

# Material Safety Data Sheet

<b>Revision Date</b> August 14, 2012	<b>Prepared by</b> Patti Rogers, MH	<b>Technical Information</b> 1-800-201-8822 or <a href="mailto:support@mgchemicals.com">support@mgchemicals.com</a>
<b>Head Office</b> 9347 - 193 Street, Surrey, B.C., V4N 4E7		<b>Emergency</b> Phone Canutech (613) 996-6666 Collect 24 hrs

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## Section 1: Product Identification

**MSDS Code: 415 - liquid**

**Name: Ferric Chloride**

**Related Part Numbers: 415-500ML; 415-1L; 415-4L; 415-20L**

Use: For etching printed circuits boards.

## Section 2: Hazardous Ingredients

CAS#	Chemical Name	Percentage by weight	ACGIH TWA	Osha Pel	Osha Stel
7705-08-0	Ferric Chloride	40%	1mg/m <sup>3</sup>	N/e	N/e
7647-01-0	Hydrochloric acid	1%	5ppm	N/e	N/e

## Section 3: Hazards Identification

**WHMIS Codes:** E

**NFPA Ratings:** Health 2 Flammability 0 Reactivity 2

**HMIS Ratings:** Health 2 Flammability 0 Physical Hazard 2

**Eyes:** Corrosive. Contact of liquid will cause severe eye burns, and corneal damage.

**Skin:** Corrosive. May cause severe skin irritation with possible burns.

**Inhalation:** May cause irritation mucous membranes and respiratory tract.

**Ingestion:** May be corrosive to the gastrointestinal tract. May cause chemical burns in the mouth, throat, esophagus, and stomach.

**Chronic:** Repeated exposure may cause an increased body load of iron, with possible chronic systemic effects.

## Section 4: First Aid Measure

**Eyes:** Remove contact lenses. Flush with water or saline for 20 minutes. Get medical aid.

**Skin:** Wash skin with large quantities of soap and water. Get medical aid if symptoms persist.

**Inhalation:** Immediately remove from exposure to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical aid.

**Ingestion:** Do not induce vomiting. If conscious, give 1-2 glasses of water. Get medical aid.

## Section 5: Fire Fighting Measures

**Autoignition Temperature:** N/a **Flash Point:** N/a **LEL / UEL:** N/a

**Extinguishing Media:** Water spray, foam, dry chemicals and carbon dioxide.

**General Information:** Will not burn.

## Section 6: Accidental Release Measures

**Spill Procedure:** Provide adequate ventilation. Wear appropriate personal protection. Sprinkle absorbent compound onto spill, then sweep into a plastic container. Wipe up further residue with paper towel and place into container. Wash spill area with soap and water.

## Section 7: Handling and Storage

**Handling:** Wash thoroughly after handling. Avoid contact with eyes, skin, and clothing. Do not ingest or inhale. Do not expose container to heat or flame.

**Storage:** Keep from freezing. Store in a cool, dry, well-ventilated area, away from incompatible substances.

## Section 8: Exposure Controls

**Routes of entry:** Eyes, ingestion, inhalation, and skin.

**Ventilation:** Use adequate general or local exhaust ventilation to keep airborne concentrations below exposure limits.

**Personal Protection:** Wear appropriate protective eyeglasses or chemical safety goggles. Wear appropriate protective clothing to prevent skin contact. Use a NIOSH approved respirator when necessary.

## Section 9: Physical and Chemical Properties

<b>Physical State:</b>	Liquid	<b>Odor:</b>	Slight iron/acid	<b>Solubility:</b>	Soluble in water	<b>Evaporation Rate:</b>	1.00
<b>Boiling Point:</b>	106°C	<b>Specific Gravity:</b>	1.26	<b>Vapor Pressure:</b>	40 @35°C	<b>Vapor Density:</b>	1.00
						<b>pH:</b>	<1

## Section 10: Stability and Reactivity

<b>Stability:</b>	Stable at normal temperatures and pressures.
<b>Conditions to avoid:</b>	Incompatible materials.
<b>Incompatibilities:</b>	Alkalis, oxidizers, corrosive to metals.
<b>Polymerization:</b>	Will not occur.
<b>Decomposition:</b>	Prolonged contact with metals may produce flammable hydrogen gas.

