PROPOSAL FORM
Mid-Michigan Bulk Water Chemical Consortium

ORIGINAL

Note: This form may be completed using MS Word®

Provide the following business and contact information:

Legal Name: PVS Technologies, Inc.		Federal ID or Social Security Number: 38-1949201
Address: 10900 Harper Avenue		State of Incorporation: Michigan
City: Detroit	State & Zip: MI, 48213	Primary E-Mail: bids@pvschemicals.com
Type of Organization: X Corporation __ LLC __ LLP __ Sole Proprietor __ Partnership __ S-Corporation __ Other (Explain)		
Office Phone: 313-571-1100	Alternate Office Phone: 313-921-1200	Office Fax: 313-571-6765
Primary Contact: Craig Mikkelson	Contact Phone: 313-571-1100 ext. 4111	Contact Fax: 313-571-6765
Contact Mobile: 313-718-0418	Contact E-Mail: bids@pvschemicals.com	Website URL: www.pvschemicals.com

Provide responses to the following questions:

How many years has your firm been in business under the present ownership?	30
Have you done business with the Board of Water and Light? If so, furnish specifics.	Yes, supplying Ferric Chloride.
Have you done business with the City of Lansing? If so, furnish specifics.	Yes, supplying Ferric Chloride
Have you ever defaulted on a contract or been involved in litigation with the Board of Water and Light or the City of Lansing? If so, furnish specifics.	No.
Have you ever defaulted on a contract or been involved in litigation or pending litigation or claims with any other client in the past five years? If so, furnish specifics.	No.
List any relationships between your firm's staff and any current BWL employee.	None.
Specify your background, training, experience, credentials and other factors which qualify you to perform the work described in the Scope of Work included in this Request for Proposal.	PVS Technologies, Inc. has been manufacturing Ferric Chloride since June 1986. We have 14 terminals and manufacturing locations.
List at least three (3) references for similar work you have performed for other clients. Include Client name, contact name, title and phone number.	See attached list of references.
List subcontractors that you plan to use on this project.	We are not using subcontractors.
Indicate any exceptions to the enclosed General Requirements.	None
Include any additional information you may deem helpful in evaluating your proposal.	SDS and NSF Certification included.

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The undersigned Bidder hereby acknowledges receipt of the following addenda:

Addendum No.	Date	Enter addenda numbers and received dates if applicable
NONE		

Provide pricing:

Activity	Unit Pricing
Sodium Hypochlorite	
Chemical:	$ No bid / ton
Demurrage:	$ No bid / hour *first 4 hours free
Hydrofluosilic Acid	
Chemical in minimum 40,000 lbs. shipments:	$ No bid / ton
Chemical in minimum 30,000 lbs. shipments:	$ No bid / ton
Chemical split between Dye and Wise Plants minimum 40,000 lbs. shipments:	$ No bid / ton
Demurrage:	$ No bid / hour *first 4 hours free
Ferric Chloride	
Dry Chemical:	$ 397.00 / ton
Liquid Chemical:	$ 150.86 / ton
Demurrage:	$ 75.00 / hour *first 4 hours free
Pebble Quick Lime	
Chemical:	$ No bid / ton
Demurrage:	$ No bid / hour *first 4 hours free

The undersigned Bidder states that this proposal is made in conformity with the Proposal Documents and agrees that, in the event of any discrepancies or differences between any conditions of their proposal and the Proposal Documents, the provisions of the latter shall prevail. No verbal or written agreements or understandings considered or entered into prior to signing of a contract in the form of a purchase order, shall be binding after the signing of the contract unless incorporated in the contract.

The undersigned Bidder certifies that this proposal is made in good faith, without collusion or connection with any other person or persons submitting proposals for the work.

Company Name: PVS Technologies, Inc.	
Signature:	Craig Mikkelson/VP of Sales & Marketing

PROPOSAL FORM
Mid-Michigan Bulk Water Chemical Consortium

Name:	Craig Mikkelson
Title:	Vice President of Sales & Marketing
Date:	March 20, 2017

END OF PROPOSAL FORM

SWORN AND NOTARIZED AFFIDAVIT OF COMPLIANCE

IRAN ECONOMIC SANCTIONS ACT

Michigan Public Act No. 517 of 2012

All bidders must submit the following certification statement in compliance with Public Act No. 517 of 2012 (the "Iran Economic Sanctions Act") and attach this form to the bid. **The Lansing Board of Water & Light shall not accept any bid that does not include this sworn and notarized certification of statement.**

The undersigned, the owner or authorized officer of PVS Technologies, Inc. (the Bidder), pursuant to the compliance certification requirement provided in the Lansing Board of Water & Light Request for Proposal, hereby certifies, represents and warrants that the Bidder (including its officers, directors and employees) is not an "Iran linked business" within the meaning of the Iran Economic Sanctions Act, and that in the event the Bidder is awarded a contract as a result of the aforementioned Request for Proposal, the Bidder will not become an "Iran linked business" at any time during the course of performing the work or any services under the contract.

The Bidder further acknowledges that any person who is found to have submitted a false certification is responsible for a civil penalty of not more than $250,000.00 or two (2) times the amount of the contract or proposed contract for which the false certification is made, whichever is greater, the cost of the Lansing Board of Water & Light's investigation, and reasonable attorney fees, in addition to the fine. Moreover, any person who submitted a false certification shall be ineligible to bid on a Request for Proposal for three (3) years from the date it is determined that the person has submitted the false certification.

BIDDER

PVS Technologies, Inc.

By: _____

Its: Craig Mikkelson/Vice President of Sales & Marketing

Date: March 20, 2017

STATE OF MICHIGAN)

COUNTY OF WAYNE)

This instrument was acknowledged before me on the 20 day of March, 20 17, by Eileen McDonnell.

_____

Eileen McDonnell, Notary Public

Wayne County, Michigan

My Comission Expires: December 23, 2020

Acting in the County of: Wayne

EILEEN MCDONNELL
Notary Public, State of Michigan
Wayne County, Michigan
My Commission Expires Dec 23, 2020
Acting in Wayne County

CERTIFIED COPY OF RESOLUTIONS
OF BOARD OF DIRECTORS
OF PVS TECHNOLOGIES, INC.

The undersigned, being the Assistant Secretary of PVS Technologies, Inc. (the "Company"), a Michigan corporation, certifies that the following is an accurate and complete copy of resolutions duly adopted by the Board of Directors of the Company, and that said resolutions remain in full force and effect as of the date of this certificate:

"RESOLVED, That the Company is authorized to submit bids to private and governmental entities for the sale of products and for the performance of services (collectively, 'Bids').

RESOLVED, That the Company is authorized to enter into contracts with private and governmental entities for the sale and purchase of products and for the performance of services (collectively, 'Contracts').

FURTHER RESOLVED, That the Company is authorized to submit applications for permits, licenses and other grants of authority from governmental entities which the Company requires to conduct its business (collectively, 'Applications').

FURTHER RESOLVED, That Craig L. Mikkelson, Vice President of Sales & Marketing of the Company, shall be and is authorized to execute Bids, Contracts and Applications on behalf of the Company and such other documents relating to Bids, Contracts and Applications as he deems necessary or expedient for the purposes of carrying out the terms of the Bids, Contracts and Applications or otherwise conducting the business of the Company."

IN WITNESS OF THESE CERTIFIED RESOLUTIONS, the undersigned has signed below and affixed the corporate seal of the Company on October 28, 2016.

James B. DeVleeschouwer, Asst. Secretary

Subscribed and sworn to before me
on October 28, 2016.

Notary Public, Wayne County, Michigan

My Commission Expires: 3/2/2018

Mary P. Moreau
Notary Public, Macomb County, MI
Acting in Wayne County
Commission expires March 2, 2018

References
Liquid Ferric Chloride

Pittsburgh Water Sewer Authority
Jim Tracey
Penn Liberty Plaza I
1200 Penn Avenue, 2nd Floor
Pittsburgh, PA 15222
jtracey@pgh2o.com
412-255-8800

Supplying Ferric Chloride
Contract Dates: 01/2010 - Current
Annual Volume: 1600 Dry Tons

City of Atlanta, GA
55 Trinity Avenue SW
Suite 1790
Atlanta, GA 30303
Pat Dixon
pddixon@atlantaga.gov
404-865-8933

Supplying Ferric Chloride
Annual Volume: 722,754 LBS
Contract Term: 08/2011 – Current

City of Monroe, NC
2401 Walkup Drive
Monroe, NC 28110
Karen Penegar
kpenegar@monroenc.org
704-282-4603

Supplying Ferric Chloride
Annual Volume: 135,000 Gallons
Contract Term: Quarterly since 2009

PVS Technologies, Inc. manufactures and distributes ferric chloride to the municipalities throughout the United States. PVS Technologies, Inc. has been in the business of supplying chemicals to business and municipalities since 1986. This is a list of current and past customers for your review.

