

MATERIALS SAFETY DATA SHEET

PVS TECHNOLOGIES, INC.

DATE PREPARED: 09/11/00 1:07 PM

FERRIC CHLORIDE - PHOTOENGRAVING GRADE

Distributed by Kepro Circuit Systems, Inc.
Catalog #'s
E-4oz, 8-oz, E-1Qt, E-1G, E-4G, E-52G

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name: Ferric Chloride - Photoengraving Grade

Chemical Name/Synonyms: Iron (III) Chloride Solution

Chemical Formula: FeCl_3

CAS Number: 7705-08-0

HS Tariff Classification Number: data not available

Tax ID Number: data not available

Manufacturer:

PVS Technologies, Inc.

10900 Harper Avenue

Detroit, Michigan 48213

telephone: (313) 571-1100 (for product information)

fax: (313) 571-6765

****FOR TRANSPORTATION EMERGENCY ONLY, 24 HOURS EVERYDAY, CALL****

****CHEMTREC, 1-800-424-9300****

2. COMPOSITION/INFORMATION ON INGREDIENTS

<u>Component</u>	<u>CAS Registry #</u>	<u>% by weight</u>
Ferric Chloride	7705-08-0	32 - 45
Hydrochloric Acid	7647-01-0	<=3.0
Water	7732-18-5	Balance

Hazardous Ingredients: Ferric Chloride, Hydrochloric Acid,

Exposure Limits (ppm):

	<u>Component</u>	<u>OSHA TLV</u>	<u>ACGIH TLV</u>	<u>NIOSH</u>
Ferric Chloride (as soluble iron salts)		1 mg/m ³ , 8-hr TWA	1 mg/m ³ , 8-hr TWA	1 mg/m ³ , 8-hr TWA
Hydrochloric Acid (as hydrogen chloride gas)		5 ppm ceiling	5 ppm ceiling	100 ppm IDLH

3. HAZARDS IDENTIFICATION

Emergency Overview

A reddish brown liquid with a slight odor of iron/acid. Avoid inhaling concentrated vapor or mist, may cause irritation of respiratory tract. May result in severe liver and/or kidney damage, if swallowed, and can be fatal. Do not induce vomiting. Avoid contact with skin. Liquid, mist, or vapor can cause immediate irritation to all human tissue. Contact with eyes can result in permanent visual loss unless removed quickly by thorough irrigation with water. **Caution:** May release irritating and toxic gases of hydrogen chloride during fire. Contain spills and keep liquid out of water sources. See Sections 3, 4, 5, and 6.

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Potential Health Effects (Acute and Chronic)

INHALATION: Inhalation of concentrated mist or vapor may cause irritation of the respiratory tract.

INGESTION: Ingestion may cause severe liver and/or kidney damage, and may be fatal.

DIRECT CONTACT: The product is an irritant. Contact may include irritation with dryness, discomfort or rash. Ferric chloride has been infrequently associated with skin sensitization in humans. Extensive exposure could lead to skin sensitization

DIRECT EYE CONTACT: Contact with eyes may cause irritation and tearing and eye tissue discoloration, and may result in permanent visual loss unless removed quickly by thorough irrigation with water.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: None known.

CARCINOGENS (NTP, IARC, or OSHA): No

4. FIRST AID MEASURES:

INHALATION: Remove victim to fresh air. If not breathing, perform artificial respiration. If breathing is difficult, give oxygen. **Get immediate medical attention.**

INGESTION: If swallowed, do NOT induce vomiting. Give victim water or milk. Call a physician or poison control center immediately. **Get immediate medical attention.** Never give anything by mouth to an unconscious person.

DIRECT CONTACT: Flush with water until material is removed. Remove contaminated clothing. Wash clothing before reuse.

DIRECT EYE CONTACT: Immediately flush with water for at least 15 minutes. Hold eyelids apart to ensure complete irrigation of eye/lid tissue. **Get immediate medical attention.**

5. FIRE FIGHTING MEASURES

FLAMMABLE PROPERTIES:

Flammability: Product not flammable.

Flash Point: not applicable

Method used: TCC

OXIDIZING PROPERTIES: data not available

AUTOFLAMMABILITY: not applicable

AUTOIGNITION TEMPERATURE: not applicable

FLAMMABLE LIMITS, % BY VOLUME:

Lower flammable limit: not applicable

Upper flammable limit: not applicable

EXTINGUISHING MEDIA: Use water spray, fog, foam, dry chemical, CO₂ or other agents as appropriate for surrounding fire.

FIRE FIGHTING INSTRUCTIONS: As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear. Keep unnecessary people away; isolate hazard area and deny entry. Stay upwind; keep out of low areas. During fire, irritating and toxic gases of hydrogen chloride may be generated by thermal decomposition. Cool exterior of storage tanks.

