

**Section 1 Chemical Product and Company Identification**

**Product Identifier** GPC® Calibrated Ferric Chloride  
**Product Number** IR-CHE7303  
**General Use** Etching solution for engraving copper and brass  
**Company Address** UEI Systems®, a UEI Group Company  
 9090 Nieman Road  
 Overland Park, KS 66214 USA  
**Phone** +1 800 221 9059 or +1 913 541 0503  
**Emergency Contact Number** CHEMTREC – Available 24 hours/day, 7 days/week  
 Domestic North America: +1 800 424 9300  
 International: +1 703 527 3887

**Section 2 Hazards Identification**

**GHS Classification**

Hazard Class	Hazard Category	Route of Exposure
Corrosive to metals	1	–
Skin Irritation	2	–
Serious Eye Damage	1	–

**GHS Labeling**

**Contains** Ferric Chloride (7705-08-0) Hydrochloric Acid (7647-01-0)



**Danger**

**Hazard Statements** May be corrosive to metals  
 Causes skin irritation  
 Causes serious eye damage

**Precautionary Statements** Keep only in original container  
 Wash skin thoroughly after handling  
 Wear protective gloves/protective clothing/eye protection/face protection

**Response** **If On Skin** Wash with plenty of soap and water  
**If In Eyes:** Rinse cautiously with water for several minutes.  
 Remove contact lenses, if present and easy to do. Continue rinsing.  
 Immediately call a **Poison Center** or doctor/ physician.  
**If Skin Irritation Occurs:** Get medical advice/attention. Take off contaminated clothing and wash before reuse. Absorb spillage to prevent material damage.

**Storage** Store in corrosive resistant container with a resistant inner liner.

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

**Section 3 Hazardous Ingredients / Identity Information**

Hazardous Components	CAS No.	%
Ferric Chloride	7705-08-0	20–40
Hydrochloric Acid	7647-01-0	<1
Organic Acids	NA	<1
Copper	7440-50-8	<1

**Section 4 First Aid Measures**

In all cases, call a physician immediately.

**Inhalation** If breathed in, move person into fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen.

**Skin Contact** Wash off with soap and plenty of water.

**Eye Contact** Immediately flush eyes with large amounts of water for at least 15 minutes. Continue rinsing eyes during transport to hospital.

**Ingestion** Do **not** induce vomiting. Rinse mouth with water. Never give anything by mouth to an unconscious person.

**Acute and Delayed Symptoms** The most important known symptoms and effects are described in Section 2 and/or Section 11.

**Section 5 Firefighting Measures**

**Extinguishing Media** Use water spray, alcohol-resistant foam, dry chemical, or carbon dioxide

**Flammable/Combustible Properties** Hydrogen Chloride gas

**Firefighting Equipment/Instructions** Wear self-contained breathing apparatus for firefighting, if necessary

**Section 6 Accidental Release Measures**

**Personal Precautions** Wear respiratory protection. Avoid dust formation. Avoid breathing vapors, mist or gas. Evacuate personnel to safe areas. Avoid breathing dust. For personal protection, see Section 8.

**Environmental Precautions** Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Do not discharge into the environment.

**Methods for Cleaning Up** Soak up with inert absorbent material and dispose as hazardous waste. Keep in suitable, closed containers for disposal.

**Section 7 Handling and Storage**

**Handling Precautions** Avoid contact with skin and eyes. Avoid inhalation of vapor or mist.

**Storage Requirements** Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.

**Section 8 Component Exposure Limits**

Control Parameters	Hazardous Components	CAS No.	%	OSHA (PEL/TWA)	ACGIH TLV
	Ferric Chloride	7705-08-0	20–40	1 mg/m <sup>3</sup>	1 mg/m <sup>3</sup>
	Hydrochloric Acid	7647-01-0	<1	5 ppm (ceiling)	5 ppm (ceiling)

## Section 8 Component Exposure Limits, continued

<b>Appropriate Engineering Controls</b>	Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.
<b>Eye/Face Protection</b>	Wear face shield and safety glasses
<b>Skin Protection</b>	Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.
<b>Personal Protection</b>	Wear complete body suit protecting against chemicals. The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.
<b>Respiratory Protection</b>	Where risk assessment shows air-purifying respirators are appropriate, use a full-face particle respirator type N100 (US) or type P3 (EN 143) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator.
<b>Control of Environmental Exposure</b>	Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Do not discharge into the environment.