Safety Data Sheet

Revision Date Mar-15-2015 | Item # 10244 | Safety Data Sheet 0235

1. PRODUCT AND COMPANY IDENTIFICATION

CONTROLLED IF STAMPE

Product Name	Ferric Chloride Solution DWG Grade
UN/ID No.	UN2582
Synonyms	Iron (III) Chloride, Iron trichloride, $FeCl_3$
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

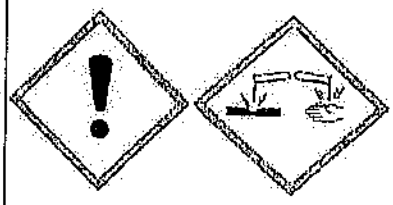
Acute toxicity - Oral	Category 4
Skin corrosion/irritation	Category 1
Serious eye damage/eye irritation	Category 1

Emergency Overview

DANGER

Hazard statements
- Causes severe skin burns and eye damage
- Harmful if swallowed

Physical hazards
- Corrosive
- May be corrosive to metals



Precautionary statements

Prevention
- Wear eye/face protection
- Wear protective gloves/protective clothing/eye protection/face protection
- Do not breathe dust/fume/gas/mist/vapors/spray
- Do not eat, drink or smoke when using this product
- Wash face, hands and any exposed skin thoroughly after handling

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

Storage
- Store in a secure area

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

Hazards not otherwise classified (HNOC)
None known.

Other information

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

Unknown Acute Toxicity — 0.85% 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	55-69
Iron trichloride	7705-08-0	231-729-4	31-45
Hydrogen chloride	7647-01-0	231-595-7	0.0-1.0
Ferrous chloride	7758-94-3	231-843-4	0.0-0.7

*The exact percentage (concentration) of composition has been withheld as a trade secret.

4. FIRST AID MEASURES

General advice
- Immediate medical attention is required

Eye contact
- Immediate medical attention is required
- Immediately flush with plenty of water. After initial flushing, remove any contact lenses and continue flushing for at least 15 minutes
- Do not rub affected area

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

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

Ingestion
- Call a physician or poison control center immediately
- Do NOT induce vomiting
- Rinse mouth
- Drink 4 to 8 ounces (120-240 ml) of water or milk as soon as possible after ingestion.
- Never give anything by mouth to an unconscious person

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 personnel

Use personal protective equipment as required. Avoid contact with skin, eyes or clothing.

5. FIRE-FIGHTING MEASURES

Suitable extinguishing media
- Dry chemical, CO2, water spray or alcohol-resistant foam
- Use extinguishing measures that are appropriate to local circumstances and the surrounding environment

Unsuitable extinguishing media
- Caution: Use of water spray when fighting fire may be inefficient
- Do not use a solid water stream as it may scatter and spread fire

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	• Neutralize with soda ash or lime • Take up mechanically, placing in appropriate containers for disposal • Clean contaminated surface thoroughly • Soak up with inert absorbent material
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, oxidizers, steel, and most metals

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Chemical Name	ACGIH TLV	OSHA PEL	NIOSH IDLH
Iron trichloride 7705-08-0	TWA: 1 mg/m³ Fe	-	TWA: 1 mg/m³ Fe
Hydrogen chloride 7647-01-0	Ceiling: 2 ppm	Ceiling: 5 ppm Ceiling: 7 mg/m³	IDLH: 50 ppm Ceiling: 5 ppm Ceiling: 7 mg/m³
Ferrous chloride 7758-94-3	TWA: 1 mg/m³ Fe	(vacated) TWA: 1 mg/m³ Fe	TWA: 1 mg/m³ Fe

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	• Do not eat, drink or smoke when using this product • Wash contaminated clothing before reuse • 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

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

Property	Values	Remarks • Method
pH	<2	
Melting point/Freezing Point	-26 °C / -15 °F	
Boiling point / boiling range	110 °C / 230 °F	
Flash point	No information available	
Evaporation rate	<1	n-Butyl acetate =1
Flammability (solid, gas)	No information available	
Flammability Limit in Air		Not flammable
Upper flammability limit (%)	No information available	
Lower flammability limit (%):	No information available	
Vapor pressure	No information available	negligible
Vapor density	No information available	
Specific Gravity	1.40	
Water solubility	Miscible in water	
Solubility in other solvents	No information available	
Partition coefficient	No information available	
Autoignition temperature	No information available	
Decomposition temperature	No information available	
Kinematic viscosity	No information available	
Dynamic viscosity	No information available	
Explosive properties	No information available	
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	11.7 Pounds per gallon (lb/gal), Typical

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, oxidizers, steel, and most metals

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 kidney effects. May cause adverse liver effects.
Skin Contact	Contact causes severe skin irritation and possible burns.
Eye contact	Corrosive to the eyes and may cause severe damage including blindness.

Chemical Name	Oral LD50	Dermal LD50	Inhalation LC50
Iron trichloride 7705-08-0	= 450 mg/kg (Rat)	>2000 mg/kg (rat)	-
Hydrogen chloride 7647-01-0	= 700 mg/kg (Rat)	> 5010 mg/kg (Rabbit)	= 3124 ppm (Rat) 1 h
Ferrous chloride 7758-94-3	450	-	-

Information on toxicological effects

Symptoms: Vomiting, Hypoxemia (reduced O2 in the blood), Metabolic Acidosis

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	No information available.

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

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.
Aspiration hazard	No information available.

Numerical measures of toxicity - Product Information

Unknown Acute Toxicity: 0.85% of the mixture consists of ingredient(s) of unknown toxicity

The following values are calculated based on chapter 3.1 of the GHS document . mg/kg

12. ECOLOGICAL INFORMATION

Ecotoxicity

Ecotoxicity: Toxic to aquatic life with long lasting effects

0.85% of the mixture consists of components(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	27.9: 48 h Daphnia magna mg/L EC50 9.6: 48 h Daphnia magna mg/L EC50 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)	1000
RQ as is (lbs)(wet)	2222 (45% Ferric Chloride)
Description	UN2582, Ferric chloride, solution, 8, III
Special Provisions	B15, IB3, T4, TP1
Emergency Response Guide Number	154

IATA

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

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 does not contain any chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372

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
Ferrous chloride 7758-94-3	100 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
Ferrous chloride 7758-94-3	100 lb	-	RQ 100 lb final RQ RQ 45.4 kg final RQ

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
Iron trichloride 7705-08-0	X	X	X
Ferrous chloride 7758-94-3	X	X	X

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

International Inventories

TSCA	Complies
DSL/NDSL	Complies
EINECS/ELINCS	Complies
ENCS	Does not comply
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

NFPA	Health hazards 3	Flammability 0	Instability 0	Physical and Chemical Properties -
HMIS	Health hazards 3	Flammability 0	Physical hazards 0	Personal protection D

Item #	10244
Safety Data Sheet	0235
Revision Date	Mar-15-2015
Issue Date	Mar-15-2015
Version	1
Revision Note	*** Updated value on SDS.

Disclaimer

All information, statements, data, advice, and/or recommendations, including, without limitation, those relating to storage, loading/unloading, piping, and transportation (collectively referred to herein as "Information") are believed to be accurate, reliable, and based on reliable industry and regulatory references. However, no representation or warranty, express or implied, is made as to its completeness, accuracy, fitness for a particular purpose or any other matter, including, without limitation, that the practice or application of any such information is free of patent infringement or other intellectual property misappropriation. The Company providing this SDS is not engaged in the business of providing technical, operational, engineering, or safety information for a fee, and therefore, any such information provided herein has been furnished as an accommodation and without charge. All information provided herein is intended for use by persons having requisite knowledge, skill, and experience in the chemical industry. The Company providing this SDS shall not be responsible or liable for the use, application, or implementation of the information provided herein, and all such information is to be used at the risk, and in the sole judgment and discretion of such persons, their employees, advisors, and agents. This safety data sheet (SDS) is offered for your information, consideration, and investigation as required by federal hazardous products act and related legislation.