## Section 11: Toxicological Information

<b>Sensitization:</b> (effects of repeated exposure)	No		
<b>Carcinogenicity:</b> (risk of cancer)	No		
<b>Teratogenicity:</b> (risk of malformation in an unborn fetus)	No		
<b>Reproductive Toxicity (risk of sterility):</b>	TDL <sub>0</sub> : 29mg/kg (rat)		
<b>Mutagenicity: (risk of heritable genetic effects):</b>	No		
<b>Lethal Exposure Concentrations:</b>	<b>Ingestion (LD50):</b> 4500 mg/kg (rat)	<b>Inhalation (LC50):</b> N/e	<b>Skin (LD50):</b> N/e

## Section 12: Ecological Information

**General Information:** Avoid runoff into storms and sewers, which lead into waterways. Water runoff can cause environmental damage.

**Environmental Impact Data:** (percentage by weight)

**CFC:** 0      **HFC:** 0      **Cl.Solv:** 0      **VOC:** 0      **HCFC:** 0      **ODP:** 0

### Section 13: Disposal Information

**General Information:** Dispose of in accordance with all local, provincial, state, and federal regulations. Water runoff can cause environmental damage.

### Section 14: Transportation Information

**Ground Canada:** (all sizes 4L or smaller)

Classified as **Consumer Commodity**. Refer to **TDG regulations** (Canadian Transportation of Dangerous Goods regulations).

**Recommend Shipper be trained and certified.**

**Ground USA:** - (all sizes 4L or smaller)

Classified as **ORM-D**. Refer to USA CFR 49 Regulations.

**Recommend Shipper be trained and certified.**

**Ground Canada and USA:** - (all sizes larger than 4L)

**Shipper must be trained and certified. Refer to CFR 49 (USA), and TDG regulations (Canada).**

Shipping Name: **FERRIC CHLORIDE SOLUTION**, UN number: **2582**, Class: **8**, Packing Group: **III**.

Recommend using original MG Chemicals UN Certified outer cartons. Tape all seams on the carton. Hazard Label required – CORROSIVE. A double arrow orientation label is required and is already printed on the original outer carton.

**Air:** (all sizes 1L or smaller)

**Shipper must be trained and certified. Refer to IATA Dangerous Goods Regulations.**

Shipping Name: **FERRIC CHLORIDE SOLUTION**, UN number: **2582**, Class: **8**, Packing Group: **III**.

For IATA, follow packing instructions Y818.

**Air:** (all sizes 4L and larger )

**Shipper must be trained and certified. Refer to IATA Dangerous Goods Regulations.**

Recommend: **DO NOT SHIP BY AIR**.

**Sea:**

**Shipper must be trained and certified. Refer to IMDG regulations.**

Shipping Name: **FERRIC CHLORIDE SOLUTION**, UN number: **2582**, Class: **8**, Packing Group: **III**.

### Section 15: Regulatory Information

**This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all of the information required by the Controlled Products Regulations. SARA (Superfund Amendments and Reauthorization Act of 1986, USA, 40 CFR 372.4)**

This product contains hydrochloric acid (CAS# 7647-01-0) with a reportable quantity of 5,000 lb and ferric chloride (CAS# 7705-08-0) with a reportable quantity of 1000 lb under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA)

**EPCRA (Emergency Planning and Right to Know Act, USA, 40 CFR 372.45)**

This product contains hydrochloric acid (CAS# 7647-01-0), which, if an aerosol form, is subject to the reporting requirements of section 313 Title III of the SARA of 1986 and 40 CFR part 372.

**TSCA (Toxic Substances Control Act of 1976, USA)**

All substances are TSCA listed.

**CAA (Clean Air Act, USA)**

This product does not contain any class 1-ozone depletors.

This product does not contain any class 2-ozone depletors.

This product does not contain any chemicals listed as hazardous air pollutants.

**California Proposition 65 (Chemicals known to cause cancer or reproductive toxicity, May 1, 1997 revision, USA)**

This product does not contain any chemicals listed.

**Health Canada**

Labeling and containers used in this product are listed in compliance with Consumer Chemicals and Container



regulations.

**Environment Canada**

Chemicals in this product are listed on the Domestic Substances List in the Canadian Environmental Protection Act

This product does not contain any ozone depleting substances.

**Industry and Science Canada**

Labeling, product identity, net quantity declaration, minimum printing type size heights, and packaging of this product is in compliance with the Consumer Packaging and Labeling Act and Regulations. This product is not slack filled in accordance to chapter 4 prohibitions.

**RoHS** (The restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2004).

This product is RoHS compliant.

## Section 16: Other Information

**Definitions:** N/a = not applicable, n/e = not established

**Disclaimer:** This material safety data sheet is provided as an information resource only. M.G. Chemicals believes the information contained herein is accurate and compiled from reliable sources. It is the responsibility of the user to verify its validity. The buyer assumes all responsibility of using and handling the product in accordance with federal, state, and local regulations.