

# Inorganic Coagulant Solve 3

## Material Safety Data Sheet

Date Issued: 04/23/10

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### 1. PRODUCT IDENTIFICATION

Product Name: **SOLVE 3**  
Chemical Type: Ferric Chloride  
Chemical Family: Inorganic Salts  
Formula: FeCl<sub>3</sub>  
Synonym: Iron (III) Chloride

Company: WaterSolve LLC., 4964 Starr St. S.E. Grand Rapids, Michigan 49546, USA  
For product information call 616 575-8693 or visit [www.gowatersolve.com](http://www.gowatersolve.com)

For Chemical Emergency Spill, Leak, Fire, Exposure, or Accident

Call CHEMTREC Day or Night

Within USA and Canada: 1-800-424-9300

Outside USA and Canada: +1 703-527-3887 (collect calls accepted)

### 2. COMPOSITION/INFORMATION ON INGREDIENTS

<u>Component:</u>	<u>CAS#</u>	<u>Weight %</u>	<u>ACGIH TWA</u>	<u>OSHA (PEL)</u>
Ferric Chloride	7705-08-0	37-42%	Not established	Not established
Hydrochloric Acid	7647-01-0	<0.5%	2ppm (Ceiling)	7 mg/m <sup>3</sup> (Ceiling) 5ppm (Ceiling)

### 3. HAZARDS IDENTIFICATION

#### **EMERGENCY OVERVIEW:**

#### **APPEARANCE AND ODOR:**

**COLOR:** reddish-brown

**APPEARANCE:** liquid

**ODOR:** slight pungent

#### **STATEMENT OF HAZARD:**

**WARNING! CAUSES EYE AND SKIN IRRITATION**

#### **DANGER!**

**Corrosive material. Causes burns. Reacts with metals to release flammable hydrogen gas.  
May be harmful or fatal if swallowed in large amounts. Effects may be delayed.**

Effects of exposure: Direct contact with this material may cause severe eye and skin irritation. Inhalation overexposure to the mist or vapor may cause respiratory tract irritation. Refer to Section 11 for information on toxicology. The acute oral (rat) LD50 is estimated to be >400 mg/kg.

#### **4. FIRST AID**

General: If you feel unwell, seek medical attention (show the label or this MSDS if possible. Effects of exposure (inhalation, ingestion, or skin contact) To substance may be delayed. Ensure that medical personnel are aware of the material (s) involved, and take precautions to protect themselves.

- Eye Contact: Do not rub. Immediately flush eyes gently for 30 minutes with plenty of water, occasionally lifting upper and lower lids, until no evidence of chemical remains. Call a physician immediately for any symptoms of injury to the eye..
- Skin Contact: Wash immediately with plenty of water for at least 30 minutes while removing contaminated clothing, jewelry and shoes. Do not reuse contaminated clothing without laundering. If irritation or pain is still present, seek medical attention.
- Inhalation: Remove person from exposure area to fresh air. If breathing is difficult, give oxygen. Apply artificial respiration by qualified medical personnel if patient is not breathing. Obtain medical attention immediately.
- Ingestion: If swallowed, call a physician immediately. Only induce vomiting at the instruction of a physician. Have victim rinse mouth with water. Never give anything by mouth to an unconscious person. Give one or two glasses of water to drink and refer to medical personnel or take direction from either a physician or a poison control center.

#### **5. FIRE-FIGHTING MEASURES**

**Fire hazards/conditions of flammability:** This material is not combustible.

**Protective Equipment:**

Wear full firefighting protective clothing. See MSDS Section (Exposure Controls/Personal Protection). Firefighters, and others exposed, wear self-contained breathing apparatus.

**Special Hazards:**

Keep containers cool by spraying with water if exposed to fire. During a fire, irritating/toxic hydrogen chloride, and/or phosgene gases may be generated if material is dried and then heated to decomposition.

