SAFETY DATA SHEET

1. IDENTIFICATION

Product identifier

Product code: F1045
Product Name: FERRIC SULFATE, POWDER, REAGENT

Other means of identification

Synonyms:
- Ferric sulfate, hydrate
- Iron (III) sulfate, hydrate
- Sulfuric acid, iron (3+) salt (3:2), hydrate
- Iron sulfate (Fe2(SO4)3) hydrate

CAS #: 15244-10-7
RTECS #: Not available
CI#: Not available

Recommended use of the chemical and restrictions on use

Uses advised against: No information available

Supplier:
Spectrum Chemical Mfg. Corp
14422 South San Pedro St.
Gardena, CA 90248
(310) 516-8000

Order Online At: https://www.spectrumchemical.com

Emergency telephone number: Chemtrec 1-800-424-9300
Contact Person: Martin LaBenz (West Coast)
Contact Person: Ibad Tirmiz (East Coast)

2. HAZARDS IDENTIFICATION

Classification

This chemical is considered hazardous according to the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

Considered a dangerous substance or mixture according to the Globally Harmonized System (GHS)

<table>
<thead>
<tr>
<th>Hazard</th>
<th>Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute toxicity - Oral</td>
<td>Category 4</td>
</tr>
<tr>
<td>Skin corrosion/irritation</td>
<td>Category 2</td>
</tr>
<tr>
<td>Serious eye damage/eye irritation</td>
<td>Category 2A</td>
</tr>
<tr>
<td>Specific target organ toxicity (single exposure)</td>
<td>Category 3</td>
</tr>
</tbody>
</table>

Label elements
Warning

Hazard statements
Harmful if swallowed
Causes skin irritation
Causes serious eye irritation
May cause respiratory irritation

Hazards not otherwise classified (HNOC)
Not Applicable

Other hazards
May be harmful if inhaled

Precautionary Statements - Prevention
Wash face, hands and any exposed skin thoroughly after handling
Do not eat, drink or smoke when using this product
Avoid breathing dust/fume/gas/mist/vapors/spray
Use only outdoors or in a well-ventilated area
Wear protective gloves
Wear eye/face protection

Precautionary Statements - Response
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.
IF ON SKIN: Wash with plenty of water
If skin irritation occurs: Get medical advice/attention
Take off contaminated clothing and wash it before reuse
IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER or doctor/physician if you feel unwell.
IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell
Rinse mouth

Precautionary Statements - Storage
Store in a well-ventilated place. Keep container tightly closed
Store locked up

Precautionary Statements - Disposal
Dispose of contents/container to an approved waste disposal plant

3. COMPOSITION/INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS-No.</th>
<th>Weight %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ferric Sulfate</td>
<td>10028-22-5</td>
<td>100</td>
</tr>
</tbody>
</table>

4. FIRST AID MEASURES
4. FIRST AID MEASURES

First aid measures
General Advice: National Capital Poison Center in the United States can provide assistance if you have a poison emergency and need to talk to a poison specialist. Call 1-800-222-1222.

Skin Contact: Wash off immediately with soap and plenty of water removing all contaminated clothing and shoes. Get medical attention. If skin irritation persists, call a physician.

Eye Contact: Flush eyes with water for 15 minutes. Get medical attention.

Inhalation: Move to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Obtain medical attention.

Ingestion: Do not induce vomiting without medical advice. Never give anything by mouth to an unconscious person. Obtain medical attention.

Most important symptoms and effects, both acute and delayed

Symptoms
Causes serious eye irritation. May cause brownish discoloration of the eye lens. Causes skin irritation. Irritating to respiratory system. Coughing and wheezing. May affect the liver. It may affect the kidneys. Ingestion may cause vomiting and nausea. Upset stomach. May cause metabolic acidosis. black-colored stool. Central nervous system effects. May affect the cardiovascular system. Hypotension.

Indication of any immediate medical attention and special treatment needed

Notes to Physician: Treat symptomatically

Protection of first-aiders
First-Aid Providers: Avoid exposure to blood or body fluids. Wear gloves and other necessary protective clothing. Dispose of contaminated clothing and equipment as bio-hazardous waste

5. FIRE-FIGHTING MEASURES

Extinguishing Media

Suitable Extinguishing Media: The product is not flammable. If it is involved in a fire, extinguish the fire using an agent suitable for the type of surrounding fire.