End of Safety Data Sheet

PVS TECHNOLOGIES

Liquid Ferric Chloride – Drinking Water Grade

PVS Technologies Liquid Ferric Chloride is a concentrated solution of Iron III Chloride ($FeCl_3$) in water. It is manufactured from 100% high purity raw materials.

Principal Uses

Potable Water Treatment

- Turbidity reduction
- Color elimination
- Enhanced coagulation, NOM and DBP precursor removal
- Softening solids sedimentation
- Lead control through a wide pH application range
- Sludge reduction
- Filter conditioning
- Arsenic Removal

Wastewater Treatment

- Phosphate precipitation and removal
- Enhanced sedimentation
- Dewatering of all types of sludge streams
- Polymer flocculant enhancement
- Sulfide based odor elimination
- Struvite control

Specifications	
Appearance:	A dark red/brown liquid
Concentrations:	
$FeCl_3$	37% - 42%
$FeCl_2$	0.75% maximum
Free Acid as HCl	1.0% maximum Drinking Water Grade
Insolubles	0.008% (80 ppm) maximum
Radionuclides	None
Specific gravity:	1.38 – 1.49
Viscosity:	12.1 centipoises for a 40% solution
Crystallization:	37% $FeCl_3$ (- 15°F); 40% $FeCl_3$ (10°F)
AWWA Certification:	B407-12
ANSI/NSF Standard 60 Certification:	Maximum use level – 250 ppm as solution
CAS No.:	7705-08-0
UN Classification:	UN2582, Ferric Chloride Solution
	SQC data available on request

Delivery

This product is available for shipping via the following options:
55 gallon drums
300 gallon totes
4,000 & 8,000 gallon tank trucks
17,000 gallon railcars

Product Availability

Throughout North America – 8,000 gallon tankers only available in Michigan.

Handling & Safety

Ferric Chloride is considered to be hazardous by definition of the Hazard Communication Standard (29 CFR 1910.1200) and should be handled in a manner that is consistent with acceptable practices. Please obtain the Ferric Chloride Safety Data Sheet for complete up-to-date information.

Under normal situations the only protective equipment required in the use and handling of Liquid Ferric Chloride are splash proof chemical goggles and rubber gloves. Liquid Ferric Chloride will stain both clothing and skin and it is recommended that, to protect against this occurrence, other protect clothing be worn as is appropriate.

Ferric Chloride reacts with many metals. However, most handling situations are reliably addressed through the use of common plastic materials such as FRP, PVC, Polyethylene, Polypropylene and Teflon. For additional information, please consult your equipment supplier.

For additional information call: 313 571-1100
To place an order call: 800 337-7428

PVS Technologies - Serving Water and Wastewater Plants throughout the World

The Public Health and Safety Organization

NSF Product and Service Listings

These NSF Official Listings are current as of **Monday, February 15, 2016** at 12:15 a.m. Eastern Time. Please contact NSF International to confirm the status of any Listing, report errors, or make suggestions.

Alert: NSF is concerned about fraudulent downloading and manipulation of website text. Always confirm this information by clicking on the below link for the most accurate information:
http://info.nsf.org/Certified/PwsChemicals/Listings.asp?Company=3U690&Standard=060&

NSF/ANSI 60
Drinking Water Treatment Chemicals - Health Effects

PVS Technologies

10900 Harper Avenue
Detroit, MI 48213
United States
313-571-1100
Visit this company's website (http://www.pvschemicals.com)

Facility : Decatur, AL

Ferrous Chloride[1]

Trade Designation	*Product Function*	*Max Use*
Ferrous Chloride, Solution	Other	250mg/L
Liquid Ferrous Chloride	Other	250mg/L
Liquid Ferrous Chloride- DWG	Other	250mg/L

[1] This product may be used for chlorite removal.

Facility : Trinity, AL

Ferrous Chloride[1]

Trade Designation	*Product Function*	*Max Use*
Ferrous Chloride, Solution	Other	250mg/L
Liquid Ferrous Chloride	Other	250mg/L
Liquid Ferrous Chloride- DWG	Other	250mg/L

[1] This product may be used for chlorite removal.

Facility : Distribution Center - Henderson, CO

Ferric Chloride

Trade Designation	*Product Function*	*Max Use*
Ferric Chloride Solution	Coagulation & Flocculation	250mg/L
LFC	Coagulation & Flocculation	250mg/L
LFC DWG	Coagulation & Flocculation	250mg/L
Liquid Ferric Chloride	Coagulation & Flocculation	250mg/L
Liquid Ferric Chloride Drinking Water Grade	Coagulation & Flocculation	250mg/L

Polymer Blends[PY]

Trade Designation	*Product Function*	*Max Use*
Ferri+Plus 1005	Coagulation & Flocculation	251mg/L
Ferri+Plus 1010	Coagulation & Flocculation	253mg/L
Ferri+Plus 1020	Coagulation & Flocculation	255mg/L
Ferri+Plus 1050	Coagulation & Flocculation	160mg/L
Ferri+Plus 1075	Coagulation & Flocculation	107mg/L
Ferri+Plus 1100	Coagulation & Flocculation	80mg/L
Ferri+Plus 1125	Coagulation & Flocculation	64mg/L
Ferri+Plus 1150	Coagulation & Flocculation	53mg/L
Ferri+Plus 1200	Coagulation & Flocculation	40mg/L
Ferri+Plus 1300	Coagulation & Flocculation	27mg/L
Ferri+Plus 1400	Coagulation & Flocculation	20mg/L

[PY] Polyamines Certified by NSF International comply with 40 CFR 141.111 requirements for percent monomer and dose.

Facility : Augusta, GA

Ferric Chloride

Trade Designation	*Product Function*	*Max Use*
Ferric Chloride, Solution	Coagulation & Flocculation	250mg/L
LFC	Coagulation & Flocculation	250mg/L
LFC-DWG	Coagulation & Flocculation	250mg/L
Liquid Ferric Chloride	Coagulation & Flocculation	250mg/L
Liquid Ferric Chloride Drinking Water Grade (DWG)	Coagulation & Flocculation	250mg/L

Ferrous Chloride

Trade Designation	*Product Function*	*Max Use*
Ferrous Chloride, Solution	Coagulation & Flocculation	250mg/L
Liquid Ferrous Chloride	Coagulation & Flocculation	250mg/L
Liquid Ferrous Chloride - DWG	Coagulation & Flocculation	250mg/L

Facility : Distribution Center - Chicago, IL

Ferric Chloride

Trade Designation	*Product Function*	*Max Use*
Ferric Chloride, Solution	Coagulation & Flocculation	250mg/L
Liquid Ferric Chloride	Coagulation & Flocculation	250mg/L
Liquid Ferric Chloride - DWG	Coagulation & Flocculation	250mg/L

Facility : Distribution Center - East St. Louis, IL

Ferric Chloride

Trade Designation	*Product Function*	*Max Use*
Ferric Chloride, Solution	Coagulation & Flocculation	250mg/L
Liquid Ferric Chloride	Coagulation & Flocculation	250mg/L
Liquid Ferric Chloride - DWG	Coagulation & Flocculation	250mg/L

Ferrous Chloride

Trade Designation	*Product Function*	*Max Use*
Ferrous Chloride	Coagulation & Flocculation	250mg/L
Ferrous Chloride, Solution	Coagulation & Flocculation	250mg/L
Liquid Ferrous Chloride	Coagulation & Flocculation	250mg/L

NOTE: Only products bearing the NSF Mark are NSF Certified.

