

MATERIAL SAFETY DATA SHEET

SECTION 1 — PRODUCT AND COMPANY IDENTIFICATION

Product identifier: FERRIC CHLORIDE- Drinking Water Grade

Typical product use: Water and wastewater treatment, treatment of industrial waste water.

Supplier name and address:

PVS Technologies, Inc.

10900 Harper Avenue
Detroit, MI 48213 USA
313-571-1100

Manufacturer's name and address:

Refer to supplier

24 Hour Transportation Emergency Telephone #: (800) 424-9300 (Chemtrec)

SECTION 2 — HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW

Reddish brown liquid, slight iron / acid odor.

Danger! Corrosive material. Causes burns. Reacts with metals to release flammable hydrogen gas.

May be harmful or fatal if swallowed in large amounts. Effects may be delayed.

POTENTIAL HEALTH EFFECTS

Target organs: Eyes, skin, respiratory system, digestive system.

Signs and symptoms of short-term (acute) exposure:

Inhalation: Vapors and mists may be corrosive or irritating to the nose, throat and respiratory tract. Symptoms may include burning sensation, coughing, shortness of breath, lung inflammation and pulmonary edema (fluid accumulation).

Skin contact: Vapors, mists and liquids may cause severe irritation and/or corrosive burns to the skin. Symptoms may include dryness, discomfort or rash, deep burns and tissue damage.

Eye contact: Direct eye contact may cause severe irritation, tearing, blurred vision, corrosive burns, severe damage, eye injury and permanent blindness.

Ingestion: Vapors, mists and liquids are corrosive to the mouth, throat and digestive system. Ingestion may result in abnormal liver and kidney function. Symptoms may include nausea, vomiting, pain, diarrhea, coma and death. Effects may be delayed by up to three days.

Effects of long-term (chronic) exposure: Chronic skin contact with low concentrations may cause dermatitis.

Other important hazards: Eye contact may cause eye tissue discoloration. For further information on other important hazards, see TOXICOLOGICAL INFORMATION, Section 11.

SECTION 3 — COMPOSITION / INFORMATION ON INGREDIENTS

<u>Ingredients</u>	<u>CAS #</u>	<u>% (weight)</u>	<u>LC₅₀ (rat, inh) (mg/m³ / 4hr)</u>	<u>LD₅₀ (mg/kg)</u>	
				<u>rat, oral</u>	<u>dermal, rabbit</u>
Ferric chloride	7705-08-0	37 – 45	not available	500 – 5000	> 20000
Water	7732-18-5	55 – 63	not available	90 ml/Kg	not available

SECTION 4 — FIRST AID MEASURES

Inhalation: Immediately remove person to fresh air. If breathing stops, provide rescue breathing. If breathing is difficult, administer oxygen by qualified medical personnel only. Obtain medical attention.

Skin contact: Flush immediately with water for at least 30 minutes, while removing contaminated clothing under running water. Obtain immediate medical attention. Wash clothing before reuse.

Eye contact: Immediately flush with water for at least 30 minutes. Obtain immediate medical attention.

Ingestion: If swallowed, DO NOT induce vomiting. Have victim rinse mouth with water, then give victim one to two glasses of water to drink. Never give anything by mouth to an unconscious person. Obtain immediate medical attention.

SECTION 5 — FIRE FIGHTING MEASURES

Fire hazards/conditions of flammability: This material is not considered to be flammable. Product may release small amounts of flammable Hydrogen gas on contact with metals. Closed containers may rupture if exposed to excess heat or flame, due to a build-up of internal pressure.

Flash point (Method): Not Applicable

Auto-ignition temperature: Not Applicable

Lower flammable limit (% by volume): Not Applicable

Upper flammable limit (% by volume): Not Applicable

Explosion data: Sensitivity to mechanical impact / static discharge: Not Applicable

Oxidizing properties: Data not available

Suitable extinguishing media: Use water spray, water fog, alcohol resistant foam, dry chemicals, CO₂ or other agents as appropriate for surrounding fires.

Special fire-fighting procedures/equipment: Firefighters should wear proper protective equipment and a self-contained breathing apparatus. Move containers from fire area if it can be done without risk. Water spray may be useful in cooling equipment and containers exposed to heat and flame.

Hazardous combustion products: May release toxic fumes of Hydrogen Chloride gas in a fire.

SECTION 6 — ACCIDENTAL RELEASE MEASURES

Personal precautions: Restrict access to area until completion of clean-up. Ensure clean-up is conducted by trained personnel only. All persons dealing with clean-up should wear the appropriate protective equipment including self-contained breathing apparatus and boots. Keep all other personnel upwind and away from the spill/release.

Environmental precautions: Ensure spilled product does not enter drains, sewers, waterways, or confined spaces. Dike far ahead of the spill for later recovery or disposal.

Spill response/Cleanup: Ventilate area of release. Stop leak if you can do so without risk. Neutralize spill with lime or soda ash. Absorb neutralized spill with inert absorbent material, then place absorbent material into a suitable, labeled container for later disposal (see Section 13). Flush spill area with water, in accordance with applicable regulations, to waste treatment system. Notify the appropriate authorities as required.

Reportable Quantity: Spills over 1000 dry pounds (454Kg) must be reported to National Response Center (800) 424-8802.

SECTION 7 — HANDLING AND STORAGE

Safe handling procedures: This material is corrosive. Wear appropriate chemically protective equipment. Use in a well ventilated area with proper engineering controls. Avoid inhalation of vapors. Avoid contact with skin, eyes and clothing. Keep away from heat and flame. Keep away from metals and other incompatible materials. Protect container from physical damage. Do not strike containers or fittings with tools or hard objects. Keep container closed and dry. Wash thoroughly after handling. Emptied container may retain vapor and product residue.

