SAFETY DATA SHEET

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Trade Name: Ferrous Sulfate Heptahydrate
CAS Number: 7782-63-0
Synonyms: copperas, iron sulfate, green vitriol
Use/Description: Solid product from the Sulfuric Acid Pickling of Steel

Company Identification:	**24 Hour Contact – CHEMTREC 1-800-424-9300**
Nucor LMP Steel, Inc. 2000 East First Street Maryville MO 64468	Safety Officer [8:00 am – 5:00 pm]: 1-(660)-582-3127
Nucor Fastener – Indiana 6730 County Road 60 St. Joe IN 46785	Safety Officer [8:00 am – 5:00 pm] 1-(260)-337-1600

For general product information, contact facility as listed above. For emergencies, use the 24 Hour Contact.

2. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW
WARNING! AVOID SKIN AND EYE CONTACT. IRRITATING TO SKIN AND EYES. HARMFUL IF SWALLOWED.

OSHA Hazards: Irritant
Acute Toxicant

GHS Classification: Acute Toxicity (Category 4)
Skin Irritation (Category 2)
Eye Irritation (Category 2)

Pictogram(s):

Signal Word: Warning

Hazard Statement(s):
H302: Harmful if swallowed
H315: Causes skin irritation
H319: Causes serious eye irritation

Precautionary Statement(s):
P264: Wash thoroughly after handling
P280: Wear protective gloves/protective clothing/eye protection/face protection.
P301+P312: IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell.
P302+P352: IF ON SKIN: Wash with plenty of soap and water.
P305+P351+P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P310: Immediately call a POISON CENTER or doctor/physician.

Potential Health Effects

Primary Routes of Exposure

Eye and skin contact, inhalation.

Eye Contact

Causes eye irritation

Skin Contact and Absorption

Harmful if absorbed through skin. Causes skin irritation.

Inhalation

Inhalation of mists may produce severe respiratory irritation. Inhalation of mists or vapors generated by heating this product may be severely irritating to mucous membranes and respiratory system.

Ingestion

Causes damage to gastrointestinal tract following oral exposure.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Components		CAS No.	% Weight	Exposure Limits			
				ACGIH TLV (mg/m^3)		OSHA PEL (mg/m^3)	
Ferrous Sulfate Heptahydrate	($FeO_4S \cdot 7H_2O$)	7782-63-0	100%	1	mg/m^3		Not established

Exact specifications for specific products may be available from the facility upon request.

4. FIRST AID MEASURES

Eye Contact

Immediately flush eyes with plenty of water, for at least 20 minutes. Lift the upper and lower lids occasionally. Obtain medical attention immediately.

Skin Contact

Flush skin with plenty of water, for at least 20 minutes. If there is widespread contamination, remove contaminated clothing under safety shower and wash exposed areas with soap and large quantities of water. Obtain medical attention immediately. Launder contaminated clothing before reusing.

Inhalation

If symptomatic, move to fresh air. Perform artificial respiration, if necessary, and obtain medical attention immediately. Do not use mouth-to-mouth method if victim ingested or inhaled the substance; induce artificial respiration with the aid of a pocket mask equipped with a one-way valve or other proper respiratory medical device.

Ingestion

Rinse mouth. Give plenty of water to drink. Obtain medical attention immediately.

Rescue

If the exposed person has been overcome, notify response personnel and put established emergency rescue procedures into effect. Understand the facility's emergency rescue procedures and know the locations to the rescue equipment before the need arises. Move the affected person from the hazardous exposure.

5. FIRE FIGHTING MEASURES

Flash Point (Method): Not available

Flammable Limits (% volume in air): Not available

Auto ignition Temperature: Not available

Extinguishing Media

Small Fires—Dry chemical, dry sand, alcohol resistant foam, or CO_2.

Large Fires—Alcohol-resistant foam, water fog, or water spray (not water streams). Move containers from fire area if safe to do so. Dike fire control water for later disposal; do not scatter the material.

Fire involving tanks or car/trailer loads—Fight fire from maximum distance or use unmanned hose holders or monitor nozzles. Do not get water inside containers. Cool containers with flooding quantities of water until well after fire is out. Withdraw immediately in case of rising sound from venting safety devices or discoloration of tank. ALWAYS stay away from ends of tanks. ISOLATE for 800 meters (1/2 mile) in all directions; also, consider initial evacuation for 800 meters (1/2) mile in all directions.
Special Fire Fighting Procedures: Exposure to unknown concentrations of fumes or mists requires the wearing of a pressure-demand airline respirator or pressure-demand self-contained breathing apparatus.
Unusual Fire or Explosion Hazards: None known

6. ACCIDENTAL RELEASE MEASURES

Precautions if Material is Spilled or Released: Eliminate all ignition sources (no smoking, flares, sparks, or flames in immediate area). Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Stop leaks if safe to do so. Prevent entry into waterways, sewers, basements or confined areas. Absorb or cover with dry earth, sand or other non-combustible material and transfer to containers. Isolate spill or leak area immediately for at least 25 to 50 meters (80 to 160 feet) in all directions. Keep unauthorized personnel away. Stay upwind. Keep out of low areas. Ventilate enclosed areas.