Facility : Distribution Center - Louisville, KY

Ferric Chloride

Trade Designation	*Product Function*	*Max Use*
Ferric Chloride DWG	Coagulation & Flocculation	125mg/L
Ferric Chloride Drinking Water Grade	Coagulation & Flocculation	125mg/L
Ferric Chloride, Solution	Coagulation & Flocculation	125mg/L
Liquid Ferric Chloride	Coagulation & Flocculation	125mg/L

Facility : Distribution Center - 2 Baltimore, MD

Ferric Chloride

Trade Designation	*Product Function*	*Max Use*
Ferric Chloride, Solution	Coagulation & Flocculation	250mg/L
Liquid Ferric Chloride	Coagulation & Flocculation	250mg/L
Liquid Ferric Chloride-DWG	Coagulation & Flocculation	250mg/L

Facility : Detroit, MI

Ferric Chloride

Trade Designation	*Product Function*	*Max Use*
Ferric Chloride Solution	Coagulation & Flocculation	250mg/L
Ferric Chloride, Solution	Coagulation & Flocculation	250mg/L
LFC	Coagulation & Flocculation	250mg/L
LFC-DWG	Coagulation & Flocculation	250mg/L
Liquid Ferric Chloride	Coagulation & Flocculation	250mg/L
Liquid Ferric Chloride Drinking Water Grade (DWG)	Coagulation & Flocculation	250mg/L
Liquid Ferric Chloride LMG	Coagulation & Flocculation	250mg/L

Ferrous Chloride

Trade Designation	*Product Function*	*Max Use*
Ferrous Chloride, Solution	Coagulation & Flocculation	250mg/L
Liquid Ferrous Chloride	Coagulation & Flocculation	250mg/L
Liquid Ferrous Chloride - DWG	Coagulation & Flocculation	250mg/L

Polymer Blends[PY]

Trade Designation	*Product Function*	*Max Use*

Ferri+Plus 1005	Coagulation & Flocculation	251mg/L
Ferri+Plus 1010	Coagulation & Flocculation	253mg/L
Ferri+Plus 1020	Coagulation & Flocculation	255mg/L
Ferri+Plus 1025	Coagulation & Flocculation	250mg/L
Ferri+Plus 1050	Coagulation & Flocculation	263mg/L
Ferri+Plus 1075	Coagulation & Flocculation	267mg/L
Ferri+Plus 1100	Coagulation & Flocculation	200mg/L
Ferri+Plus 1125	Coagulation & Flocculation	160mg/L
Ferri+Plus 1150	Coagulation & Flocculation	133mg/L
Ferri+Plus 1200	Coagulation & Flocculation	100mg/L
Ferri+Plus 1300	Coagulation & Flocculation	67mg/L
Ferri+Plus 1400	Coagulation & Flocculation	50mg/L
Ferri+Plus 2005	Coagulation & Flocculation	251mg/L
Ferri+Plus 2010	Coagulation & Flocculation	253mg/L
Ferri+Plus 2020	Coagulation & Flocculation	255mg/L
Ferri+Plus 2050	Coagulation & Flocculation	263mg/L
Ferri+Plus 2075	Coagulation & Flocculation	267mg/L
Ferri+Plus 2100	Coagulation & Flocculation	200mg/L
Ferri+Plus 2125	Coagulation & Flocculation	160mg/L
Ferri+Plus 2150	Coagulation & Flocculation	133mg/L
Ferri+Plus 2200	Coagulation & Flocculation	100mg/L
Ferri+Plus 2300	Coagulation & Flocculation	67mg/L
Ferri+Plus 2400	Coagulation & Flocculation	50mg/L
Ferri+Plus 3005	Coagulation & Flocculation	251mg/L
Ferri+Plus 3010	Coagulation & Flocculation	253mg/L
Ferri+Plus 3020	Coagulation & Flocculation	255mg/L
Ferri+Plus 3050	Coagulation & Flocculation	263mg/L
Ferri+Plus 3075	Coagulation & Flocculation	267mg/L
Ferri+Plus 3100	Coagulation & Flocculation	200mg/L
Ferri+Plus 3125	Coagulation & Flocculation	160mg/L
Ferri+Plus 3150	Coagulation & Flocculation	133mg/L
Ferri+Plus 3200	Coagulation & Flocculation	100mg/L
Ferri+Plus 3300	Coagulation & Flocculation	67mg/L
Ferri+Plus 3400	Coagulation & Flocculation	50mg/L
Ferri+Plus 4005	Coagulation & Flocculation	251mg/L
Ferri+Plus 4010	Coagulation & Flocculation	253mg/L
Ferri+Plus 4020	Coagulation & Flocculation	255mg/L
Ferri+Plus 4050	Coagulation & Flocculation	263mg/L
Ferri+Plus 4075	Coagulation & Flocculation	267mg/L
Ferri+Plus 4100	Coagulation & Flocculation	200mg/L
Ferri+Plus 4125	Coagulation & Flocculation	160mg/L
Ferri+Plus 4150	Coagulation & Flocculation	133mg/L
Ferri+Plus 4200	Coagulation & Flocculation	100mg/L
Ferri+Plus 4300	Coagulation & Flocculation	67mg/L

Ferri+Plus 4400	Coagulation & Flocculation	50mg/L
Ferri+Plus 5005	Coagulation & Flocculation	251mg/L
Ferri+Plus 5010	Coagulation & Flocculation	253mg/L
Ferri+Plus 5020	Coagulation & Flocculation	255mg/L
Ferri+Plus 5050	Coagulation & Flocculation	263mg/L
Ferri+Plus 5075	Coagulation & Flocculation	267mg/L
Ferri+Plus 5100	Coagulation & Flocculation	200mg/L
Ferri+Plus 5125	Coagulation & Flocculation	160mg/L
Ferri+Plus 5150	Coagulation & Flocculation	133mg/L
Ferri+Plus 5200	Coagulation & Flocculation	100mg/L
Ferri+Plus 5300	Coagulation & Flocculation	67mg/L
Ferri+Plus 5400	Coagulation & Flocculation	50mg/L

[PY] Polyamines Certified by NSF International comply with 40 CFR 141.111 requirements for percent monomer and dose.

Facility : Distribution Center - Lakeville, MN

Ferric Chloride

Trade Designation	*Product Function*	*Max Use*
Ferric Chloride, Solution	Coagulation & Flocculation	250mg/L
Liquid Ferric Chloride	Coagulation & Flocculation	250mg/L
Liquid Ferric Chloride - DWG	Coagulation & Flocculation	250mg/L

Facility : Distribution Center - Syracuse, NY

Ferric Chloride

Trade Designation	*Product Function*	*Max Use*
Ferric Chloride, Solution	Coagulation & Flocculation	250mg/L
Liquid Ferric Chloride	Coagulation & Flocculation	250mg/L
Liquid Ferric Chloride - DWG	Coagulation & Flocculation	250mg/L

Facility : Distribution Center - 1 Philadelphia, PA

Ferric Chloride

Trade Designation	*Product Function*	*Max Use*

Ferric Chloride, Solution	Coagulation & Flocculation	250mg/L
Liquid Ferric Chloride	Coagulation & Flocculation	250mg/L
Liquid Ferric Chloride - DWG	Coagulation & Flocculation	250mg/L

Facility : Houston, TX

Ferric Chloride

Trade Designation	*Product Function*	*Max Use*
Ferric Chloride LMG	Coagulation & Flocculation	250mg/L
Ferric Chloride Solution DWG (LFCD)	Coagulation & Flocculation	250mg/L
Ferric Chloride Solution EMD	Coagulation & Flocculation	250mg/L
Ferric Chloride, Solution	Coagulation & Flocculation	250mg/L
LFC	Coagulation & Flocculation	250mg/L
LFC-DWG	Coagulation & Flocculation	250mg/L
Liquid Ferric Chloride	Coagulation & Flocculation	250mg/L
Liquid Ferric Chloride Drinking Water Grade (DWG)	Coagulation & Flocculation	250mg/L

Facility : Distribution Center - Petersburg, VA

Ferric Chloride

Trade Designation	*Product Function*	*Max Use*
Ferric Chloride, Solution	Coagulation & Flocculation	250mg/L
Liquid Ferric Chloride	Coagulation & Flocculation	250mg/L
Liquid Ferric Chloride - DWG	Coagulation & Flocculation	250mg/L

Facility : New Martinsville, WV

Ferric Chloride

Trade Designation	*Product Function*	*Max Use*
Ferric Chloride, Solution	Coagulation & Flocculation	250mg/L
Liquid Ferric Chloride	Coagulation & Flocculation	250mg/L
Liquid Ferric Chloride Drinking Water Grade (DWG)	Coagulation & Flocculation	250mg/L
Liquid Ferric Chloride LMG	Coagulation & Flocculation	250mg/L

Polymer Blends[PY]

Trade Designation	*Product Function*	*Max Use*

Ferri+Plus 1005	Coagulation & Flocculation	251mg/L
Ferri+Plus 1010	Coagulation & Flocculation	253mg/L
Ferri+Plus 1020	Coagulation & Flocculation	255mg/L
Ferri+Plus 1025	Coagulation & Flocculation	250mg/L
Ferri+Plus 1050	Coagulation & Flocculation	160mg/L
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Ferri+Plus 1125	Coagulation & Flocculation	64mg/L
Ferri+Plus 1150	Coagulation & Flocculation	53mg/L
Ferri+Plus 1200	Coagulation & Flocculation	40mg/L
Ferri+Plus 1300	Coagulation & Flocculation	27mg/L
Ferri+Plus 1400	Coagulation & Flocculation	20mg/L

[PY] Polyamines Certified by NSF International comply with 40 CFR 141.111 requirements for percent monomer and dose.