Storage requirements: Store in a cool, dry, well-ventilated area away from all sources of heat and incompatible materials. Storage area should be clearly identified, clear of obstruction, and accessible only to trained and authorized personnel. Inspect periodically for damage or leaks.

Incompatible materials: Oxidizing agents, metals, strong bases, reducing agents, alcohols, sulfides, monomers (e.g. Styrene).

Special packaging materials: Always keep in containers made of the same materials as the supply container.

SECTION 8 — EXPOSURE CONTROLS / PERSONAL PROTECTION

Permissible exposure levels:

<u>Ingredient name:</u>	<u>OSHA PEL</u>	<u>ACGIH TLV</u>
Ferric chloride	*1 mg/m ³ (final rule / vacated limit)	*1 mg/m ³

*Note: The OSHA PEL's and ACGIH TLV's listed above for Ferric chloride are for "Iron salts, soluble, as Fe".

Ventilation and engineering controls: Provide good general room ventilation to minimize exposure to vapors or mists. Local exhaust ventilation may be required in order to meet TLV requirements.

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SECTION 8 — EXPOSURE CONTROLS / PERSONAL PROTECTION- Continued

Respiratory protection: Respiratory protection is required if the airborne concentration exceeds the TLV. NIOSH-approved full face respirators are recommended depending on the airborne concentration levels. Advice should be sought from respiratory protection specialists.

Protective gloves: Gloves impervious to the material must be worn. Confirmation of what type of material is most suitable for the intended application, should be obtained from glove suppliers.

Eye protection: Chemical splash goggles to prevent direct contact or injury. Do not wear contact lenses.

Other protective equipment: Wear protective clothing to minimize skin contact. Full-face shield, rubber footwear, acid-resistant hood and full-body suit recommended as appropriate. An eyewash station and safety shower should be made available in the immediate working area. Other equipment may be required depending on workplace standards.

SECTION 9 — PHYSICAL AND CHEMICAL PROPERTIES

Physical form, color and odor: Reddish brown liquid, slight iron/acid odor

Odor threshold: Not Available

Boiling point: 230 °F (110 °C)

Specific gravity (water=1): 1.432 @ 17.5°C (40% solution).

Coefficient of oil/water distribution: Not Available

Solubility in water (%): Complete

Volatile organic compounds (VOC's): Not Applicable

pH: < 2.0.

Evaporation rate (nBuAC=1): <1

Melting/freezing point: -15°F (37% solution)

Vapour pressure: Negligible.

Vapour density (Air=1): Not Applicable

Percent Volatile by Weight: Not Available

SECTION 10 — STABILITY AND REACTIVITY

Stability and reactivity: Stable under the recommended storage and handling conditions prescribed. Product may release small amounts of flammable Hydrogen gas on contact with metals. Hazardous polymerization will not occur.

Conditions to avoid: Avoid contact with incompatible materials, heat and flame. Material is acidic and corrodes most metals.

Materials to avoid: Incompatible materials (see Section 7).

Hazardous decomposition products: . Product may release small amounts of flammable Hydrogen gas on contact with metals

SECTION 11 — TOXICOLOGICAL INFORMATION

Routes of exposure: Skin contact, eye contact, inhalation and ingestion.

Toxicological data: There is no available data for the product itself, only for the ingredients. Ingredient: Ferric Chloride LD50-Rat, Oral, 500 – 5000 mg/Kg. Rabbit, Dermal, >2000 mg/Kg

Carcinogenicity: None of the listed ingredients are classified as carcinogenic by IARC or ACGIH.

Teratogenicity, mutagenicity, other reproductive effects: None known.

Sensitization to material: No skin or respiratory sensitization effects are known.

Synergistic materials: Not Available.

Conditions aggravated by exposure: None known.

SECTION 12 — ECOLOGICAL INFORMATION

Environmental effects: The product should not be allowed to enter drains or water courses or be deposited where it can affect ground or surface waters.

Important environmental characteristics: Not Available

Aquatic toxicity: Fat Head Minnows LC 50 > 1000ppm. Daphnia Magna LC50 > 1000 ppm.

SECTION 13 — DISPOSAL CONSIDERATIONS

Handling for disposal: Handle waste according to recommendations in Section 7. Do not allow waste product or container to contaminate waterways.

Methods of disposal: Containers should be disposed of in accordance with all applicable federal, state, and local regulations

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SECTION 14 — TRANSPORT INFORMATION

Department of Transportation (DOT) Information:

Proper Shipping Name: FERRIC CHLORIDE, SOLUTION
UN No.: UN2582
Primary Class(es): 8
Subsidiary Class(es): None
Packing Group: III
Label: Corrosive

Other Shipping Information: Emergency Guidebook Number 154.

SECTION 15 — REGULATORY INFORMATION

U.S. Federal Regulations:

OSHA: This product is hazardous by definition of Hazard Communication Standard (29CFR1910.1200).

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

Section 311/312 Hazard and Physical Hazards:

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

CERCLA/SUPERFUND (40 CFR 117, 302)

<u>Ingredient</u>	<u>RO (Reportable Quantity)</u>
ferric chloride, solution	1000 pounds, anhydrous basis

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

TSCA: All compounds contained in this product are in the TSCA inventory

DOT: Please see Section 14.

SECTION 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>HMIS</u>	
Health	3	Health	3
Flammability	0	Flammability	0
Reactivity	0	Reactivity	0

Prepared by: PVS Technologies, Inc.

Telephone No. 313-571-1100

Preparation date: December 18, 2008.

Revision information: - Sections 2 and 3 reversed to meet new ANSI standards, all other sections revised and updated

END OF DOCUMENT

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