

## 1. PRODUCT AND COMPANY IDENTIFICATION

<b>Product Name</b>	<b>Ferric Chloride Solution</b>	CONTROLLED DOCUMENT IF STAMPED IN RED
Synonyms	Iron (III) Chloride	
UN/ID No.	UN2582	
Item #	10243	
Revision Date	May-20-2020	
Safety Data Sheet	4118	
Recommended Use	Water treatment chemical	
Uses advised against	Consumer uses: Private households (= general public = consumers).	


**Company Name**  
PVS Technologies, Inc.  
10900 Harper Ave.  
Detroit, MI 48213  
(313) 571-1100  
**24 Hour Emergency Phone Number** CHEMTREC 1-800-424-9300

## 2. HAZARDS IDENTIFICATION

### Classification

Acute toxicity - Oral	Category 4
Acute toxicity - Inhalation (Gases)	Category 4
Skin corrosion/irritation	Category 1
Serious eye damage/eye irritation	Category 1
Carcinogenicity	Category 1A

### Emergency Overview

<b>DANGER</b>	
<b>Hazard statements</b>	Causes severe skin burns and eye damage May cause cancer
	

### Precautionary statements

#### Prevention

- Obtain special instructions before use
- Do not handle until all safety precautions have been read and understood
- Use personal protective equipment as required
- Wash face, hands and any exposed skin thoroughly after handling
- Do not eat, drink or smoke when using this product
- Use only outdoors or in a well-ventilated area
- Do not breathe dust/fume/gas/mist/vapors/spray

#### Response

- Immediately call a POISON CENTER or doctor/physician
- Specific treatment (see section 4 on this Safety Data Sheet)

Eyes

IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing Immediately call a POISON CENTER or doctor/physician

## Ferric Chloride Solution

- Skin** IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower Wash contaminated clothing before reuse
- Inhalation** IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing Call a POISON CENTER or doctor/physician if you feel unwell Immediately call a POISON CENTER or doctor/physician
- Ingestion** IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell Rinse mouth Do NOT induce vomiting

### Storage

- Store locked up

### Disposal

- Dispose of contents/container to an approved waste disposal plant

### Other Information

#### **Other hazards**

- Toxic to aquatic life with long lasting effects
- Toxic to aquatic life

Unknown Acute Toxicity

0% of the mixture consists of ingredient(s) of unknown toxicity

## 3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	CAS No.	EC No.	Weight-% *
Water	7732-18-5	231-791-2	52-68
Iron trichloride	7705-08-0	231-729-4	32-45
Hydrogen chloride	7647-01-0	231-595-7	0-3

## 4. FIRST AID MEASURES

### **General advice**

- Immediate medical attention is required

### **Eye contact**

- Immediate medical attention is required
- Do not rub affected area
- Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes
- Keep eyes wide open while rinsing

### **Skin contact**

- Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes
- Immediate medical attention is required

### **Inhalation**

- Remove to fresh air
- Call a physician or poison control center immediately
- If not breathing, give artificial respiration
- If breathing is labored, administer oxygen

### **Ingestion**

- Do NOT induce vomiting
- Never give anything by mouth to an unconscious person
- Immediate medical attention is required
- Drink plenty of water
- Remove from exposure, lie down
- Clean mouth with water and drink afterwards plenty of water
- Call a physician or poison control center immediately

### **Note to physician**

- Product is a corrosive material. Use of gastric lavage or emesis is contraindicated. Possible perforation of stomach or esophagus should be investigated. Do not give chemical antidotes. Asphyxia from glottal edema may occur. Marked decrease in blood pressure may occur with moist rales, frothy sputum, and high pulse pressure
- Treat symptomatically

### **Self-protection for first aid**

- Use personal protective equipment as required

**Ferric Chloride Solution  
personnel**

- Avoid contact with skin, eyes or clothing

## 5. FIRE-FIGHTING MEASURES

- Suitable extinguishing media**
- Dry chemical, CO<sub>2</sub>, water spray or alcohol-resistant foam
  - Use extinguishing measures that are appropriate to local circumstances and the surrounding environment
- Unsuitable extinguishing media**
- No information available
- Specific hazards arising from the chemical**
- The product causes burns of eyes, skin and mucous membranes
  - Thermal decomposition can lead to release of irritating and toxic gases and vapors
  - In the event of fire and/or explosion, do not breathe fumes
- Protective equipment and precautions for firefighters**
- Wear a self-contained breathing apparatus and chemical protective clothing
- Flammable properties**
- No information available
- Explosive properties**
- No information available