Number of matching Manufacturers is 1

Number of matching Products is 148

Processing time was 0 seconds

PROPOSAL FORM
Mid-Michigan Bulk Water Chemical Consortium

COPY

Note: This form may be completed using MS Word®

Provide the following business and contact information:

Legal Name: PVS Technologies, Inc.		Federal ID or Social Security Number: 38-1949201
Address: 10900 Harper Avenue		State of Incorporation: Michigan
City: Detroit	State & Zip: MI, 48213	Primary E-Mail: bids@pvschemicals.com
Type of Organization: X Corporation __ LLC __ LLP __ Sole Proprietor __ Partnership __ S-Corporation __ Other (Explain)		
Office Phone: 313-571-1100	Alternate Office Phone: 313-921-1200	Office Fax: 313-571-6765
Primary Contact: Craig Mikkelson	Contact Phone: 313-571-1100 ext. 4111	Contact Fax: 313-571-6765
Contact Mobile: 313-718-0418	Contact E-Mail: bids@pvschemicals.com	Website URL: www.pvschemicals.com

Provide responses to the following questions:

How many years has your firm been in business under the present ownership?	30
Have you done business with the Board of Water and Light? If so, furnish specifics.	Yes, supplying Ferric Chloride.
Have you done business with the City of Lansing? If so, furnish specifics.	Yes, supplying Ferric Chloride
Have you ever defaulted on a contract or been involved in litigation with the Board of Water and Light or the City of Lansing? If so, furnish specifics.	No.
Have you ever defaulted on a contract or been involved in litigation or pending litigation or claims with any other client in the past five years? If so, furnish specifics.	No.
List any relationships between your firm's staff and any current BWL employee.	None.
Specify your background, training, experience, credentials and other factors which qualify you to perform the work described in the Scope of Work included in this Request for Proposal.	PVS Technologies, Inc. has been manufacturing Ferric Chloride since June 1986. We have 14 terminals and manufacturing locations.
List at least three (3) references for similar work you have performed for other clients. Include Client name, contact name, title and phone number.	See attached list of references.
List subcontractors that you plan to use on this project.	We are not using subcontractors.
Indicate any exceptions to the enclosed General Requirements.	None
Include any additional information you may deem helpful in evaluating your proposal.	SDS and NSF Certification included.

PROPOSAL FORM
Mid-Michigan Bulk Water Chemical Consortium

The undersigned Bidder hereby acknowledges receipt of the following addenda:

Addendum No.	Date	Enter addenda numbers and received dates if applicable
NONE		

Provide pricing:

Activity	Unit Pricing
Sodium Hypochlorite	
Chemical:	$ No bid / ton
Demurrage:	$ No bid / hour *first 4 hours free
Hydrofluosilic Acid	
Chemical in minimum 40,000 lbs. shipments:	$ No bid / ton
Chemical in minimum 30,000 lbs. shipments:	$ No bid / ton
Chemical split between Dye and Wise Plants minimum 40,000 lbs. shipments:	$ No bid / ton
Demurrage:	$ No bid / hour *first 4 hours free
Ferric Chloride	
Dry Chemical:	$ 397.00 / ton
Liquid Chemical:	$ 150.86 / ton
Demurrage:	$ 75.00 / hour *first 4 hours free
Pebble Quick Lime	
Chemical:	$ No bid / ton
Demurrage:	$ No bid / hour *first 4 hours free

The undersigned Bidder states that this proposal is made in conformity with the Proposal Documents and agrees that, in the event of any discrepancies or differences between any conditions of their proposal and the Proposal Documents, the provisions of the latter shall prevail. No verbal or written agreements or understandings considered or entered into prior to signing of a contract in the form of a purchase order, shall be binding after the signing of the contract unless incorporated in the contract.

The undersigned Bidder certifies that this proposal is made in good faith, without collusion or connection with any other person or persons submitting proposals for the work.

Company Name: PVS Technologies, Inc.	
Signature: Craig Mikkelson	Craig Mikkelson/VP of Sales & Marketing

PROPOSAL FORM
Mid-Michigan Bulk Water Chemical Consortium

Name:	Craig Mikkelson
Title:	Vice President of Sales & Marketing
Date:	March 20, 2017

END OF PROPOSAL FORM

SWORN AND NOTARIZED AFFIDAVIT OF COMPLIANCE

IRAN ECONOMIC SANCTIONS ACT

Michigan Public Act No. 517 of 2012

All bidders must submit the following certification statement in compliance with Public Act No. 517 of 2012 (the "Iran Economic Sanctions Act") and attach this form to the bid. **The Lansing Board of Water & Light shall not accept any bid that does not include this sworn and notarized certification of statement.**

The undersigned, the owner or authorized officer of PVS Technologies, Inc. (the Bidder), pursuant to the compliance certification requirement provided in the Lansing Board of Water & Light Request for Proposal, hereby certifies, represents and warrants that the Bidder (including its officers, directors and employees) is not an "Iran linked business" within the meaning of the Iran Economic Sanctions Act, and that in the event the Bidder is awarded a contract as a result of the aforementioned Request for Proposal, the Bidder will not become an "Iran linked business" at any time during the course of performing the work or any services under the contract.

The Bidder further acknowledges that any person who is found to have submitted a false certification is responsible for a civil penalty of not more than $250,000.00 or two (2) times the amount of the contract or proposed contract for which the false certification is made, whichever is greater, the cost of the Lansing Board of Water & Light's investigation, and reasonable attorney fees, in addition to the fine. Moreover, any person who submitted a false certification shall be ineligible to bid on a Request for Proposal for three (3) years from the date it is determined that the person has submitted the false certification.

BIDDER

PVS Technologies, Inc.

By: _____

Its: Craig Mikkelson/Vice President of Sales & Marketing

Date: March 20, 2017

STATE OF MICHIGAN)

COUNTY OF WAYNE)

This instrument was acknowledged before me on the 20 day of March, 20 17, by Eileen McDonnell.

_____

Eileen McDonnell, Notary Public

Wayne County, Michigan

My Comission Expires: December 23, 2020

Acting in the County of: Wayne

EILEEN MCDONNELL
Notary Public, State of Michigan
Wayne County, Michigan
My Commission Expires Dec 23, 2020
Acting in Wayne County

CERTIFIED COPY OF RESOLUTIONS
OF BOARD OF DIRECTORS
OF PVS TECHNOLOGIES, INC.

The undersigned, being the Assistant Secretary of PVS Technologies, Inc. (the "Company"), a Michigan corporation, certifies that the following is an accurate and complete copy of resolutions duly adopted by the Board of Directors of the Company, and that said resolutions remain in full force and effect as of the date of this certificate:

"RESOLVED, That the Company is authorized to submit bids to private and governmental entities for the sale of products and for the performance of services (collectively, 'Bids').

RESOLVED, That the Company is authorized to enter into contracts with private and governmental entities for the sale and purchase of products and for the performance of services (collectively, 'Contracts').

FURTHER RESOLVED, That the Company is authorized to submit applications for permits, licenses and other grants of authority from governmental entities which the Company requires to conduct its business (collectively, 'Applications').

FURTHER RESOLVED, That Craig L. Mikkelson, Vice President of Sales & Marketing of the Company, shall be and is authorized to execute Bids, Contracts and Applications on behalf of the Company and such other documents relating to Bids, Contracts and Applications as he deems necessary or expedient for the purposes of carrying out the terms of the Bids, Contracts and Applications or otherwise conducting the business of the Company."

IN WITNESS OF THESE CERTIFIED RESOLUTIONS, the undersigned has signed below and affixed the corporate seal of the Company on October 28, 2016.

James B. DeVleeschouwer, Asst. Secretary

Subscribed and sworn to before me
on October 28, 2016.