**Mechanical/Static Sensitivity Statements:**

None

#### **6. ACCIDENTAL RELEASE MEASURES**

**STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED**

**Personal precautions:**

Restrict access to area until completion of clean-up. Ensure clean-up is conducted by trained personnel only. Where exposure level is not known, wear NIOSH approved, positive pressure, self-contained respirator. Where exposure level is known, wear NIOSH approved respirator suitable for level of exposure. In addition to the protective clothing/equipment in Section 8, wear a two piece PVC suit with hood or PVC overalls with hood, wear impervious boots. Keep all other personnel upwind and away from the spill/release.

**Environmental Precautions:**

Prevent water contaminated with this product from entering drains, sewers or streams, growing crops/keeping animal areas, and sites of native flora and fauna. Dike far ahead of the spill for later recovery or disposal.

**Spill response/Cleanup:** Ventilate area of release. Stop leak if you can do so without risk Cover spills with some inert absorbent. Sweep up into containers for later disposal. Flush spill area with water, in accordance with applicable regulations, to waste treatment system. Notify the appropriate authorities as required.

## 7. HANDLING AND STORAGE

### **Handling**

Precautionary Measures: Avoid contact with eyes, skin and clothing. Wash thoroughly after handling

Special Handling Statements:

Wear appropriate chemically protective equipment. Use in well ventilated area with proper engineering controls. Avoid inhalation of vapors. Keep away from heat and flame. This material will corrode steel or aluminum at a rate greater than 6.25 mm (0.25 inches/year) @ 55°C (130 °F). It is thus considered to be a corrosive material for transportation purposes. Protect container from physical damage. Do not strike containers or fittings with tools or hard objects. Keep container closed and dry. Review the label, this MSDS and any other applicable information before use. Keep separated from incompatible substances. Use appropriate Personal Protective Equipment per Section 8. Handle only with equipment, materials and supplies specified by their manufacturer as being compatible and appropriate for use with this product.

### **STORAGE:**

Bulk storage containers and ancillary fill and feed systems should be constructed out of appropriate materials such as polyethylene, polypropylene, rub-lined steel and FRP designated as appropriate for use with this product. Storage tanks should be vented to scrubber or exterior atmosphere. Storage facilities should have secondary containment as required by law or regulation. Storage tanks, piping and offloading points should be labeled with appropriate signage to avoid accidents. Some concentrations of this product will freeze or crystallize at low temperatures. Insulate and heat-trace storage tanks, pumps, pipes and ancillary equipment as necessary. Product should be used within one (1) year and stored in a cool, dry well ventilated area away from all sources of heat and incompatible material.. Material may be stored in tightly closed shipping containers, preferably the supplier containers. Containers of this material may be hazardous when empty, since they retain product residues (vapor, liquid); observe all warnings and precautions listed for the product.

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

## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

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

### **Engineering Measures:**

Where this material is not used in a closed system, good enclosure and local exhaust ventilation should be provided to control exposure.

### **Respiratory Protection:**

Respiratory protection is required if the airborne concentrations exceeds the TLV, NIOSH-approved full face respirators are recommended depending on the airborne concentration levels.

### **Eye Protection:**

Wear eye/face protection such as chemical splash proof goggles or face shield. Do not wear contact lenses. Eyewash equipment and safety shower should be provided in areas of potential exposure.

### **Skin Protection:**

Avoid skin contact. Wear impermeable gloves and suitable protective clothing.

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

### **Additional Advice:**

Food, beverages and tobacco products should not be carried, stored or consumed where this material is in use. Before eating, drinking, or smoking, wash face and hands thoroughly with soap and water.

9. **PHYSICAL AND CHEMICAL PROPERTIES**

Appearance and Odor:	Reddish-brown, liquid; slight pungent odor
Boiling Point:	105-110 °C; 220-230°F
Melting Point/ Freezing point:	-15 °F (37% solution)
Vapor Pressure:	Not applicable
Specific Gravity:	1.26-1.48
Vapor Density:	Not applicable
% Volatile (By Wt):	Not available
pH:	<2
Saturation in Air (% by Vol):	Not applicable
Evaporation Rate:	Not applicable
Solubility in Water:	Negligible
Volatile Organic Content:	None
Flash point:	Non flammable
Flammable Limits (% by vol):	Not available
Autoignition temp:	Not available
Decomposition temp:	Not available
Odor Threshold	Not available
Partition coefficient (n-octanol/water)	Not available

10. **STABILITY AND REACTIVITY**

Stability: Stable under the recommended storage and handling conditions prescribed.

