



MATERIAL SAFETY DATA SHEET

1. Product and Company Identification

Material Name FE-100L
Revision Date 12/21/2011
Version # 4
Product Use Iron control.
Manufacturer / Supplier FRAC TECH SERVICES LLC
2500 HWY 62 West
Chickasha, OK 73018
US
General information: 1-405-222-2300
Emergency 24 Hour Emergency: INFOTRAC: 1-800-535-5053

2. Hazards Identification

Physical State Solid
Appearance Clear to hazy, colorless liquid.
Emergency Overview DANGER!
Causes eye burns. Causes skin irritation. Mist or vapor irritating to eyes and respiratory tract.
OSHA regulatory status This product is hazardous according to OSHA 29 CFR 1910.1200.
Routes of exposure Inhalation. Eyes. Skin.
Eyes Causes eye burns.
Skin Causes skin irritation.
Inhalation Causes respiratory tract irritation.
Ingestion May cause digestive tract irritation.
Potential environmental effects The product may affect the acidity (pH-factor) in water with risk of harmful effects to aquatic organisms.

3. Composition / Information on Ingredients

Components	CAS #	Percent
Citric acid	77-92-9	<55

Composition comments All concentrations are in percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.

4. First Aid Measures

First aid procedures

Eye Contact Immediately flush with plenty of water for at least 15 minutes. If easy to do, remove contact lenses. Call a physician or poison control center immediately. In case of irritation from airborne exposure, move to fresh air. Get medical attention if symptoms persist.
Skin Contact Immediately flush with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention. Wash contaminated clothing before reuse. Destroy or thoroughly clean contaminated shoes.
Inhalation Move to fresh air. Treat symptomatically. Get medical attention if symptoms persist.
Ingestion Seek medical advice.
Notes to physician Not available.

5. Fire Fighting Measures

Flammable Properties No unusual fire or explosion hazards noted.

Extinguishing media

Suitable extinguishing media	Water. Water fog. Foam. Dry chemical powder. Carbon dioxide (CO2).
Unsuitable extinguishing media	Not available.
Specific Hazards arising from the Chemical	Not available.

Firefighting equipment / instructions

Self-contained breathing apparatus and full protective clothing must be worn in case of fire.

Specific Methods

Not available.

Hazardous combustion products

Carbon oxides.

6. Accidental Release Measures**Personal precautions**

Wear appropriate personal protective equipment (See Section 8).

Methods for cleaning up

Absorb spill with vermiculite or other inert material, then place in a container for chemical waste for proper disposal.

Large Spills: Flush area with water. Prevent runoff from entering drains, sewers, or streams. Dike for later disposal.

7. Handling and Storage**Handling**

Do not get in eyes and avoid contact with skin and clothing. Avoid breathing material. Do not taste or swallow. Use only with adequate ventilation. Wash thoroughly after handling.

Storage

Keep container tightly closed. Store away from incompatible materials, such as strong bases and oxidizers (See Section 10).

8. Exposure Controls / Personal Protection**Occupational exposure limits****US. ACGIH Threshold Limit Values**

Components	TWA		STEL	
	ppm	mg/m3	ppm	mg/m3
Citric acid	Not available.	Not available.	Not available.	Not available.

US. OSHA Table Z-1 Limits for Air Contaminates (29 CFR 1910.1000)

Components	PEL	
	ppm	mg/m3
Citric acid	Not available.	Not available.

Canada. Alberta OELs (Occupational Health Safety Code, Schedule 1, Table 2)

Components	TWA		STEL	
	ppm	mg/m3	ppm	mg/m3
Citric acid	Not available.	Not available.	Not available.	Not available.

Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended)

Components	TWA		STEL	
	ppm	mg/m3	ppm	mg/m3
Citric acid	Not available.	Not available.	Not available.	Not available.

Canada. Ontario OELs. (Ministry of Labor - Control of Exposure to Biological or Chemical Agents) Components

Components	TWA		STEL	
	ppm	mg/m3	ppm	mg/m3
Citric acid	Not available.	Not available.	Not available.	Not available.

Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment) Components

Components	TWA		STEL	
	ppm	mg/m3	ppm	mg/m3
Citric acid	Not available.	Not available.	Not available.	Not available.

Mexico. Occupational Exposure Limit Values

Components	TWA		STEL	
	ppm	mg/m3	ppm	mg/m3
Citric acid	Not available.	Not available.	Not available.	Not available.

Engineering controls

Ensure adequate ventilation, especially in confined areas.

Personal protective equipment

Eye / face protection

Wear safety glasses with side shields (or goggles) and a face shield. Wear a full-face respirator, needed.

Skin protection

Wear chemical-resistant gloves, footwear and protective clothing appropriate for risk of exposure. Contact glove manufacturer for specific information.

Respiratory protection

If engineering controls do not maintain airborne concentrations below recommended exposure limits (where applicable) or to an acceptable level (in countries where exposure limits have not been established), an approved respirator must be worn. In the United States of America, if respirators are used, a program should be instituted to assure compliance with OSHA 29 CFR

1910.134. Respirator type: Air-purifying respirator with an appropriate, government approved (where applicable), air-purifying filter, cartridge or canister.

General hygiene consideration

Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

9. Physical and Chemical Properties

Appearance:	Clear to hazy, colorless liquid.
Color	Colorless.
Odor	Slight.
Odor threshold	Not available.
Physical State	Liquid
Form	Clear liquid.
pH	2 - 3 1%v/v
Melting point	Not available.
Freezing point	8 °F (-13.3 °C)
Boiling point	235 °F (112.8 °C)
Flash point	Not available.
Evaporation rate	Not available.
Flammability limits in air, upper, % by volume	Not available.
Flammability limits in air, lower, % by volume	Not available.
Vapor pressure	Not available.
Vapor density	Not available.
Specific Gravity	1.77 (25 °C)
Solubility (water)	Complete.
Partition coefficient (n-octanol/water)	Not available.
Auto-ignition temperature	Not available.
Decomposition temperature	Not available.
Bulk Density	9.82 lb/gal
VOC	Not available.
Viscosity	Not available.
Percent volatile	Not available.