Notary Public, Wayne County, Michigan

My Commission Expires: 3/2/2018

Mary P. Moreau
Notary Public, Macomb County, MI
Acting in Wayne County
Commission expires March 2, 2018

References
Liquid Ferric Chloride

Pittsburgh Water Sewer Authority
Jim Tracey
Penn Liberty Plaza I
1200 Penn Avenue, 2nd Floor
Pittsburgh, PA 15222
jtracey@pgh2o.com
412-255-8800

Supplying Ferric Chloride
Contract Dates: 01/2010 - Current
Annual Volume: 1600 Dry Tons

City of Atlanta, GA
55 Trinity Avenue SW
Suite 1790
Atlanta, GA 30303
Pat Dixon
pddixon@atlantaga.gov
404-865-8933

Supplying Ferric Chloride
Annual Volume: 722,754 LBS
Contract Term: 08/2011 – Current

City of Monroe, NC
2401 Walkup Drive
Monroe, NC 28110
Karen Penegar
kpenegar@monroenc.org
704-282-4603

Supplying Ferric Chloride
Annual Volume: 135,000 Gallons
Contract Term: Quarterly since 2009

PVS Technologies, Inc. manufactures and distributes ferric chloride to the municipalities throughout the United States. PVS Technologies, Inc. has been in the business of supplying chemicals to business and municipalities since 1986. This is a list of current and past customers for your review.

Safety Data Sheet

Revision Date Mar-15-2015 | Item # 10244 | Safety Data Sheet 0235

1. PRODUCT AND COMPANY IDENTIFICATION

CONTROLLED IF STAMPE

Product Name	Ferric Chloride Solution DWG Grade
UN/ID No.	UN2582
Synonyms	Iron (III) Chloride, Iron trichloride, FeCl3
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

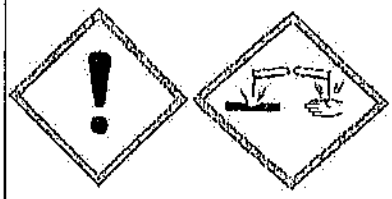
Acute toxicity - Oral	Category 4
Skin corrosion/irritation	Category 1
Serious eye damage/eye irritation	Category 1

Emergency Overview

DANGER

Hazard statements
- Causes severe skin burns and eye damage
- Harmful if swallowed

Physical hazards
- Corrosive
- May be corrosive to metals



Precautionary statements

Prevention
- Wear eye/face protection
- Wear protective gloves/protective clothing/eye protection/face protection
- Do not breathe dust/fume/gas/mist/vapors/spray
- Do not eat, drink or smoke when using this product
- Wash face, hands and any exposed skin thoroughly after handling

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

Storage
- Store in a secure area

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

Hazards not otherwise classified (HNOC)
None known.

Other information

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

Unknown Acute Toxicity — 0.85% 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	55-69
Iron trichloride	7705-08-0	231-729-4	31-45
Hydrogen chloride	7647-01-0	231-595-7	0.0-1.0
Ferrous chloride	7758-94-3	231-843-4	0.0-0.7

*The exact percentage (concentration) of composition has been withheld as a trade secret.

4. FIRST AID MEASURES

General advice
- Immediate medical attention is required

Eye contact
- Immediate medical attention is required
- Immediately flush with plenty of water. After initial flushing, remove any contact lenses and continue flushing for at least 15 minutes
- Do not rub affected area

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

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

Ingestion
- Call a physician or poison control center immediately
- Do NOT induce vomiting
- Rinse mouth
- Drink 4 to 8 ounces (120-240 ml) of water or milk as soon as possible after ingestion.
- Never give anything by mouth to an unconscious person

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 personnel
Use personal protective equipment as required. Avoid contact with skin, eyes or clothing.

5. FIRE-FIGHTING MEASURES

Suitable extinguishing media
- Dry chemical, CO2, water spray or alcohol-resistant foam
- Use extinguishing measures that are appropriate to local circumstances and the surrounding environment

Unsuitable extinguishing media
- Caution: Use of water spray when fighting fire may be inefficient
- Do not use a solid water stream as it may scatter and spread fire

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	• Neutralize with soda ash or lime • Take up mechanically, placing in appropriate containers for disposal • Clean contaminated surface thoroughly • Soak up with inert absorbent material
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, oxidizers, steel, and most metals

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Chemical Name	ACGIH TLV	OSHA PEL	NIOSH IDLH
Iron trichloride 7705-08-0	TWA: 1 mg/m³ Fe	-	TWA: 1 mg/m³ Fe
Hydrogen chloride 7647-01-0	Ceiling: 2 ppm	Ceiling: 5 ppm Ceiling: 7 mg/m³	IDLH: 50 ppm Ceiling: 5 ppm Ceiling: 7 mg/m³
Ferrous chloride 7758-94-3	TWA: 1 mg/m³ Fe	(vacated) TWA: 1 mg/m³ Fe	TWA: 1 mg/m³ Fe

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	• Do not eat, drink or smoke when using this product • Wash contaminated clothing before reuse • 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

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

Property	Values	Remarks • Method
pH	<2	
Melting point/Freezing Point	-26 °C / -15 °F	
Boiling point / boiling range	110 °C / 230 °F	
Flash point	No information available	
Evaporation rate	<1	n-Butyl acetate =1
Flammability (solid, gas)	No information available	
Flammability Limit in Air		Not flammable
Upper flammability limit (%)	No information available	
Lower flammability limit (%):	No information available	
Vapor pressure	No information available	negligible
Vapor density	No information available	
Specific Gravity	1.40	
Water solubility	Miscible in water	
Solubility in other solvents	No information available	
Partition coefficient	No information available	
Autoignition temperature	No information available	
Decomposition temperature	No information available	
Kinematic viscosity	No information available	
Dynamic viscosity	No information available	
Explosive properties	No information available	
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	11.7 Pounds per gallon (lb/gal), Typical

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, oxidizers, steel, and most metals

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 kidney effects. May cause adverse liver effects.
Skin Contact	Contact causes severe skin irritation and possible burns.
Eye contact	Corrosive to the eyes and may cause severe damage including blindness.

Chemical Name	Oral LD50	Dermal LD50	Inhalation LC50
Iron trichloride 7705-08-0	= 450 mg/kg (Rat)	>2000 mg/kg (rat)	-
Hydrogen chloride 7647-01-0	= 700 mg/kg (Rat)	> 5010 mg/kg (Rabbit)	= 3124 ppm (Rat) 1 h
Ferrous chloride 7758-94-3	450	-	-

Information on toxicological effects

Symptoms: Vomiting, Hypoxemia (reduced O2 in the blood), Metabolic Acidosis

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	No information available.

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

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.
Aspiration hazard	No information available.

Numerical measures of toxicity - Product Information

Unknown Acute Toxicity: 0.85% of the mixture consists of ingredient(s) of unknown toxicity

The following values are calculated based on chapter 3.1 of the GHS document . mg/kg

12. ECOLOGICAL INFORMATION

Ecotoxicity

Ecotoxicity: Toxic to aquatic life with long lasting effects

0.85% of the mixture consists of components(s) of unknown hazards to the aquatic environment

Chemical Name	Algae/aquatic plants	Fish	Crustacea
Iron trichloride 7705-08-0	-	20.85 - 22.56: 96 h Pimephales promelas mg/L LC50 semi-static 20.26: 96 h Lepomis macrochirus mg/L LC50 semi-static	27.9: 48 h Daphnia magna mg/L EC50 9.6: 48 h Daphnia magna mg/L EC50 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)	1000
RQ as is (lbs)(wet)	2222 (45% Ferric Chloride)
Description	UN2582, Ferric chloride, solution, 8, III
Special Provisions	B15, IB3, T4, TP1
Emergency Response Guide Number	154

IATA

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

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 does not contain any chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372

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
Ferrous chloride 7758-94-3	100 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
Ferrous chloride 7758-94-3	100 lb	-	RQ 100 lb final RQ RQ 45.4 kg final RQ

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
Iron trichloride 7705-08-0	X	X	X
Ferrous chloride 7758-94-3	X	X	X

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

International Inventories

TSCA	Complies
DSL/NDSL	Complies
EINECS/ELINCS	Complies
ENCS	Does not comply
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

NFPA	Health hazards 3	Flammability 0	Instability 0	Physical and Chemical Properties -
HMIS	Health hazards 3	Flammability 0	Physical hazards 0	Personal protection D

Item #	10244
Safety Data Sheet	0235
Revision Date	Mar-15-2015
Issue Date	Mar-15-2015
Version	1
Revision Note	*** Updated value on SDS.

Disclaimer

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End of Safety Data Sheet

PVS TECHNOLOGIES

Liquid Ferric Chloride – Drinking Water Grade

PVS Technologies Liquid Ferric Chloride is a concentrated solution of Iron III Chloride ($FeCl_3$) in water. It is manufactured from 100% high purity raw materials.