## Section 9 Physical and Chemical Properties

<b>Appearance/Odor</b>	Liquid/reddish brown	<b>Odor Threshold</b>	No data
<b>pH</b>	<2	<b>Freezing Point</b>	6–28° F (-14 – -2° C)
<b>Boiling Point Range</b>	225–280° F° (107–138° C)	<b>Solubility (H<sub>2</sub>O)</b>	No data
<b>Specific Gravity</b>	(Water = 1) 1.25 to 1.41	<b>Density</b>	68 lbs/ft <sup>3</sup> at 68°F (20°C)
<b>Octanol/H<sub>2</sub>O Coefficient</b>	No data	<b>Evaporation Rate</b>	>1
<b>Molecular Weight</b>	No data	<b>Decomposition Temperature</b>	No data
<b>Auto Ignition</b>	No data	<b>Lower Flammability Limit</b>	No data
<b>Flash Point</b>	No data	<b>Upper Flammability Limit</b>	No data
<b>Vapor Density</b>	No data	<b>Vapor Pressure</b>	No data
<b>VOC</b>	No data	<b>Flammability Class</b>	No data
<b>Viscosity</b>	No data		

## Section 10 Chemical Stability and Reactivity

<b>Reactivity</b>	No data available
<b>Chemical Stability</b>	Stable under recommended storage conditions
<b>Possibility of Hazardous Reactions</b>	No data available
<b>Conditions to Avoid</b>	No data available
<b>Incompatibility</b>	Strong oxidizing agents, Potassium, Alkali metals, Allyl Chloride, Ethylene Oxide, Styrene and bases
<b>Hazardous Decomposition/By-Products</b>	Decomposes above 392° F (200° C). This produces toxic and corrosive gases including chlorine and hydrogen chloride. Decomposes on contact with water. This produces hydrogen chloride.

**Section 11 Toxicological Information**

<b>Acute Toxicity</b>	
<b>Acute Oral LD50</b>	Mouse – 1,300 mg/kg
<b>Acute Inhalation</b>	No data available
<b>Acute Dermal LD50</b>	Rabbit – >2,000 mg/kg (OECD test guideline 402)
<b>Skin Corrosion/Irritation</b>	Rabbit Result: Irritating to skin
<b>Serious Eye Damage/Eye Irritation</b>	Rabbit Result: Severe eye irritation
<b>Respiratory/Skin Sensitization</b>	No data available
<b>Germ Cell Mutagenicity</b>	No data available
<b>Carcinogenicity</b>	No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC, ACGIH, NTP or OSHA.
<b>Reproductive Toxicity</b>	No data available
<b>Specific Target Organ Effects</b>	The substance or mixture is classified as specific target organ toxicant, single exposure, category 3 with respiratory tract irritation.
<b>Aspiration Hazard</b>	No data available

**Section 12 Ecological Information**

<b>Ecotoxicity</b>												
<b>Toxicity to Fish</b>	<table border="1"> <thead> <tr> <th>Component</th> <th>Species</th> <th>Exposure Time</th> <th>LC50/EC50/IC50</th> </tr> </thead> <tbody> <tr> <td rowspan="2">Ferric Chloride (7705-08-0)</td> <td><i>Pimephales promelas</i> (fathead minnow)</td> <td>96 hrs</td> <td>LC50 21.84 mg/l</td> </tr> <tr> <td><i>Daphnia magna</i> (water flea)</td> <td>48 hrs</td> <td>EC50 9.6 mg/l</td> </tr> </tbody> </table>	Component	Species	Exposure Time	LC50/EC50/IC50	Ferric Chloride (7705-08-0)	<i>Pimephales promelas</i> (fathead minnow)	96 hrs	LC50 21.84 mg/l	<i>Daphnia magna</i> (water flea)	48 hrs	EC50 9.6 mg/l
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<b>Persistence/Degradability</b>	No data available											
<b>Bioaccumulative Potential</b>	No data available											
<b>Mobility in Soil</b>	No data available											
<b>Results of PBT and vPvB Assessment</b>	PBT/vPvB assessment not available as chemical safety assessment not required/not conducted											
<b>Other Adverse Effects</b>	An environmental hazard cannot be excluded in the event of unprofessional handling or disposal. Toxic to aquatic life.											