10. Chemical Stability Reactivity Information

Chemical Stability	Material is stable under normal conditions.
Conditions to avoid	Contact with metals.
Incompatible material	Strong oxidizing agents. Strong bases. Attacks copper, aluminum, zinc and their alloys.
Hazardous decomposition products	No hazardous decomposition products are known.
Possibility of hazardous reaction	Hazardous polymerization does not occur.

11. Toxicology Information

Toxicological Data

Components

Citric acid

Test Results

Acute Oral LD50 Mouse: 5040 mg/kg
Acute Oral LD50 Rat: 6730 mg/kg
Acute Oral LD50 Rat: 3 g/kg
Acute Other LD50 Mouse: 42 mg/kg
Acute Other LD50 Rabbit: 330 mg/kg
Acute Other LD50 Rat: 883 mg/kg

Sensitization

No sensitizing effects known.

Carcinogenicity

Citric acid

This product is not considered to be a carcinogen by IARC, ACGIH, NTP, or OSHA.

Epidemiology

Not available.

Mutagenicity

Not available.

Reproductive effects

Not available.

Teratogenicity

Not available.

Further Information

Causes eye burns. Causes skin irritation. Mist or vapor irritating to eyes and respiratory tract.

12. Ecological Information

Ecotoxicological data

Components

Citric acid

Test Results

Not available.

Ecotoxicity

The product may affect the acidity (pH-factor) in water with risk of harmful effects to aquatic organisms..

Persistence and degradability

Not available.

Bioaccumulation / Accumulation

Not available.

Mobility in environmental media

Not available.

Partition coefficient (n-octanol/water)

Not available.

13. Disposal Considerations

Waste codes

Not available.

Disposal instructions

Dispose of contents/container in accordance with local/regional/national/international regulations. When this product as supplied is to be discarded as waste, it may meet the definition of a RCRA waste under 40 CFR 261.

Contaminated packaging

Since emptied containers may retain product residue, follow label warnings even after container is emptied.

14. Transport Information**DOT****UN number****Proper shipping name** Not regulated as dangerous goods.**Hazard class****Packing Group****Labels required****DOT Reportable Quantity:** Not available.**Additional information****Special provisions****Packaging exceptions****Packaging non bulk****Packaging bulk****ERG number****IATA****UN number****Proper shipping name** Not regulated as dangerous goods.**Hazard class****Packing group****Additional information****ERG code****IMDG****UN number****Proper shipping name** Not regulated as dangerous goods.**Hazard class****Packing group****EmS No****IMDG Additional information:****15. Regulatory Information****US federal regulation**

This product is hazardous according to OSHA 29 CFR 1910.1200.
All components are on the U.S. EPA TSCA Inventory List.

CERCLA (Superfund) Reportable Quantity:

None

Superfund amendments and Reauthorization Act of 1986 (SARA)

Hazard Categories	Immediate Hazard:	Yes
	Delayed Hazard:	No
	Fire Hazard:	No
	Pressure Hazard:	No
	Reactivity Hazard:	No

TSCA Section 12(b) Export Notification(40 CFR 707, Subpt. D): Not regulated.

Section 302 extremely hazardous substance (40 CRF 355, Appendix A): No

Section 311/312 (40 CFR 370): No

Drug Enforcement Administration (DEA) (21 CFR 1308.11-15): Not controlled

Inventory Status

Country	Inventory Name	On Inventory *
Australia	AICS	Yes
Canada	DSL	Yes
Canada	NDSL	Yes
China	IECSC	Yes
Europe	EINECS	Yes
Europe	ELINCS	No
Japan	ENCS	Yes
Korea	ECL	Yes
New Zealand	NZI	Yes
United States / Puerto Rico	TSCA	Yes
Phillipines	PICCS	Yes

*A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s).

WHMIS Information

WHMIS status Controlled

WHMIS classification D2B - Other Toxic Effects-TOXIC

State Regulation

This product does not contain a chemical known to the State of California to cause cancer, birth defects or other reproductive harm.

16. Other Information

Further Information

HMIS® is a registered trade and service mark of the NPCA.

HMIS® ratings

Health: 2

Flammability: 1

Physical Hazard: 0

A HMIS® rating including an * indicates a chronic hazard.

NFPA ratings

Health: 2

Flammability: 1

Instability: 0

Disclaimer

Seller warrants that the goods described herein shall conform to the seller's published specifications for such good. The goods described herein and the information relating to them is intended for use solely by buyers that have the necessary industrial skill, competence and knowledge to use these goods for their intended purposes. Buyers should undertake sufficient examination, verification and testing prior to use of the goods to determine the suitability and utility of the goods for Buyer's particular purposes. Buyer acknowledges that the conditions of use and uses of the good(s) are beyond the control of Seller. SELLER DISCLAIMS ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR ANY PARTICULAR PURPOSES WHATSOEVER WITH RESPECT TO THE GOODS BEING SOLD HEREUNDER. BUYER ACKNOWLEDGES THAT THE GOODS ARE BEING SOLD "AS IS." BUYER FURTHER ACKNOWLEDGES THAT THERE HAVE BEEN NO REPRESENTATIONS CONCERNING THE GOODS BEING SOLD HEREUNDER OTHER THAN WHAT ARE EXPRESSLY SET FORTH AND CONTAINED HEREIN.

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