Ferrous Sulfate Solution
SAFETY DATA SHEET

Section 1 – Product and Company Identification

Material Name: Ferrous Sulfate Solution

Manufacturer Information:
Affinity Chemical, LLC
PO Box 601298
Dallas, TX 75360
973-908-8053 (M-F, 8:00 AM -5:00 PM Eastern Time)

24 Hour Emergency Telephone:
Chemtrec 1-800-424-9300

Other Name(s): Ferrous Sulfate 5, Ferrous Sulfate 7

Product Usage:
Water treatment coagulant/flocculant, phosphate control, odor control, reducing agent

Section 2 – Hazard(s) Identification

Classification: Skin corrosive 1, Eye Damage 1 , Corrosion 1
Signal Word: **Danger**
Hazard Statements: Causes severe skin burns and eye damage ; Causes serious eye damage; May be corrosive to metals

Symbol(s):  Corrosion

Precautionary Statements:

Prevention:
Wash hands, along with any other body parts that may have been exposed, thoroughly after handling.
Wear protective gear to prevent contact with skin (Rubber gloves, aprons, slicker suit)
Wear eye protection/face protection (clear goggles and face shield)
Keep only in original container.

Response:
If on skin: Wash with plenty of soap and water.
If skin irritation occurs: Get medical advice/attention.
Refer to first-aid measures (section 4) for any specific treatment
Take off contaminated clothing and wash it before reuse.
If in eyes: Rinse cautiously with water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
If eye irritation persists: get medical attention
Absorb spillage to prevent material damage.

Storage: Store in compatible containers such as polypropylene , polyethylene, PVC, or 316 SS

Other Hazards: Ingestion or inhalation not recommended and could present hazards not otherwise classified.

Section 3 – Composition/Information on Ingredients

Common Name(s): ferrous sulfate
Chemical family: inorganic, salt

Components	CAS#	Weight %
Ferrous sulfate (as anhydrous)	7720-78-7	<20%
Sulfuric Acid	7664-93-9	<0.3%
Water (including waters of hydration)	7732-18-5	>80%

Section 4 – First-Aid Measures

Skin/Eye Contact: For skin, immediately remove contaminated clothes under safety shower. Flush skin with running water for at least 15 minutes. Launder clothes before reuse. For eyes, flush carefully in eye wash for several minutes;remove contact lenses if present and easy to do;cautiously flush person's eyes with running water for at least 15 minutes. Seek Medical attention if irritation persists.

Ingestion: Rinse mouth. Immediately dilute swallowed material by orally administrating large amounts of water or milk. DO NOT INDUCE VOMITING. NEVER administer liquids orally to an unconscious person. Call physician or poison control center if person feels unwell or more than a few drops are ingested.

Inhalation: Seek medical assistance if irritation is noted ,person is having difficulty breathing, or the possibility exists of fluid in the lungs. Remove victim from the contaminated atmosphere. If breathing stopped, give artificial respiration. Weak breathing may be supplemented with a bag-mask or manually operated air supply that delivers at least 1 liter/second.

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Section 5 – Fire-Fighting Measures

Suitable Extinguishing Media: Not combustible. Use extinguishing agents appropriate for surrounding fire

Special Fire Fighting: Move container from fire area if it can be done without risk. Avoid inhalation of material or combustion byproducts by wearing a self contained breathing apparatus. Dike area to prevent runoff and contamination of water source. Stay upwind and keep out of low areas.

Unusual Fire/Explosion: Under fire conditions at temperatures greater than 680°C or 1256°F, decomposes to give off sulfur trioxide, an oxidizing agent which will support combustion. Sulfur trioxide will react to form sulfuric acid.

Section 6 – Accidental Release Measures

Spill or Leak: Wear PPE appropriate for handling the material. No smoking or eating in spill areas. Absorb small spills with sand or vermiculite. Place contaminated material in appropriate container for disposal. If spilled on ground, the affected area should be removed to a depth of 1 to 2 inches and placed in an appropriate container for disposal Large spills should be handled according to a predetermined plan. Do not flush material to public sewer systems or any waterways. Wear appropriate protective clothing and equipment during cleanup activities. Ensure adequate decontamination of tools and equipment following cleanup. Adequate ventilation is required when neutralizing spills / leaks.

Section 7– Handling and Storage

Smoking and/or eating is not recommended in storage areas. Stainless steel or fiberglass tanks are recommended. Keep product away from heat sources and direct sunlight. Do not reuse storage containers unless properly reconditioned.

Isolate appropriately from chemicals where low pH could create a hazardous byproduct; for example a combination with hypochlorite could lead to the evolution of chlorine gas.

Section 8– Exposure Controls/Personal Protection

Component	CAS#	OSHA PEL	NIOSH REL
Soluble Iron Salts	7720-78-7 (anhydrous)	None listed	1.0 mg/m^3 (as Fe)

If airborne exposures exceed 1.0 mg/m^3, a negative pressure air-purifying respirator is recommended. Cartridges must be NIOSH / MSHA approved against dusts and mists having TWA than 0.05 mg/m^3

Eye wash and safety shower should be available near storage and usage points

Exposed skin and eyes should be protected and contact with skin and clothing avoided. Minimal PPE would be closed goggles and/or face shield and gloves (rubber,neoprene,PVC) with work clothing covering other exposed skin.

