

# SAFETY DATA SHEET

## Section 1: Identification

Product Name: Iron + Micros  
Product Use: Liquid fertilizer mixture.  
Not recommended for: No available information.

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FOR CHEMICAL EMERGENCY:  
Call CHEMTREC, day or night  
(800) 424-9300, USA/Canada  
(703) 527-3887, International

## Section 2: Hazard(s) Identification

### GHS Ratings:

### GHS Hazards

### GHS Precautions

P264	Wash skin thoroughly after handling
P314	Get medical advice/attention if you feel unwell.
P501	Dispose of contents/container in accordance with local/regional/national/international regulations.

### Signal Word:

## Section 3: Composition/Information on Ingredients

Chemical Name	CAS number	Weight Concentration %
Ferrous sulfate heptahydrate	7782-63-0	30.00% - 40.00%
Citric acid, anhydrous	77-92-9	10.00% - 20.00%
Manganese sulfate, monohydrate	10034-96-5	5.00% - 10.00%
Copper sulfate, pentahydrate	7758-99-8	1.00% - 5.00%

## Section 4: First-Aid Measures

### **If inhaled**

Remove victim to fresh air and keep at rest in a position comfortable for breathing. If not breathing, if breathing is irregular, or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. If unconscious, place in recovery position and seek medical attention immediately. Maintain an open airway. If symptoms appear or you feel unwell, seek medical advice/attention immediately. Loosen tight clothing such as a collar, tie, belt or waistband. In case of decomposition products in a fire, symptoms may be delayed. The exposed person may need to be kept under medical surveillance for 48 hours.

**If in eyes**

Rinse continuously with water for several minutes, occasionally lifting the upper and lower eyelids. Remove contact lenses if present and easy to do, continue rinsing. Seek medical advice/attention immediately.

**If on skin (or hair)**

Remove immediately all contaminated clothing. Rinse skin with plenty of soap and water for several minutes. If irritation/rash develops or persists, seek medical advice/attention immediately. Wash contaminated clothing before reuse.

**If swallowed**

Seek immediate medical advice/attention. Call a poison control center or physician. Rinse mouth with water. Remove dentures, if any. Move victim to fresh air and keep at rest in a position comfortable for breathing. If the person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Do not induce vomiting unless directed to do so by medical personnel. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Never give anything by mouth to an unconscious person. If unconscious, place victim in recovery position and seek medical attention immediately. Maintain an open airway. Loosen tight clothing such as collar, tie, belt or waistband.

**Most important symptoms and effects, both acute and delayed**

The most important known symptoms and effects are described in section 11.

**Indication of any immediate medical attention and special treatment needed**

Provide general supportive measures and treat symptomatically. Symptoms may be delayed.

**General information**

Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Show this safety data sheet to the doctor in attendance.

## Section 5: Fire-Fighting Measures

**Suitable extinguishing media**

Water fog. Water spray. Dry chemical. Carbon dioxide (CO<sub>2</sub>). Foam.

**Unsuitable extinguishing media**

None known.

**Special hazards arising from the chemical(s)**

None known.

**Hazardous combustion products**

See section 10.

**Firefighting**

If evacuation of personnel is necessary, evacuate to an upwind area. Decontaminate personnel and equipment with a water wash-down after fire and smoke exposure.

**Fire fighting equipment**

Firemen and emergency responders: wear full turnout gear or Level A equipment, including positive-pressure, self-contained breathing apparatus (SCBA).

## Section 6: Accidental Release Measures

**Personal precautions, protective equipment and emergency procedures**

Keep unnecessary personnel away from the contaminated area. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Wear suitable protective clothing. For personal protection, see section 8.

**Small spills**

Ventilate the contaminated area. Wipe up with absorbent material or mix the appropriate sorbent into the spilled

material. Use an absorbent like sawdust for aqueous, waterborne, and solvent-borne coatings. Collect the saturated towels or sorbent and transfer into a covered container.

**Large spills**

Prevent this material from entering sewers and watercourses by diking or impounding the spilled material. Ventilate the contaminated area. Mix the appropriate sorbent into the spilled material. Use an absorbent like sawdust for aqueous, waterborne, and solvent-borne coatings. Collect the saturated sorbent and transfer it into a covered container.