**Section 13 Disposal Considerations**

<b>Waste Treatment Methods</b>	Dispose in accordance with federal, state, provincial, and local regulations. Regulations may also apply to empty containers. The responsibility for proper waste disposal lies with the owner of the waste.
<b>Packaging Disposal Instructions</b>	Dispose as an unused product

**Section 14 Transportation Information**

<b>DOT (US)</b>		<b>IMDG</b>		<b>IATA</b>	
<b>UN number</b>	2582	<b>UN number</b>	2582	<b>UN number</b>	2582
<b>Class</b>	8	<b>Class</b>	8	<b>Class</b>	8
<b>Packing group</b>	III	<b>Packing group</b>	III	<b>Packing group</b>	III
<b>Proper shipping name</b>		<b>EMS-No</b>	F-A, S-B	<b>Proper shipping name</b>	
Ferric Chloride, Solution		<b>Proper shipping name</b>		Ferric Chloride, Solution	
<b>Reportable Quantity (RQ)</b>	1,000 lbs	<b>Proper shipping name</b>			
		Ferric Chloride, Solution			
<b>Poison Inhalation Hazard</b>	No	<b>Marine pollutant</b>	Yes		

**Section 15 Regulatory Information**

<b>U.S. TSCA - Inventory Status</b>	All ingredients of this product are listed or are excluded from listing on the U.S. Toxic Substances Control Act (TSCA) Chemical Substance Inventory.
<b>Canada DSL Inventory Status</b>	All ingredients of this product are listed or are excluded from listing on the Domestic Substances List (DSL), the Non-Domestic Substances List (NDSL) or exempt.
<b>CERCLA/SARA Section 302</b>	Ferric Chloride, solution – 1,000 lbs; Hydrochloric Acid – 5,000 lbs
<b>SARA 311/312 Hazards</b>	Immediate (acute) and long-term (chronic) health hazard
<b>CERCLA/SARA Section 313</b>	Not listed

	<b>Right To Know Components</b>	<b>CAS-No</b>	<b>Revision Date</b>
<b>Pennsylvania</b>	Ferric Chloride	7705-08-0	1993-04-24
<b>New Jersey</b>	Ferric Chloride	7705-08-0	1993-04-24
<b>Massachusetts</b>	Ferric Chloride	7705-08-0	1993-04-24
<b>California Prop 65</b>	This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.		

## Section 16

## Other Information

UEI Systems® provides the information contained herein in good faith. It is believed to be correct. However it is not all-inclusive and should be used only as a guide. Individuals receiving this information must exercise their independent judgement in determining its appropriateness for a particular purpose. UEI Systems shall not be held liable for any damage resulting from handling or from contact with this product. All information appearing herein is based upon data obtained from the manufacturer and/or recognized technical sources.

**Abbreviations** PEL Permissible Exposure Limit  
TLV Threshold Limit Value

- End Notes**
1. SARA - Signed into law in 1986, the Superfund Amendments and Reauthorization Act (SARA) is an extension of CERCLA, and is intended to encourage and support local and state emergency planning efforts. SARA provides citizens and local governments with information about potential chemical hazards, and calls for facilities that store hazardous materials to provide officials and citizens with data on the type and amount on hand at specific locations. This field states whether a material is listed or not listed in section 372.65 of SARA. EHS - This states if a material is listed or not listed in Appendix B to part 355, the SARA Extremely Hazardous Substances (EHS) section. RQ is the reportable quantity. TPQ is the Threshold Planning Quantity.
  2. RCRA - The Resource Conservation and Recovery Act enacted in 1976 and subsequently amended, controls solid-waste disposal and encourages recycling. This states whether a material is listed or not listed under this regulation. If listed the Hazardous Waste Number and waste characterization assigned by RCRA is also provided.
  3. CERCLA - Enacted in 1980 and amended thereafter, the Comprehensive Environmental Response, Compensation, and Liability Act provides for identification and cleanup of hazardous materials released on land, into the air, waterways, and groundwater. It covers areas affected by newly released materials and older leaking or abandoned dump sites. This states whether a material is listed or not listed in CERCLA Table 302.4. If listed the section(s) that it is listed under and the Reportable Quantity (RQ) are also provided.
  4. TSCA - The Toxic Substances Control Act controls the exposure to and use of raw industrial chemicals not subject to other laws. This states whether the chemical is listed or not listed under this regulation.

**Revision** 22 October 2015  
**Supersedes** 12 May 2015