## 6. ACCIDENTAL RELEASE MEASURES

- Personal precautions**
- Evacuate personnel to safe areas
  - Use personal protective equipment as required
  - Avoid contact with skin, eyes or clothing
  - Keep people away from and upwind of spill/leak
- Environmental precautions**
- For small spills, absorb material with clay absorbent or other compatible material. Dispose of the waste material according to local, state and governmental requirements.
  - For large spills, contain the material using barriers of absorbent pigs, clay absorbent or earth dams.
  - US regulations require reporting spills of this material that could reach any surface waters. The toll-free phone number for the US Coast Guard National Response Center is 1-800-424-8802
- Methods for cleaning up**
- Dike far ahead of liquid spill for later disposal
  - Take up mechanically, placing in appropriate containers for disposal
  - Soak up with inert absorbent material
  - Clean contaminated surface thoroughly
  - Prevent product from entering drains
  - Dam up
  - After cleaning, flush away traces with water
- Other Information**
- Spills exceeding the Reportable Quantity (RQ) of 1000 pounds or more must be reported to the National Response Center, (800) 424-8802.

## 7. HANDLING AND STORAGE

- Advice on safe handling**
- Use personal protective equipment as required
  - Avoid contact with skin, eyes or clothing
  - Ensure adequate ventilation, especially in confined areas
  - In case of insufficient ventilation, wear suitable respiratory equipment
  - Use only with adequate ventilation and in closed systems
- Storage Conditions**
- Keep container tightly closed in a dry and well-ventilated place
  - Keep out of the reach of children
  - Keep containers tightly closed in a dry, cool and well-ventilated place
  - Keep in properly labeled containers
- Incompatible materials**
- Incompatible with strong acids and bases, Incompatible with oxidizing agents

## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

## Ferric Chloride Solution

Chemical Name	ACGIH TLV	OSHA PEL	NIOSH IDLH
Iron trichloride 7705-08-0	TWA: 1 mg/m <sup>3</sup> Fe		TWA: 1 mg/m <sup>3</sup> Fe
Hydrogen chloride 7647-01-0	Ceiling: 2 ppm	Ceiling: 5 ppm Ceiling: 7 mg/m <sup>3</sup>	IDLH: 50 ppm

### Exposure Guidelines

**Engineering Controls** Ensure adequate ventilation, especially in confined areas.

### Individual protection measures, such as personal protective equipment

**Respiratory protection** • A respiratory protection program that meets OSHA 1910.134 and ANSI Z88.2 requirements must be followed whenever workplace conditions warrant the use of a respirator.

**Eye/Face protection** • Tight sealing safety goggles  
• Face protection shield

**Skin and body protection** • Wear suitable protective clothing  
• Wear impervious protective clothing, including boots, gloves, lab coat, apron or coveralls, as appropriate, to prevent skin contact

**General Hygiene Considerations** • When using do not eat, drink or smoke  
• Wash contaminated clothing before reuse  
• Keep away from food, drink and animal feeding stuffs  
• Contaminated work clothing should not be allowed out of the workplace  
• Regular cleaning of equipment, work area and clothing is recommended  
• Avoid contact with skin, eyes or clothing  
• Take off all contaminated clothing and wash it before reuse  
• Wear suitable gloves and eye/face protection

## 9. PHYSICAL AND CHEMICAL PROPERTIES

### Information on basic physical and chemical properties

**Physical state** Liquid  
**Appearance** Clear to slightly hazy  
**Color** Red brown  
**Odor** Slight Iron acidic  
**Odor threshold** No information available

<u>Property</u>	<u>Values</u>	<u>Remarks • Method</u>
<b>pH</b>	<2	
<b>Melting point/Freezing Point</b>	-26 °C / -15 °F	
<b>Boiling point / boiling range</b>	110 °C / 230 °F	
<b>Flash point</b>	No information available	
<b>Evaporation rate</b>	No information available	
<b>Flammability (solid, gas)</b>	No information available	
<b>Flammability Limit in Air</b>		
<b>Upper flammability limit (%)</b>	No information available	
<b>Lower flammability limit (%):</b>	No information available	
<b>Vapor pressure</b>	No information available	
<b>Vapor density</b>	No information available	
<b>Specific Gravity</b>	1.432	40 % Solution @17.5°C
<b>Water solubility</b>	No information available	
<b>Solubility in other solvents</b>	No information available	
<b>Partition coefficient</b>	No information available	
<b>Autoignition temperature</b>	No information available	
<b>Decomposition temperature</b>	No information available	
<b>Kinematic viscosity</b>	No information available	
<b>Dynamic viscosity</b>	No information available	
<b>Explosive properties</b>	No information available	

