# MATERIAL SAFETY DATA SHEET

**PVS TECHNOLOGIES, INC.** DATE PREPARED: October 22, 2001

**FERRIC CHLORIDE, ANHYDROUS** Product Number: None

## 1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name: Ferric Chloride, Anhydrous
Product Number: data not available
Chemical Name/Synonyms: Iron (III) Chloride, solid
Chemical Formula: $FeCl_3$
Cas Number: 7705-08-0

**Manufacturer:**

PVS Technologies, Inc.
10900 Harper Avenue
Detroit, Michigan 48213
telephone: (313) 571-1100 (for product information and emergencies)
fax: (313) 571-6765

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

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

## 2. COMPOSITION/INFORMATION ON INGREDIENTS

| Component | CAS Registry # | % by weight |
|---|---|---|
| Ferric Chloride | 7705-08-0 | 99 |
| Ferrous Chloride | 7758-94-3 | <1 |
| Inert Matter | not available | <1 |

**Hazardous Ingredients:** Ferric Chloride, Ferrous Chloride

**Exposure Limits (ppm):**

| Component | OSHA TLV | ACGIH |
|---|---|---|
| Ferric Chloride | TWA 1 mg/m$^3$ (as soluble iron salt) | TWA 1 mg/m$^3$ (as soluble iron salt) |
| Ferrous Chloride | TWA 1 mg/m$^3$ (as soluble iron salt) | TWA 1 mg/m$^3$ (as soluble iron salt |

## 3. HAZARDS IDENTIFICATION

**Potential Health Effects (Acute and Chronic)**

INHALATION: No hazard in normal industrial use.

INGESTION: Ingestion may cause severe liver and/or kidney damage. May also cause damage to the gastrointestinal tract.

DIRECT CONTACT: Product is a moderate skin irritant. Can cause irritation or corrosive chemical burns to human tissue. High heat of solution (353 BTU/LB) can cause severe thermal burns if in contact with moist skin or mucous tissue.

DIRECT EYE CONTACT: Contact with eyes may cause irritation and may be corrosive and result in permanent visual loss unless removed quickly by thorough irrigation with water.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: Caused erythema (a rash) to skin of rabbits.

CARCINOGENS (NTP, IARC, or OSHA): No

## 4. FIRST AID MEASURES:

INHALATION: No specific treatment is necessary since this material is not likely to be hazardous by inhalation. If exposed to excessive levels of dusts or fumes, remove to fresh air and get medical attention if cough or other symptoms develop.

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

DIRECT CONTACT: Dust off excess before washing. Wash with soap and water. Get medical attention if irritation develops or persists.

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: none

AUTOFLAMMABILITY: not applicable

AUTOIGNITION TEMPERATURE: not applicable

FLAMMABLE LIMITS, % BY VOLUME:

Lower flammable limit: not applicable
Upper flammable limit: not applicable

EXTINGUISHING MEDIA: Use dry chemical or $CO_2$ fire extinguishers.

**CAUTION!!** This material heats on contact with water.

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. Move container from fire area if you can do it without risk. Cool exterior of storage tanks. Stay away from ends of tanks.

FIRE AND EXPLOSION HAZARDS: During a fire, irritating and highly toxic gases of hydrogen chloride or chlorine may be generated by thermal decomposition.

SENSITIVITY TO MECHANICAL IMPACT/STATIC DISCHARGE: no applicable

## 6. ACCIDENTAL RELEASE MEASURES

Vacuum or sweep up material and place in a disposal container. After removal, flush contaminated area with detergent and water. 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.

**Emergency Overview**

Greenish black granular solid. May cause severe liver and/or kidney damage if swallowed. Do not induce vomiting. Can cause irritation or chemical burns to human tissue. Contact with eyes can cause irritation and may even cause permanent visual loss, remove quickly by thorough irrigation with water. **Do not use water on fire**. Use dry chemical or $CO_2$. Beware of chlorine gas or hydrogen chloride gas at high temperatures. See Sections 3, 4, and 5.

## 7. HANDLING AND STORAGE

Store in a dry area. Store away from heat, strong alkalis and alkali metals. Keep containers closed and dry. Protect container from physical damage. See Section 10 for types of packaging material to avoid. Avoid contact with water and minimize contact with moisture. Avoid breathing dust. Avoid contact with skin and eyes. Use gloves when handling. Wash thoroughly after handling; dust off excess before washing. Follow all MSDS/label precautions even after container is emptied because they may retain product residues.

## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

VENTILATION: Good general ventilation should be sufficient to control airborne levels..

RESPIRATORY PROTECTION: Use NIOSH/MSHA approved, full face respirator with dust filter. 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: Wear protective clothing to minimize skin contact. Rubber footwear and apron should be used as appropriate. Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower.

WORK/HYGIENIC PRACTICES: Avoid breathing dust. Use gloves when handling.

OTHER PRECAUTIONS: None.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

| | | |
|---|---|---|
| Appearance: | greenish black | |
| Odor: | none | |
| Odor Threshold: | not applicable | |
| Physical State: | granular solid | |
| Vapor Pressure (REID): | negligible | |
| Specific Gravity: | 2.8 - 2.9 | (water = 1) |
| Solubility in Water: | 50% by weight | |
| pH: | 1.0 for 2% solution | |
| Boiling Point: | 305 - 317$^0$ C or 581 - 603$^0$ F | |
| Vapor Density: | not applicable | (Air = 1) |
| Evaporation Rate: | not applicable | (Butyl Acetate = 1) |
| Melting Point: | 301$^0$ C or 574$^0$ F | |
| Coefficient of Water/Oil Distribution: | | data not available |
| Percent Volatile by Volume (%) at 55$^0$ C: | | negligible |
| Viscosity: | data not available | |
| % Solids: | data not available | |
| % VOC: | data not available | |

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. Refer to Section 7. Avoid high temperatures. Avoid potassium and sodium.

HAZARDOUS DECOMPOSITION PRODUCTS: Can release toxic chlorine gas at elevated temperatures above 553$^0$ F. Can release toxic hydrogen chloride on contact with water or steam at elevated temperatures.

## 11. TOXICOLOGICAL INFORMATION

$LD_{50}$: 1932 mg/kg (oral toxicity, rat)

$LC_{50}$: data not available

Immediate Effects: Exposure caused erythema to skin of rabbits. Ingestion causes severe liver and/or kidney damage in humans. Refer to Section 3 for other immediate effects.

Carcinogenicity: not applicable

## 12. ECOLOGICAL INFORMATION

Chronic Hazard Level: Mild chronic irritant in 2 - 5 month studies, trout showed growth decreases and invertebrates effects: reproduction at 12 and 3 ppm, respectively. For daphnids, reduction was 16% at 4.38 ppm Fe. Marine waters should not exceed 0.3 ppm Fe.

Chronic Plant Toxicity Limit: 1000 ppm

Potential for Accumulation:

Concentration factors for iron:

| | marine | freshwater |
|---|---|---|
| plants | 50,000 | 5000 |
| invertebrates | 20,000 | 3200 |
| fish | 3000 | 300 |

Half-life in total human body = 800 days

Chronic Aquatic Toxicity Limit: 130 ppm (Daphnia magna)

Persistency: Can persist indefinitely

Carcinogenicity: not applicable

## 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
Hazard Class: 8
Identification Number: UN1773
Packing Group: III
Emergency Response Guide Book Number: 157
Corrosive: 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 302 Extremely Hazardous Substances:

| Ingredient | RQ (Reportable Quantity) | TPQ |
|---|---|---|
| none | | |

Section 311/312 Hazard and Physical Hazards:

| | |
|---|---|
| Immediate: | yes |
| Delayed: | no |
| Fire: | no |
| Pressure: | no |
| Reactivity: | no |

Section 313 Toxic Chemicals:

| Ingredient | % by Weight |
|---|---|
| none | |

CERCLA/SUPERFUND (40 CFR 117, 302)

| Ingredient | RQ |
|---|---|
| Ferric Chloride, Anhydrous | 1000 pounds |

Notify the **National Response Center (1-800-424- 8802)**

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 refer to Section 14.

**State Regulations:**

California

data not available

Michigan

data not available

**International Regulations:**

CANADA

WHMIS Hazard Class(es):

data not available

CEPA:

data not available

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, Anhydrous:

(Hazard Index Key: 4 = severe; 3 = serious; 2 = moderate; 1 = slight; 0 = minimal)

| NFPA | | HMIS | |
|---|---|---|---|
| Health | 2 | Health | 3 |
| Flammability | 0 | Flammability | 0 |
| Reactivity | 0 | Reactivity | 1 |

MSDS Status: The entire MSDS has been revised October 22, 2001.

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.