7. HANDLING AND STORAGE

Store in drums or tanks that are designed to withstand low pH corrosive liquids. Store in well-ventilated, cool, dry places away from strong bases and sources of heat and ignition. Ground all transfer equipment. Use confined space entry procedures when entering vessels that have contained spent pickle liquor. Do not use air pressure or apply heat with open flame to remove spent pickle liquor from drums. “Empty” drums may retain solid, liquid, and/or vapor residues. Continue to observe all precautions on label as if empty drum were full. Do not cut, puncture, torch, or weld on or near the emptied drum. Do not use drum for other purposes.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Eye Protection
Wear chemical goggles or face shield when the risk of splashing is present.
Skin
Wear polyvinyl chloride (PVC), natural rubber, neoprene, butyl rubber, viton, nitrile or polyvinyl alcohol (PVA) gloves and protective clothing appropriate for the risk of exposure. Structural firefighters’ protective clothing will only provide limited protection.
Respiratory Protection
When potential exposures are above the occupational limits shown in Section 3, approved respirators must be used as specified by an industrial hygienist or other qualified professional. Respirator users must be medically evaluated to determine if they are physically capable of wearing a respirator. Quantitative and/or qualitative fit testing and respirator training must be satisfactorily completed by all personnel prior to respirator use. Users of any style respirator must be clean shaven on those areas of the face where the respirator seal contacts the face. Exposure to unknown concentrations of vapors or mists requires the wearing of a pressure-demand airline respirator or pressure-demand self-contained breathing apparatus. Pressure-demand airline respirators are recommended when performing jobs with high potential exposures such as entering vessels that have contained spent pickle liquor.
Ventilation and Engineering Controls
Good ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. Supplementary local exhaust ventilation may be needed in some circumstances. Ventilation equipment should be checked regularly to ensure it is functioning properly.
Recommended Decontamination Facilities
Eye wash, washing facilities, and safety shower.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance and Odor: Hygroscopic, blue green crystals
Boiling Point: 572 °F
Melting Point: 149 °F
pH: 2.5 – 5 (5% solution)
Specific Gravity (at 15.6°C): 1.18-1.40
Density (at 15.6 °C): 55 lbs/cubic ft.
Vapor Pressure: Not available
Vapor Density (air = 1): Not available
% Volatile, by Volume: Not available
Solubility in Water: 48.6g/100g at 20 degrees C
Evaporation Rate (Butyl Acetate = 1): Not available
Other Physical and Chemical Data: None

10. STABILITY AND REACTIVITY

Stability: Stable under normal conditions
Conditions to Avoid: no data available
Incompatibility (Materials to Avoid): Avoid strong oxidizing agents.
Hazardous Decomposition Products: Hazardous decomposition products formed under fire conditions. - Sulphur oxides, Iron oxides

11. TOXICOLOGICAL INFORMATION

Ingestion of ferrous sulfate can result in severe gastritis or gastroenteritis with abdominal pain, retching and vomiting, diarrhea, dehydration, shock, pallor, and cyanosis. If inhaled, iron is a local irritant to the lung and gastrointestinal tract.

Component	CAS #	Test Result
Ferrous sulfate heptahydrate	7782-63-0	Oral LD50 (Mouse): 1520 mg/kg

12. ECOLOGICAL INFORMATION

Aquatic Ecotoxicological Data
This material is toxic to fish and wildlife. Do not discharge into lakes, streams, ponds, etc.

13. DISPOSAL CONSIDERATIONS

Dispose in accordance with federal, state, and local health and environmental regulations. Offer surplus and non-recyclable solutions to a licensed disposal company. Contact a licensed professional waste disposal service to dispose of this material.

14. TRANSPORT INFORMATION

DOT Proper Shipping Name: Environmentally hazardous substances, solid, n.o.s.
DOT Hazard Class: 9
UN/NA Number: UN3077
DOT Packing Group: III
Labeling Requirements: Required
Placards: Required

15. REGULATORY INFORMATION

NOTE: The regulatory information contained in this Safety Data Sheet (SDS) is not intended to be comprehensive.

Califonia Proposition 65: This product does not contain chemicals known to the State of California to cause cancer, birth defects, or other reproductive harm.
Massachusetts Substance List: Ferrous sulfate (heptahydrate)
Pennsylvania Hazardous Substance List: Ferrous sulfate (heptahydrate)
New Jersey Hazardous Substance List: Ferrous sulfate (heptahydrate)

Toxic Substances Control Act (TSCA)
Components of this product are listed on the TSCA Inventory.

Comprehensive Environmental Response, Compensation and Liability Act (CERCLA)

Chemical Name	Reportable Quantity (in lb)
Ferrous sulfate heptahydrate	1000*

Superfund Amendments and Reauthorization Act of 1986 (SARA), Title III

HAZARD CATEGORIES: Immediate Health Effect, Delayed Health Effect

SECTION 313 REPORTABLE INGREDIENTS:

Chemical Name	CAS Number	Concentration (% by weight)	Reportable
Lead	7439-92-1	< 0.0005	Yes – No de minimis level

Concentrations based on analytical data and process knowledge of typical products distributed by the facility.

16. OTHER INFORMATION

Disclaimer of Liability
Legally required information is given in accordance with applicable OSHA regulations. Information given herein is offered in good faith as accurate, but without guarantee. Conditions of use and suitability of the product for particular uses are beyond our control; all risks of use of the product are therefore assumed by the user and WE EXPRESSLY DISCLAIM ALL WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE IN RESPECT TO THE USE OR SUITABILITY OF THE PRODUCT. Nothing is intended as a recommendation for uses, which infringe valid patents, or as extending any license under valid patents. Appropriate warnings and safe handling procedures should be provided to handlers and users. Use or retransmission of the information contained herein in any other format than the format as presented is strictly prohibited. Nucor neither represents nor warrants that the format, content or product formulas contained in this document comply with the laws of any other country except the United States of America.