Principal Uses

Potable Water Treatment

- Turbidity reduction
- Color elimination
- Enhanced coagulation, NOM and DBP precursor removal
- Softening solids sedimentation
- Lead control through a wide pH application range
- Sludge reduction
- Filter conditioning
- Arsenic Removal

Wastewater Treatment

- Phosphate precipitation and removal
- Enhanced sedimentation
- Dewatering of all types of sludge streams
- Polymer flocculant enhancement
- Sulfide based odor elimination
- Struvite control

Specifications	
Appearance:	A dark red/brown liquid
Concentrations:	
$FeCl_3$	37% - 42%
$FeCl_2$	0.75% maximum
Free Acid as HCl	1.0% maximum Drinking Water Grade
Insolubles	0.008% (80 ppm) maximum
Radionuclides	None
Specific gravity:	1.38 – 1.49
Viscosity:	12.1 centipoises for a 40% solution
Crystallization:	37% $FeCl_3$ (- 15°F); 40% $FeCl_3$ (10°F)
AWWA Certification:	B407-12
ANSI/NSF Standard 60 Certification:	Maximum use level – 250 ppm as solution
CAS No.:	7705-08-0
UN Classification:	UN2582, Ferric Chloride Solution
	SQC data available on request

Delivery

This product is available for shipping via the following options:
55 gallon drums
300 gallon totes
4,000 & 8,000 gallon tank trucks
17,000 gallon railcars

Product Availability

Throughout North America – 8,000 gallon tankers only available in Michigan.

Handling & Safety

Ferric Chloride is considered to be hazardous by definition of the Hazard Communication Standard (29 CFR 1910.1200) and should be handled in a manner that is consistent with acceptable practices. Please obtain the Ferric Chloride Safety Data Sheet for complete up-to-date information.

Under normal situations the only protective equipment required in the use and handling of Liquid Ferric Chloride are splash proof chemical goggles and rubber gloves. Liquid Ferric Chloride will stain both clothing and skin and it is recommended that, to protect against this occurrence, other protect clothing be worn as is appropriate.

Ferric Chloride reacts with many metals. However, most handling situations are reliably addressed through the use of common plastic materials such as FRP, PVC, Polyethylene, Polypropylene and Teflon. For additional information, please consult your equipment supplier.

For additional information call: 313 571-1100
To place an order call: 800 337-7428

PVS Technologies - Serving Water and Wastewater Plants throughout the World

The Public Health and Safety Organization

NSF Product and Service Listings

These NSF Official Listings are current as of **Monday, February 15, 2016** at 12:15 a.m. Eastern Time. Please contact NSF International to confirm the status of any Listing, report errors, or make suggestions.

Alert: NSF is concerned about fraudulent downloading and manipulation of website text. Always confirm this information by clicking on the below link for the most accurate information:
http://info.nsf.org/Certified/PwsChemicals/Listings.asp?Company=3U690&Standard=060&

NSF/ANSI 60
Drinking Water Treatment Chemicals - Health Effects

PVS Technologies
10900 Harper Avenue
Detroit, MI 48213
United States
313-571-1100
Visit this company's website
(http://www.pvschemicals.com)

Facility : Decatur, AL

Ferrous Chloride[1]

Trade Designation	*Product Function*	*Max Use*
Ferrous Chloride, Solution	Other	250mg/L
Liquid Ferrous Chloride	Other	250mg/L
Liquid Ferrous Chloride- DWG	Other	250mg/L

[1] This product may be used for chlorite removal.

Facility : Trinity, AL

Ferrous Chloride[1]

Trade Designation	*Product Function*	*Max Use*
Ferrous Chloride, Solution	Other	250mg/L
Liquid Ferrous Chloride	Other	250mg/L
Liquid Ferrous Chloride- DWG	Other	250mg/L

[1] This product may be used for chlorite removal.

Facility : Distribution Center - Henderson, CO

Ferric Chloride

Trade Designation	*Product Function*	*Max Use*
Ferric Chloride Solution	Coagulation & Flocculation	250mg/L
LFC	Coagulation & Flocculation	250mg/L
LFC DWG	Coagulation & Flocculation	250mg/L
Liquid Ferric Chloride	Coagulation & Flocculation	250mg/L
Liquid Ferric Chloride Drinking Water Grade	Coagulation & Flocculation	250mg/L

Polymer Blends[PY]

Trade Designation	*Product Function*	*Max Use*
Ferri+Plus 1005	Coagulation & Flocculation	251mg/L
Ferri+Plus 1010	Coagulation & Flocculation	253mg/L
Ferri+Plus 1020	Coagulation & Flocculation	255mg/L
Ferri+Plus 1050	Coagulation & Flocculation	160mg/L
Ferri+Plus 1075	Coagulation & Flocculation	107mg/L
Ferri+Plus 1100	Coagulation & Flocculation	80mg/L
Ferri+Plus 1125	Coagulation & Flocculation	64mg/L
Ferri+Plus 1150	Coagulation & Flocculation	53mg/L
Ferri+Plus 1200	Coagulation & Flocculation	40mg/L
Ferri+Plus 1300	Coagulation & Flocculation	27mg/L
Ferri+Plus 1400	Coagulation & Flocculation	20mg/L

[PY] Polyamines Certified by NSF International comply with 40 CFR 141.111 requirements for percent monomer and dose.

Facility : Augusta, GA

Ferric Chloride

Trade Designation	*Product Function*	*Max Use*
Ferric Chloride, Solution	Coagulation & Flocculation	250mg/L
LFC	Coagulation & Flocculation	250mg/L
LFC-DWG	Coagulation & Flocculation	250mg/L
Liquid Ferric Chloride	Coagulation & Flocculation	250mg/L
Liquid Ferric Chloride Drinking Water Grade (DWG)	Coagulation & Flocculation	250mg/L

Ferrous Chloride

Trade Designation	*Product Function*	*Max Use*
Ferrous Chloride, Solution	Coagulation & Flocculation	250mg/L
Liquid Ferrous Chloride	Coagulation & Flocculation	250mg/L
Liquid Ferrous Chloride - DWG	Coagulation & Flocculation	250mg/L

Facility : Distribution Center - Chicago, IL

Ferric Chloride

Trade Designation	*Product Function*	*Max Use*
Ferric Chloride, Solution	Coagulation & Flocculation	250mg/L
Liquid Ferric Chloride	Coagulation & Flocculation	250mg/L
Liquid Ferric Chloride - DWG	Coagulation & Flocculation	250mg/L

Facility : Distribution Center - East St. Louis, IL

Ferric Chloride

Trade Designation	*Product Function*	*Max Use*
Ferric Chloride, Solution	Coagulation & Flocculation	250mg/L
Liquid Ferric Chloride	Coagulation & Flocculation	250mg/L
Liquid Ferric Chloride - DWG	Coagulation & Flocculation	250mg/L

Ferrous Chloride

Trade Designation	*Product Function*	*Max Use*
Ferrous Chloride	Coagulation & Flocculation	250mg/L
Ferrous Chloride, Solution	Coagulation & Flocculation	250mg/L
Liquid Ferrous Chloride	Coagulation & Flocculation	250mg/L

NOTE: Only products bearing the NSF Mark are NSF Certified.

Facility : Distribution Center - Louisville, KY

Ferric Chloride

Trade Designation	*Product Function*	*Max Use*
Ferric Chloride DWG	Coagulation & Flocculation	125mg/L
Ferric Chloride Drinking Water Grade	Coagulation & Flocculation	125mg/L
Ferric Chloride, Solution	Coagulation & Flocculation	125mg/L
Liquid Ferric Chloride	Coagulation & Flocculation	125mg/L

Facility : Distribution Center - 2 Baltimore, MD

Ferric Chloride

Trade Designation	*Product Function*	*Max Use*
Ferric Chloride, Solution	Coagulation & Flocculation	250mg/L
Liquid Ferric Chloride	Coagulation & Flocculation	250mg/L
Liquid Ferric Chloride-DWG	Coagulation & Flocculation	250mg/L

Facility : Detroit, MI

Ferric Chloride

Trade Designation	*Product Function*	*Max Use*
Ferric Chloride Solution	Coagulation & Flocculation	250mg/L
Ferric Chloride, Solution	Coagulation & Flocculation	250mg/L
LFC	Coagulation & Flocculation	250mg/L
LFC-DWG	Coagulation & Flocculation	250mg/L
Liquid Ferric Chloride	Coagulation & Flocculation	250mg/L
Liquid Ferric Chloride Drinking Water Grade (DWG)	Coagulation & Flocculation	250mg/L
Liquid Ferric Chloride LMG	Coagulation & Flocculation	250mg/L