Polymerization: Will not occur

Conditions to Avoid: Dangerous gases may accumulate in confined spaces. Avoid contact with incompatible materials, heat and flame. Material is acidic and corrodes most metals.

Materials to avoid: Metals such as iron, or steel which are subject to corrosion.

Hazardous decomposition: hydrochloric acid vapors (at high temperature)

Products: Thermal decomposition of dried residues- will produce hydrogen chloride gas.

11. **TOXICOLOGICAL INFORMATION**

Toxicological information for the product is found under Section 3. HAZARDS IDENTIFICATION

Toxicological information on the OSHA regulated components of this product is as follows:

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

Base on Ferric Chloride Solid (anhydrous)

**TOXICOLOGICAL DATA:** LD50 (oral, rat) = 450 mg/kg

**Mutagenicity:** Other mutation test systems: Escherichia coli- 500 nmol/tube;

Phage inhibition capacity: Escherichia coli 41 ng/well

**Reproductive Effects:** TDLo Rat 1 day(s) intratesticular 12976 mg/kg

TDLo Rat 1 day (s) intravaginal 29 mg/kg pre pregnancy continuous

**Teratogenicity and Fetotoxicity:** Not available

**Synergistic Materials:** Not available

Hydrochloric acid has a 4-hour inhalation LC-50 (rat) value of 3124 ppm (4.7mg/L). Contact with hydrochloric acid solutions or mists can cause severe skin and eye irritation. Acute overexposure to hydrochloric acid vapor may cause severe eye and respiratory tract irritation.

12. **ECOLOGICAL INFORMATION**

**ECOTOXICITY:** All ecological information provided was conducted on a structurally similar product.

This material is estimated to be harmful to aquatic organisms (EC50 between 10 and 100 mg/l). No t expected to bioaccumulate.

**Species:** Bluegill Sunfish (*Lepomis macrochirus*)

96.8 mg/l LC50

13. **DISPOSAL CONSIDERATIONS**

The information on RCRA waste classification and disposal methodology provided below applies only to the product, as supplied. If the material has been altered or contaminated, or it has exceeded its recommended shelf life, the guidance may be inapplicable. Hazardous waste classification under federal regulations (40 CFR Part 261 et seq) is dependent upon whether a material is a RCRA "listed hazardous waste" or has any of the four RCRA "hazardous waste characteristics." Refer to 40 CFR Part 261.33 to determine if a given material to be disposed of is a RCRA "listed hazardous waste"; information contained in Section 15 of this MSDS is not intended to indicate if the product is a "listed hazardous waste." RCRA Hazardous Waste Characteristic. There are four characteristics defined in 40 CFR Section 261.21-61.24: Ignitability, Corrosivity, Reactivity, and Toxicity. To determine Ignitability, See Section 9 of this MSDS (flash point). For Corrosivity, see sections 9 and 14 (pH and DOT corrosivity). For Reactivity, see Section 10 (incompatible materials). For Toxicity, see Section 2 (composition). Federal regulations are subject to change. State and local requirements, which may differ from or be more stringent than the federal regulations, may also apply to the classification of the material to be disposed. The company encourages the recycle, recovery and reuse of materials, where permitted, as an alternate to disposal as a waste. The company recommends that organic materials classified as RCRA hazardous wastes to be disposed of by thermal treatment or incineration at EPA approved facilities. The company has provided the foregoing for information only; the person generating the waste is responsible for determining the waste classification and disposal method.

14. **TRANSPORT INFORMATION**

This section provides basic shipping classification information. Refer to appropriate transportation regulations for specific requirements.