Steel containers are acceptable for all acid-free wastes. Use suitable plastic containers for acid-bearing wastes. Dispose of the waste in compliance with all Federal, state, regional, and local regulations.

**Section 7: Handling and Storage**

**Precautions for safe handling**

Avoid inhalation of vapors/spray and contact with skin and eyes. Do not ingest. Use only with adequate ventilation.

Observe good industrial hygiene practices. Eating, drinking, and smoking should be prohibited in areas where this material is handled, stored, or processed. Workers should wash hands and face, before eating, drinking, and smoking. Remove contaminated clothing and protective equipment before entering eating areas.

**Conditions for safe storage, including any incompatibilities**

Prevent from freezing. Do not store above 120 F (49 C). Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see section 10) and food and drink.

**Section 8: Exposure Controls / Personal Protection**

Chemical Name / CAS No.	OSHA Exposure Limits	ACGIH Exposure Limits	Other Exposure Limits
Ferrous sulfate heptahydrate 7782-63-0	Not Established	Not Established	Not Established
Citric acid, anhydrous 77-92-9	TWA: 15 mg/m3 (Total dust), 5 mg/m3 (Respirable fraction)	Not Established	DFG MAKs: TWA: 4 mg/m3 (Total dust), 1.5 mg/m3 (Respirable fraction)
Manganese sulfate, monohydrate 10034-96-5	STEL: 5 mg/m3, ceiling (fume & manganese, elemental & inorganic compounds, as Mn); Vacated 1989 PEL: TWA = 1 mg/m3 (fume); STEL = 3 mg/m3 (fume)	TWA: 0.2 mg/m3 (fume and manganese, elemental & inorganic compounds, as Mn); Notice of Intended Change: 0.03 (respirable fraction) (fume & manganese, elemental & inorganic compounds, as Mn)	DFG MAKs: TWA: 0.5 mg/m3, Ceiling. Peak: 3 MAK, 15 minutes, avg value, 1-hr interval (fume)  NIOSH: TWA: 1 mg/m3 STEL: 3 mg/m3 IDHL: 500 mg/m3

Copper sulfate, pentahydrate 7758-99-8	TWA: 1 mg/m3 (dusts & mists), 0.1 mg/m3 (fume)	TWA: 1 mg/m3 (dusts & mists), 0.2 mg/m3 (fume)	NIOSH: TWA: 1 mg/m3 (dusts & mists), 0.1 mg/m3 (fume)  DFG MAKs: TWA: 1 mg/m3, Peak, 2MAK 15 minutes, avg value, 1-hr interval (copper and inorganic copper compounds); 0.1 mg/m3, Peak, 2MAK 15 minutes, avg value, 1-hr interval (fume)
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### Appropriate engineering controls

Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of the workday.

### Ventilation

Good general ventilation should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level.

### Personal protective equipment

#### Eye/face protection

Splash goggles are recommended. Avoid contact with eyes. If extra protection is required, wear a face shield over the splash goggles. Face shields are effective only if worn in addition to splash goggles.

#### Hand protection

Wear chemical-resistant gloves (butyl rubber or neoprene). Protective gloves should be inspected frequently and discarded when they exhibit cuts, tears, pinholes, or signs of excessive wear. Wash and dry hands after use.

#### Body protection

Wear appropriate clothing to prevent repeated or prolonged skin contact.

#### Respiratory protection

In case of insufficient ventilation, wear suitable respiratory equipment. Chemical respirator with organic vapor cartridge.