Arriving material may be hot; personnel performing unload operations should have additional PPE such as a rainsuit/slicker suit, goggles with faceshield, and appropriate footwear and gloves.

Section 9– Physical and Chemical Properties

Appearance	Clear to translucent, bluish green	**Upper/lower flammability or explosive Limits**	N/A
Odor	N/A	**Vapor pressure**	Similar to water
Odor threshold	N/A	**Vapor density**	Similar to water
pH	1.8-2.2 (neat)	**Relative density (15.6°C)**	1.15-1.22
Melting point/freezing point	N/A	**Solubility**	high in water
Initial boiling point	105°C	**Partition coef n-octanol/water**	N/A
Flash point	N/A	**Auto-ignition temp**	N/A
Evaporation rate	N/A	**Decomposition Temp**	>680C (monohydrate)
Flammability	N/A		

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Section 10- Stability and Reactivity

Reactivity:	Stable at normal temperatures and pressures
Chemical stability:	Stable; water component can evaporate
Possibility of hazardous reactions:	May produce hazardous decomposition products if mixed with pH sensitive materials (e.g. chlorine gas when mixed with sodium hypochlorite). Solubility decreases as temperature drops, leading to precipitation. At temperatures greater than 680°C, it decomposes to form oxides of sulfur and iron Avoid strong acids
Conditions to avoid:	or bases and excessive heat
Incompatible materials:	Corrosive to carbon steel; avoid aluminum,carbon, brass, nylon
Hazardous decomposition products:	This may include iron oxide and sulfur oxides.

Section 11- Toxicological Information

Acute Toxicity Estimate:	The acute oral LD50 is 132-881 mg Fe/kg (rat).
Chronic Toxicity Estimate:	Oral NOAEL 57-65 mg Fe/kg/d (rat,90 days)
Symptoms of Overexposure:	May cause skin and eye irritation. If inhaled, may cause headaches, nausea, and respiratory irritations.
Carcinogenicity:	Not listed as a carcinogen by NTP, IARC, or OSHA.
Other Possible Health Hazards:	The common recognized injury from Ferrous Sulfate is local tissue irritation. The irritating action is often from hydrolysis to form sulfuric acid and may occur from ingestion, skin or eye contact, or inhalation of dusts and mists. Remove victim from contaminated area. SKIN / EYES: May cause corneal burns or severe irritation in eyes. Fumes or mists may cause irritation or burns to skin. INGESTION: Oral and gastrointestinal irritation. Local tissue damage. Nausea, vomiting, diarrhea, and gastrointestinal bleeding may follow. Can be fatal if swallowed in sufficient quantities. INHALATION:Irritation of the respiratory system. Long term exposure may cause bronchial irritation, coughing, and bronchial pneumonia. Medical conditions generally aggravated are acute and chronic respiratory diseases.
Routes of Entry:	Ingestion, skin or eye contact, or inhalation of dusts and mists.

Section 12- Ecological Information

Ecotoxicity:

Data are experimentally not accessible. Under standard test conditions, the ferrous ion, Fe2+, is unstable and is oxidized to the ferric, Fe3+, ion. Ferric iron salts have a high rate of conversion to insoluble ferric hydroxide, in consequence, Fe2+ is to a great extent removed from the test system. Furthermore, iron plays an important role in biological processes, with iron homeostasis being under strict control. In conclusion, iron is not considered to be toxic to the aquatic environment under normal conditions.

Section 13- Disposal Considerations

Disposal: Contact site environmental personnel and/or state and federal agencies for disposal procedures that are in accordance with environmental regulations.

Section 14- Transport Information

U.S. DOT

PROPER SHIPPING NAME: Corrosive liquid, Acidic, Inorganic, N.O.S. (contains Ferrous Sulfate)

HAZARD CLASS	UN ID NUMBER	PACKING GROUP	RQ (lbs)
8	UN3264	PG III	2,800

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Section 15 – Regulatory Information

SARA Title III information:

SECTION 302 EXTREMELY HAZARDOUS SUBSTANCES: Not listed
SECTION 313 TOXIC CHEMICAL: Not listed
RCRA HAZARD WASTE: Not listed

311/312 HEALTH & PHYSICAL HAZARDS:

Acute	Chronic	Fire	Pressure	Reactivity
Yes	Yes	NO	NO	NO

NFPA RATING

Health	Fire	Reactivity
1	0	1

MAXIMUM USE LEVEL (water treatment): 150 mg/l
TSCA INFORMATION: Listed - Sulfuric Acid, Iron(2) salt (1:1)

Section 16– Other Information

Date of preparation: 9/7/18 Version Draft
Summary of changes: New