FIRE AND EXPLOSION HAZARDS: None

SENSITIVITY TO MECHANICAL IMPACT/STATIC DISCHARGE: not applicable

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6. ACCIDENTAL RELEASE MEASURES

Contain spill in order to prevent contamination of water way; neutralize with lime or soda ash. Flush with water in accordance with applicable regulations to waste treatment system. Avoid runoff into storm sewers and ditches which lead to waterways. Spills of 1000 pounds (454 kilograms) or more must be reported to the **National Response Center, (800) 424-8802**. If water pollution occurs, notify the appropriate authorities

7. HANDLING AND STORAGE

Store away from heat, strong alkalis and alkali metals. Keep containers closed and dry. Protect container from physical damage. Use handling equipment (pumps, hoses, etc.) compatible with product, i.e., polyethylene, polypropylene, PVC, Teflon, rubber, FRP, and titanium. See Section 10 for types of packaging materials to avoid. Avoid contact with bare metals other than titanium. Avoid breathing vapors and/or mist. Avoid making contact with eyes and skin. Wash thoroughly after handling. Follow all MSDS/label precautions even after container is emptied because they may retain vapor and product residues.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

VENTILATION: Good general ventilation should be sufficient to control airborne levels of vapor and mist.

RESPIRATORY PROTECTION: If airborne concentrations exceed the published exposure limits use NIOSH/MSHA approved, full face respirator as appropriate. Consult respirator manufacturer to determine appropriate equipment.

PROTECTIVE GLOVES: Wear impervious rubber gloves.

EYE PROTECTION: Wear splash proof chemical safety goggles. Do not wear contact lenses.

OTHER PROTECTIVE EQUIPMENT: Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower.

WORK/HYGIENIC PRACTICES: Avoid ingestion and breathing mist. Ferric Chloride will permanently stain clothing and temporarily stain skin. Avoid contact with skin and clothing. Wash thoroughly after handling.

OTHER PRECAUTIONS: None.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	reddish brown	
Odor:	slightly iron/acid	
Odor Threshold:	data not available	
Physical State:	liquid	
Vapor Pressure (REID):	negligible	
Specific Gravity:	40% solution = 1.432 at 17.5 ⁰ C	(water = 1)
Solubility in Water:	complete	
pH:	<2.0	
Boiling Point:	230 ⁰ F or 110 ⁰ C	
Vapor Density:	not applicable	(Air = 1)
Evaporation Rate:	1	(Butyl Acetate = 1)
Freezing Point:	(-58) ⁰ F or (-50 ⁰) C	
Coefficient of Water/Oil Distribution:	not applicable	
Viscosity:	data not available	
% Solids:	not applicable	
% VOC:	not applicable	

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For information on FLASH POINT, FLAMMABILITY, OXIDIZING PROPERTIES, AUTOFLAMMABILITY, and EXPLOSIVE PROPERTIES, please see Section 5.

10. STABILITY AND REACTIVITY

GENERAL: This product is stable and hazardous polymerization will not occur.

INCOMPATIBLE MATERIALS AND CONDITIONS TO AVOID: Material is stable when properly handled. Material is acidic and corrodes most metals. Avoid contact with strong alkalis and alkali metals.

HAZARDOUS DECOMPOSITION PRODUCTS: May release hydrogen chloride gas at elevated temperatures.

11. TOXICOLOGICAL INFORMATION

Immediate Effects: Can cause severe liver and/or kidney damage if swallowed, and may even be fatal. See Section 3 for other immediate health hazards.

12. ECOLOGICAL INFORMATION

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

13. DISPOSAL CONSIDERATIONS

Dispose of spilled, neutralized, or waste product, contaminated soil and other contaminated materials in accordance with all local, state and federal regulations.

14. TRANSPORT INFORMATION

DOT (Department of Transportation)

Proper Shipping Name: Ferric Chloride, Solution

Hazard Class: 8

Identification Number: UN2582

Packing Group: III

Label: data not available

Emergency Response Guide Book Number: 60

Corrosive: **To metals only (not to skin)**

15. REGULATORY INFORMATION

U.S. Federal Regulations:

OSHA:

This product is hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200).

SARA TITLE III (Superfund Amendments and Reauthorization Act of 1986)

Section 311/312 Hazard and Physical Hazards:

Immediate yes

Delayed yes

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Fire: no
Pressure: no
Reactivity: no

Section 313 Toxic Chemicals:

<u>Ingredient</u>	<u>% by Weight</u>
None	

CERCLA/SUPERFUND (40 CFR 117, 302)

<u>Ingredient</u>	<u>RQ (Reportable Quantity)</u>
ferric chloride, solution	1000 pounds
hydrochloric acid	5000 pounds

Notification to the **National Response Center, Wash., DC (1-800-424-8802)** is required if any of the above RQs are exceeded.

RCRA:

If discarded in its purchased form, this product would be a hazardous waste by characteristic. Under RCRA, it is the responsibility of the product user to determine at the time of disposal, whether a material containing the product or derived from the product should be classified as a hazardous waste.

This product contains no Class I or Class II Ozone Depleting Chemicals

DOT:

Please see Section 14.

This product has been classified in accordance with the hazard criteria of the CPR and the MSDS contains all the information required by the CPR.

16. OTHER INFORMATION

The following label hazard ratings are recommended for containers of Ferric Chloride, Solution: (Hazard Index Key: 4 = severe; 3 = serious; 2 = moderate; 1 = slight; 0 = minimal)

<u>NFPA</u>		<u>HMS</u>	
Health	not rated	Health	3
Flammability	not rated	Flammability	0
Reactivity	not rated	Reactivity	0

MSDS Status: The entire MSDS has been revised, October 27, 1997

To the best of our knowledge, the information contained herein is accurate. However, neither PVS Chemicals, Inc., nor any of its subsidiaries, assumes any liability whatsoever for the accuracy or completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user.

All materials may present unknown hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards which exist. Consult the manufacturer for further information.