## Section 9: Physical and Chemical Properties

<p><b>Appearance:</b> Green liquid</p> <p><b>Odor:</b> Minimal odor</p> <p><b>Odor threshold:</b> No Data</p> <p><b>pH</b> 1.8 - 2.2</p> <p><b>Specific gravity:</b> 1.276</p> <p><b>Boiling point:</b> No Data</p> <p><b>Melting point/Freezing point:</b> No Data</p> <p><b>Flash Point:</b> No Data</p> <p><b>Flammability:</b> No Data</p>	<p><b>Explosive limits:</b> No Data</p> <p><b>Vapor pressure:</b> No Data</p> <p><b>Vapor density:</b> No Data</p> <p><b>Relative density:</b> No Data</p> <p><b>Solubility:</b> No Data</p> <p><b>Boiling range:</b> No Data</p> <p><b>Evaporation rate:</b> No Data</p> <p><b>Autoignition temperature:</b> No Data</p> <p><b>Decomposition temperature:</b> No Data</p>
<b>Viscosity:</b> No Data	

Partition coefficient (n- No Data  
octanol/water):

## Section 10: Stability and Reactivity

### Chemical stability

STABLE

### Incompatible materials

Citric acid when wet or in a solution is corrosive to brass, copper, zinc, aluminum and their alloys, lead, cast iron and steel (not stainless steel).

Metal nitrates

Oxidizing agents

Strong bases (sodium / potassium / barium hydroxides)

Alkalines

Phosphates

Powdered metals

Strong acids (hydrochloric, nitric, sulfuric, hydrobromic, hydroiodic, perchloric)

Strong oxidizing agents

### Hazardous decomposition

Acrid smoke

Carbon dioxide

Carbon monoxide

Irritating fumes

Copper oxides

Sulfur oxides

Manganese

Hazardous polymerization will not occur.

## Section 11: Toxicological Information

### Mixture Toxicity

Oral Toxicity LD50: 3,450mg/kg

### Component Toxicity

7782-63-0 Ferrous sulfate heptahydrate  
Oral LD50: 1,520 mg/kg (mouse)

7758-99-8 Copper sulfate, pentahydrate  
Oral LD50: 369 mg/kg (mouse)

### Likely routes of exposure

Inhalation      Skin contact      Eye contact      Ingestion

### Exposure may affect the following organs

Blood    Kidneys    Liver    Central Nervous System    Skin

### Effects of exposure

**Ingestion** Ingestion may cause gastrointestinal irritation. Symptoms can include nausea, diarrhea, vomiting, and abdominal pain.

**Skin contact** May cause irritation to the skin. Symptoms can include pain, itching and/or redness.

**Inhalation** May cause respiratory irritation. Symptoms can include sore throat, coughing, sneezing, and labored breathing.

**Eye contact** May cause eye irritation. Symptoms can include irritation, pain, watering and/or redness.

**Conditions aggravated**

No data available

**Carcinogenicity**

The following chemicals comprise 0.1% or more of this mixture and are listed and/or classified as carcinogens or potential carcinogens by NTP, IARC, OSHA, or ACGIH.

<u>CAS Number</u>	<u>Description</u>	<u>% Weight</u>	<u>Carcinogen Rating</u>
None			N/A

**Section 12: Ecological Information**

**Ecotoxicity**

No data available

**Persistence and degradability**

No data available

**Bioaccumulative potential**

No data available

**Mobility in soil**

No data available

**Other adverse effects**

No data available

**Section 13: Disposal Considerations**

**Disposal instructions**

Do not allow this material to drain into sewers/water supplies. All waste must be handled in accordance with local, state and federal regulations or with regulations of Canada and its Provinces. This product, if unaltered by use, may be disposed of by treatment at a permitted facility or as advised by your local hazardous waste regulatory authority.

**Waste from residues/unused products**

Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (refer to Disposal instructions).

**Contaminated packaging**

Empty containers should be taken to an approved waste handling site for recycling or disposal. Since emptied containers may retain product residue, follow label warnings even after container is emptied.

**Section 14: Transport Information**

<u>Agency</u>	<u>Proper Shipping Name</u>	<u>UN Number</u>	<u>Packing Group</u>	<u>Hazard Class</u>
DOT	Not regulated by DOT			

**Section 15: Regulatory Information**

**State of California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65): WARNING!**

This product contains the following chemicals which are listed by the State of California as carcinogenic or a reproductive toxin:

- None

The following chemicals are listed under Canadian NDSL

- None

<b>Section 16: Other Information</b>
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Reviewer Revision

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