USDOT Proper Shipping Name: Ferric Chloride Solution  
Hazard Class: 8  
Packing Group: III  
UN/ID Number: UN2582  
Transport Label Required: Corrosive  
Hazardous Substances:

<b><u>Component / CAS No.</u></b>	<b><u>Reportable Quantity of Product (lbs.)d</u></b>
Ferric Chloride	2381 (RQ-1000)

TRANSPORT CANADA  
Proper Shipping Name: Ferric Chloride Solution  
Hazard Class: 8  
Packing Group: III  
UN/ID Number: UN2582  
Transport Label Required: Corrosive

ICAO/IATA  
Proper Shipping Name: Ferric Chloride Solution  
Hazard Class: 8  
Packing Group: III  
UN/ID Number: UN2582  
Transport Label Required: Corrosive  
Packing Instructions/Maximum Net Quantity Per Package  
Passenger Aircraft-  
Cargo Aircraft-

IMO  
Proper Shipping Name: Ferric Chloride Solution  
Hazard Class: 8  
Packing Group: III  
UN/ID Number: UN2582  
Transport Label Required: Corrosive

**15. REGULATORY INFORMATION**  
**INVENTORY INFORMATION**

USA : All components of this product are included on the TSCA Chemical Inventory or are not required to be listed on the TSCA Chemical I inventory.

Canada: All components of this product are included on the Domestic Substances List (DSL) or are not required to be listed on the DSL.

European Union (EU): All components of this product are included on the European Inventory of Existing Chemical Substances (EINECS) or are not required to be listed on EINECS.

Australia: All components of this product are included in the Australian Inventory of Chemical Substances(AICA).

China: All components of this product are included on the Chinese inventory or are not required to be listed on the Chinese Inventory.

Japan: All components of this product are included on the Japanese (ENCS) inventory or are not required to be listed on the Japanese Inventory.

Korea: All components of this product are included on the Korean (ECL) inventory or are not required to be listed on the Korean inventory

Philippines: All components of this product are included on the Philippine (PICCS) inventory or are not required to be listed on the Philippine inventory.

**OTHER ENVIRONMENTAL INFORMATION**

The following components of this product may be subject to reporting requirements pursuant to Section 313 of CERCLA (40 CFR 372), Section 12(b) of TSCA, or may be subject to release reporting requirements (40 CFR 307, 40 CFR 311, etc.) See Section 13 for information on waste classification and waste disposal of this product. This product does not contain any components regulated under sections of the EPA.

<u>Component:</u>	<u>CAS#</u>	<u>Weight %</u>	<u>TPQ (lbs)</u>	<u>RQ(lbs)</u>	<u>S313</u>	<u>TSCA 12B</u>
Ferric Chloride	7705-08-0	38-42%	None	1000	No	No
Hydrochloric Acid	7647-01-0	<0.5%	500	5000	Yes	No

Product Classification under section 311 of SARA
Acute (Y)

**16. OTHER INFORMATION**

	<b>HEALTH</b>	<b>FLAMMABILITY</b>	<b>REACTIVITY</b>
NFPA	3	0	1
HMIS	3	0	1

REASON FOR ISSUE: New Format

**OTHER INFORMATION**

Reasonable care has been taken in the preparation of this information, but the manufacturer makes no warranty of merchantability or any other warranty, expressed or implied, with respect to this information. The manufacturer makes no representations and assumes no liability for any direct, incidental or consequential damages resulting from its use. Recipients are advised to confirm in advance of need that the information is current, applicable, and suitable to their circumstances. The information accumulated herein is believed to be accurate but is not warranted to be whether originating with the company or not. This information is for the specific material described only and may not be valid if the material is used in combination with any other materials or in any process. The user is responsible to determine the completeness of the information and suitability for the user's own particular use. The knowledge and belief of the company that the information is accurate and reliable as of the date indicated but the company makes no express or implied warranty of merchantability. The company makes no express or implied warranty of fitness for a purpose for the material or for the information.