORMATION (Not meant to be all inclusive)**

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DOT (Department of Transportation):

Proper Shipping Name : Ferric Chloride, Solution  
Hazard Class : 8  
Identification Number : UN2582  
Packing Group : III  
Label Required : CORROSIVE

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14. TRANSPORT INFORMATION (Not meant to be all inclusive) (Cont.)

Reportable Quantity (RQ): 1000# (Ferric Chloride); 5000# (Hydrogen Chloride)

15. REGULATORY INFORMATION

FEDERAL REGULATIONS:

TSCA INVENTORY STATUS:

This product or all components of this product are listed on the EPA/TSCA Inventory of Chemical Substances.

SARA TITLE III SECTION 311/312 CATEGORY:

IMMEDIATE (ACUTE) HEALTH HAZARD : YES  
 DELAYED (CHRONIC) HEALTH HAZARD : YES  
 FIRE HAZARD : NO  
 SUDDEN RELEASE OF PRESSURE HAZARD: NO  
 REACTIVE HAZARD : NO

SARA SECTION 302/304/313/HAP:

| COMPONENT         | RQ (LBS) (*1) | RQ (LBS) (*2) | TPQ (LBS) (*3) | SEC 313 (*4) | HAP (*5) |
|-------------------|---------------|---------------|----------------|--------------|----------|
| Ferric Chloride   | 1000          | N.A.          | N.A.           | NO           | NO       |
| Hydrogen Chloride | 5000          | 5000          | 500            | YES          | YES      |

NOTE: RQ, TPQ, Section 313 reporting requirements are dependent upon individual ingredients. Hydrogen Chloride (gas only) is on the Extremely Hazardous Substance List. In liquid form, Hydrogen Chloride (Hydrochloric Acid) is not required to be reported as an Extremely Hazardous Substance, but is subject to SARA 311 and 312 reporting requirements. Hydrochloric Acid also appears on the Section 313 list; however, the listing only applies to the aerosol forms of Hydrochloric Acid.

-----FOOTNOTES-----

- \*1 = CERCLA Reportable Quantity
- \*2 = SARA Reportable Quantity
- \*3 = SARA EHS Threshold Planning Quantity
- \*4 = SARA 313 Toxic Chemical/Category
- \*5 = U.S. EPA Hazardous Air Pollutant

STATE REGULATIONS:

CALIFORNIA--The following components are listed under Prop 65:  
 No data available.

WISCONSIN--The following components are listed as a Wisconsin HAP:  
 Iron Salt, soluble, as Fe. Hydrogen Chloride.

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16. OTHER INFORMATION

HMIS RATING SYSTEM

Health : 3\*

Flammability: 0

Reactivity : 0

\* = Chronic Health Hazard

NFPA RATING SYSTEM

Health : 3

Flammability : 0

Reactivity : 0

Special Hazard: None

MSDS ABBREVIATIONS: N.A. = Not Applicable
N.D. = Not Determined
HAP = Hazardous Air Pollutant
VOC = Volatile Organic Compound
C = Ceiling Limit
N.E./Not Estab. = Not Established

MSDS PREPARED BY: KJL

REASON FOR REVISION: Change(s) made in Sections 2 and 9.

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The data in this Material Safety Data Sheet relates only to the specific material designated and does not relate to its use in combination with any other material or process. The data contained is believed to be correct. However, since conditions of use are outside our control it should not be taken as a warranty or representation for which HYDRITE CHEMICAL CO. assumes legal responsibility. This information is provided solely for your consideration, investigation, and verification.
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