**Ferric Chloride Solution**

Oxidizing properties No information available

**Other Information**

Softening point °C No information available  
 Molecular weight No information available  
 VOC Content (%) No information available  
 Density No information available  
 Bulk density 11.9428 Pounds per gallon (lb/gal)

**10. STABILITY AND REACTIVITY**

**Stability** • Stable under recommended storage conditions  
**Conditions to avoid** • Exposure to air or moisture over prolonged periods  
**Incompatible materials** Incompatible with strong acids and bases, Incompatible with oxidizing agents  
**Hazardous Decomposition Products** • Thermal decomposition can lead to release of irritating and toxic gases and vapors  
**Possibility of Hazardous Reactions** • None under normal processing and storage

**11. TOXICOLOGICAL INFORMATION****Information on likely routes of exposure**

**Principle Routes of Exposure** Inhalation, Skin contact, Eye contact  
**Inhalation** May cause irritation of respiratory tract. Avoid breathing vapors or mists.  
**Ingestion** May cause adverse liver effects. May cause adverse kidney effects. May be fatal if swallowed.  
**Skin contact** May cause skin irritation and/or dermatitis.  
**Eye contact** Contact with eyes may cause irritation.

Chemical Name	Oral LD50	Dermal LD50	Inhalation LC50
Water 7732-18-5	> 90 mL/kg ( Rat )		
Iron trichloride 7705-08-0	= 316 mg/kg ( Rat ) = 450 mg/kg ( Rat )	>2000 mg/kg (rat)	
Hydrogen chloride 7647-01-0	238 - 277 mg/kg ( Rat )	> 5010 mg/kg ( Rabbit )	= 1.68 mg/L ( Rat ) 1 h

**Information on toxicological effects****Symptoms** No information available**Delayed and immediate effects as well as chronic effects from short and long-term exposure**

**Sensitization** No information available.  
**Germ cell mutagenicity** No information available.  
**Carcinogenicity** The table below indicates whether each agency has listed any ingredient as a carcinogen.

Chemical Name	ACGIH	IARC	NTP	OSHA
Hydrogen chloride 7647-01-0		Group 3		X

IARC (International Agency for Research on Cancer)

*Not classifiable as a human carcinogen*

OSHA (Occupational Safety and Health Administration of the US Department of Labor)

X - Present

**Reproductive toxicity** No information available.  
**STOT - single exposure** No information available.  
**STOT - repeated exposure** No information available.  
**Chronic toxicity** Chronic exposure to corrosive fumes/gases may cause erosion of the teeth followed by jaw necrosis. Bronchial irritation with chronic cough and frequent attacks of pneumonia are common. Gastrointestinal disturbances may also be seen. Avoid repeated exposure. Possible risk of irreversible effects. May cause adverse liver effects.  
**Target Organ Effects** Eyes, Gastrointestinal tract (GI), Liver, Respiratory system, Skin.

**Ferric Chloride Solution****Aspiration hazard**

No information available.

**Numerical measures of toxicity - Product Information****Unknown Acute Toxicity** 0% of the mixture consists of ingredient(s) of unknown toxicity**The following values are calculated based on chapter 3.1 of the GHS document .**

Oral LD50 687 mg/kg  
 LC50 (Gas) 18776.74 mg/l  
 LC50 (Dust/Mist) 16.7 mg/l

**12. ECOLOGICAL INFORMATION****Ecotoxicity**

Ecotoxicity Toxic to aquatic life with long lasting effects

**0% of the mixture consists of component(s) of unknown hazards to the aquatic environment**

Chemical Name	Algae/aquatic plants	Fish	Crustacea
Iron trichloride 7705-08-0		20.95 - 22.56: 96 h Pimephales promelas mg/L LC50 semi-static 20.26: 96 h Lepomis macrochirus mg/L LC50 semi-static 75.6: 96 h Gambusia affinis mg/L LC50 static	27.9: 48 h Daphnia magna mg/L EC50 9.6: 48 h Daphnia magna mg/L EC50 Static
Hydrogen chloride 7647-01-0		282: 96 h Gambusia affinis mg/L LC50 static	

**Persistence and degradability** No information available**Bioaccumulation** No information available

Chemical Name	Partition coefficient
Iron trichloride 7705-08-0	-4

**Other adverse effects** No information available**13. DISPOSAL CONSIDERATIONS****Disposal of wastes** • This material, as supplied, is a hazardous waste according to federal regulations (40 CFR 261)

**Contaminated packaging** • Do not reuse container  
**US EPA Waste Number** • D002

This product contains one or more substances that are listed with the State of California as a hazardous waste.