Ferrous Chloride

Trade Designation	*Product Function*	*Max Use*
Ferrous Chloride, Solution	Coagulation & Flocculation	250mg/L
Liquid Ferrous Chloride	Coagulation & Flocculation	250mg/L
Liquid Ferrous Chloride - DWG	Coagulation & Flocculation	250mg/L

Polymer Blends[PY]

Trade Designation	*Product Function*	*Max Use*

Ferri+Plus 1005	Coagulation & Flocculation	251mg/L
Ferri+Plus 1010	Coagulation & Flocculation	253mg/L
Ferri+Plus 1020	Coagulation & Flocculation	255mg/L
Ferri+Plus 1025	Coagulation & Flocculation	250mg/L
Ferri+Plus 1050	Coagulation & Flocculation	263mg/L
Ferri+Plus 1075	Coagulation & Flocculation	267mg/L
Ferri+Plus 1100	Coagulation & Flocculation	200mg/L
Ferri+Plus 1125	Coagulation & Flocculation	160mg/L
Ferri+Plus 1150	Coagulation & Flocculation	133mg/L
Ferri+Plus 1200	Coagulation & Flocculation	100mg/L
Ferri+Plus 1300	Coagulation & Flocculation	67mg/L
Ferri+Plus 1400	Coagulation & Flocculation	50mg/L
Ferri+Plus 2005	Coagulation & Flocculation	251mg/L
Ferri+Plus 2010	Coagulation & Flocculation	253mg/L
Ferri+Plus 2020	Coagulation & Flocculation	255mg/L
Ferri+Plus 2050	Coagulation & Flocculation	263mg/L
Ferri+Plus 2075	Coagulation & Flocculation	267mg/L
Ferri+Plus 2100	Coagulation & Flocculation	200mg/L
Ferri+Plus 2125	Coagulation & Flocculation	160mg/L
Ferri+Plus 2150	Coagulation & Flocculation	133mg/L
Ferri+Plus 2200	Coagulation & Flocculation	100mg/L
Ferri+Plus 2300	Coagulation & Flocculation	67mg/L
Ferri+Plus 2400	Coagulation & Flocculation	50mg/L
Ferri+Plus 3005	Coagulation & Flocculation	251mg/L
Ferri+Plus 3010	Coagulation & Flocculation	253mg/L
Ferri+Plus 3020	Coagulation & Flocculation	255mg/L
Ferri+Plus 3050	Coagulation & Flocculation	263mg/L
Ferri+Plus 3075	Coagulation & Flocculation	267mg/L
Ferri+Plus 3100	Coagulation & Flocculation	200mg/L
Ferri+Plus 3125	Coagulation & Flocculation	160mg/L
Ferri+Plus 3150	Coagulation & Flocculation	133mg/L
Ferri+Plus 3200	Coagulation & Flocculation	100mg/L
Ferri+Plus 3300	Coagulation & Flocculation	67mg/L
Ferri+Plus 3400	Coagulation & Flocculation	50mg/L
Ferri+Plus 4005	Coagulation & Flocculation	251mg/L
Ferri+Plus 4010	Coagulation & Flocculation	253mg/L
Ferri+Plus 4020	Coagulation & Flocculation	255mg/L
Ferri+Plus 4050	Coagulation & Flocculation	263mg/L
Ferri+Plus 4075	Coagulation & Flocculation	267mg/L
Ferri+Plus 4100	Coagulation & Flocculation	200mg/L
Ferri+Plus 4125	Coagulation & Flocculation	160mg/L
Ferri+Plus 4150	Coagulation & Flocculation	133mg/L
Ferri+Plus 4200	Coagulation & Flocculation	100mg/L
Ferri+Plus 4300	Coagulation & Flocculation	67mg/L

Ferri+Plus 4400	Coagulation & Flocculation	50mg/L
Ferri+Plus 5005	Coagulation & Flocculation	251mg/L
Ferri+Plus 5010	Coagulation & Flocculation	253mg/L
Ferri+Plus 5020	Coagulation & Flocculation	255mg/L
Ferri+Plus 5050	Coagulation & Flocculation	263mg/L
Ferri+Plus 5075	Coagulation & Flocculation	267mg/L
Ferri+Plus 5100	Coagulation & Flocculation	200mg/L
Ferri+Plus 5125	Coagulation & Flocculation	160mg/L
Ferri+Plus 5150	Coagulation & Flocculation	133mg/L
Ferri+Plus 5200	Coagulation & Flocculation	100mg/L
Ferri+Plus 5300	Coagulation & Flocculation	67mg/L
Ferri+Plus 5400	Coagulation & Flocculation	50mg/L

[PY] Polyamines Certified by NSF International comply with 40 CFR 141.111 requirements for percent monomer and dose.

Facility : Distribution Center - Lakeville, MN

Ferric Chloride

Trade Designation	*Product Function*	*Max Use*
Ferric Chloride, Solution	Coagulation & Flocculation	250mg/L
Liquid Ferric Chloride	Coagulation & Flocculation	250mg/L
Liquid Ferric Chloride - DWG	Coagulation & Flocculation	250mg/L

Facility : Distribution Center - Syracuse, NY

Ferric Chloride

Trade Designation	*Product Function*	*Max Use*
Ferric Chloride, Solution	Coagulation & Flocculation	250mg/L
Liquid Ferric Chloride	Coagulation & Flocculation	250mg/L
Liquid Ferric Chloride - DWG	Coagulation & Flocculation	250mg/L

Facility : Distribution Center - 1 Philadelphia, PA

Ferric Chloride

Trade Designation	*Product Function*	*Max Use*

Ferric Chloride, Solution	Coagulation & Flocculation	250mg/L
Liquid Ferric Chloride	Coagulation & Flocculation	250mg/L
Liquid Ferric Chloride - DWG	Coagulation & Flocculation	250mg/L

Facility : Houston, TX

Ferric Chloride

Trade Designation	*Product Function*	*Max Use*
Ferric Chloride LMG	Coagulation & Flocculation	250mg/L
Ferric Chloride Solution DWG (LFCD)	Coagulation & Flocculation	250mg/L
Ferric Chloride Solution EMD	Coagulation & Flocculation	250mg/L
Ferric Chloride, Solution	Coagulation & Flocculation	250mg/L
LFC	Coagulation & Flocculation	250mg/L
LFC-DWG	Coagulation & Flocculation	250mg/L
Liquid Ferric Chloride	Coagulation & Flocculation	250mg/L
Liquid Ferric Chloride Drinking Water Grade (DWG)	Coagulation & Flocculation	250mg/L

Facility : Distribution Center - Petersburg, VA

Ferric Chloride

Trade Designation	*Product Function*	*Max Use*
Ferric Chloride, Solution	Coagulation & Flocculation	250mg/L
Liquid Ferric Chloride	Coagulation & Flocculation	250mg/L
Liquid Ferric Chloride - DWG	Coagulation & Flocculation	250mg/L

Facility : New Martinsville, WV

Ferric Chloride

Trade Designation	*Product Function*	*Max Use*
Ferric Chloride, Solution	Coagulation & Flocculation	250mg/L
Liquid Ferric Chloride	Coagulation & Flocculation	250mg/L
Liquid Ferric Chloride Drinking Water Grade (DWG)	Coagulation & Flocculation	250mg/L
Liquid Ferric Chloride LMG	Coagulation & Flocculation	250mg/L

Polymer Blends[PY]

Trade Designation	*Product Function*	*Max Use*

Ferri+Plus 1005	Coagulation & Flocculation	251mg/L
Ferri+Plus 1010	Coagulation & Flocculation	253mg/L
Ferri+Plus 1020	Coagulation & Flocculation	255mg/L
Ferri+Plus 1025	Coagulation & Flocculation	250mg/L
Ferri+Plus 1050	Coagulation & Flocculation	160mg/L
Ferri+Plus 1075	Coagulation & Flocculation	107mg/L
Ferri+Plus 1100	Coagulation & Flocculation	80mg/L
Ferri+Plus 1125	Coagulation & Flocculation	64mg/L
Ferri+Plus 1150	Coagulation & Flocculation	53mg/L
Ferri+Plus 1200	Coagulation & Flocculation	40mg/L
Ferri+Plus 1300	Coagulation & Flocculation	27mg/L
Ferri+Plus 1400	Coagulation & Flocculation	20mg/L

[PY] Polyamines Certified by NSF International comply with 40 CFR 141.111 requirements for percent monomer and dose.

Number of matching Manufacturers is 1

Number of matching Products is 148

Processing time was 0 seconds