Chemical Name	California Hazardous Waste Status
Iron trichloride 7705-08-0	Toxic Corrosive

**14. TRANSPORT INFORMATION****DOT**

**Proper shipping name** Ferric chloride, solution  
**Hazard Class** 8  
**UN/ID No.** UN2582  
**Packing Group** III  
**RQ (lbs)(dry)** Ferric chloride: RQ kg= 454.00  
**RQ as is (lbs)(wet)** 2222  
**Technical Name Description** FERRIC CHLORIDE  
**Description** UN2582, Ferric chloride, solution, 8, III, RQ  
**Special Provisions** B15, IB3, T4, TP1  
**Emergency Response Guide Number** 154

**Transport Canada****UN/ID No.** UN2582

**Ferric Chloride Solution**

Proper shipping name FERRIC CHLORIDE SOLUTION  
 Hazard Class 8  
 Packing Group III  
 Description UN2582, Ferric chloride solution, 8, III

**IATA**

UN/ID No. UN2582  
 Proper shipping name FERRIC CHLORIDE SOLUTION  
 Hazard Class 8  
 Packing Group III  
 ERG Code 8L  
 Special Provisions A3, A803

**IMDG**

UN/ID No. UN2582  
 Proper shipping name FERRIC CHLORIDE SOLUTION  
 Hazard Class 8  
 Packing Group III  
 EmS-No. F-A, S-B  
 Special Provisions 223

**15. REGULATORY INFORMATION****US Federal Regulations****SARA 311/312 Hazard Categories**

Acute health hazard Yes  
 Chronic Health Hazard Yes  
 Fire hazard No  
 Sudden release of pressure hazard No  
 Reactive Hazard No

**SARA 313**

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product contains a chemical or chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372

Chemical Name	SARA 313 - Threshold Values %
Hydrogen chloride - 7647-01-0	1.0

**U.S. - TSCA (Toxic Substances Control Act) - Section 5(a)(2) - Chemicals with Significant New Use Rules (SNURs)****CWA (Clean Water Act)**

This product contains the following substances which are regulated pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42)

Chemical Name	CWA - Reportable Quantities	CWA - Toxic Pollutants	CWA - Priority Pollutants	CWA - Hazardous Substances
Iron trichloride 7705-08-0	1000 lb			X
Hydrogen chloride 7647-01-0	5000 lb			X

**CERCLA**

This material, as supplied, contains one or more substances regulated as a hazardous substance under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302)

Chemical Name	Hazardous Substances RQs	CERCLA/SARA RQ	RQ (lbs)(dry)
Iron trichloride 7705-08-0	1000 lb		RQ 1000 lb final RQ RQ 454 kg final RQ
Hydrogen chloride 7647-01-0	5000 lb	5000 lb	RQ 5000 lb final RQ RQ 2270 kg final RQ

**Canada****WHMIS Classification**

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations (CPR) and the SDS contains all the information required by the CPR

WHMIS Classification  
 WHMIS

# Ferric Chloride Solution



## US State Regulations

### California Proposition 65

This product does not contain any Proposition 65 chemicals

### U.S. State Right-to-Know Regulations

Chemical Name	New Jersey	Massachusetts	Pennsylvania
Water 7732-18-5			X
Iron trichloride 7705-08-0	X	X	X
Hydrogen chloride 7647-01-0	X	X	X

### DEA List I, List II

Chemical Name	U.S. - DEA - List I or Precursor Chemicals	U.S.- DEA - List II or Essential Chemicals
Hydrogen chloride 7647-01-0	-	0.0 kg, Domestic Sales Weight 50 gallon, Export Volume 27 kg, Export Weight

### International Inventories

TSCA	Complies
DSL/NDSL	Complies
EINECS/ELINCS	Complies
ENCS	Complies
IECSC	Complies
KECL	Complies
PICCS	Complies
AICS	Complies

### Legend:

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory  
 DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List  
 EINECS/ELINCS - European Inventory of Existing Chemical Substances/European List of Notified Chemical Substances  
 ENCS - Japan Existing and New Chemical Substances  
 IECSC - China Inventory of Existing Chemical Substances  
 KECL - Korean Existing and Evaluated Chemical Substances  
 PICCS - Philippines Inventory of Chemicals and Chemical Substances  
 AICS - Australian Inventory of Chemical Substances

## 16. OTHER INFORMATION

<u>NFPA</u>	Health hazards 3	Flammability 0	Instability 0	Physical and Chemical Properties
<u>HMIS</u>	Health hazards 3	Flammability 0	Physical hazards 0	Personal protection D

Item #	10243
Safety Data Sheet	4118
Revision Date	May-20-2020
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Version	3
Revision Note	*** Updated value on SDS.

### Disclaimer

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## **Ferric Chloride Solution**

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**End of Safety Data Sheet**