Unsuitable Extinguishing Media: No information available.

Specific hazards arising from the chemical

Hazardous Combustion Products: If it is involved in a fire, the following may be released: sulfur oxides, iron oxides

Specific hazards: No information available.

Special Protective Actions for Firefighters

Specific Methods: No information available.

Special Protective Equipment for Firefighters: As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear

Product code: F1045 Product name: FERRIC SULFATE, POWDER, REAGENT
6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

**Personal Precautions:** Ensure adequate ventilation. Keep people away from and upwind of spill/leak. Use personal protective equipment. Avoid contact with skin, eyes and clothing. Evacuate personnel to safe areas. Avoid breathing dust. Avoid dust formation.

**Environmental precautions** Prevent further leakage or spillage if safe to do so. Do not let product enter drains.

**Methods and material for containment and cleaning up**

**Methods for containment** Stop leak if you can do it without risk. Cover with plastic sheet to prevent spreading.

**Methods for cleaning up** Sweep up and shovel into suitable containers for disposal. Clean contaminated surface thoroughly.

7. HANDLING AND STORAGE

**Precautions for safe handling**

**Technical Measures/Precautions:** Provide sufficient air exchange and/or exhaust in work rooms. Keep away from incompatible materials.

**Safe Handling Advice**

Wear personal protective equipment. Avoid contact with skin, eyes and clothing. Do not breathe vapors/dust. Do not ingest. Handle in accordance with good industrial hygiene and safety practice.

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


**Incompatible Materials:**

Oxidizing agents. Strong bases.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

**Control parameters**

**National occupational exposure limits**

**United States**

<table>
<thead>
<tr>
<th>Components</th>
<th>OSHA</th>
<th>NIOSH</th>
<th>ACGIH</th>
<th>AIHA WHEEL</th>
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</thead>
<tbody>
<tr>
<td>Ferric Sulfate 10028-22-5</td>
<td>None</td>
<td>None</td>
<td>1 mg/m³TWA (as Fe)</td>
<td>None</td>
</tr>
</tbody>
</table>

**Canada**

<table>
<thead>
<tr>
<th>Components</th>
<th>Alberta</th>
<th>British Columbia</th>
<th>Ontario</th>
<th>Quebec</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ferric Sulfate 10028-22-5</td>
<td>1 mg/m³TWA (as Fe)</td>
<td>1 mg/m³TWA (as Fe)</td>
<td>2 mg/m³STEL (as Fe)</td>
<td>1 mg/m³TWAEV (as Fe)</td>
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</table>

**Australia and Mexico**

<table>
<thead>
<tr>
<th>Components</th>
<th>Australia</th>
<th>Mexico</th>
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</thead>
<tbody>
<tr>
<td>Ferric Sulfate 10028-22-5</td>
<td>1 mg/m³TWA (as Fe)</td>
<td>1 mg/m³TWA (as Fe)</td>
</tr>
</tbody>
</table>

Product code: F1045  
Product name: FERRIC SULFATE, POWDER, REAGENT
Appropriate engineering controls

Engineering measures to reduce exposure: Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.

Individual protection measures, such as personal protective equipment

Personal Protective Equipment

**Eye protection:** Goggles

**Skin and body protection:** Long sleeved clothing. Chemical resistant apron. Gloves.

**Respiratory protection:** Wear respirator with dust filter.

**Hygiene measures:** Avoid contact with skin, eyes and clothing. When using, do not eat, drink or smoke. Wash hands before breaks and immediately after handling the product.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Odor: Odorless.</td>
<td>Taste No information available</td>
<td>Formula: Fe2(SO4)3.xH2O</td>
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<tr>
<td>Molecular/Formula weight: 399.98 + xH2O</td>
<td>Flammability: No information available</td>
<td>Flashpoint (°C/°F): No information available</td>
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<tr>
<td>Flash Point Tested according to: Not available</td>
<td>Autoignition Temperature (°C/°F): No information available</td>
<td>Lower Explosion Limit (%): No information available</td>
</tr>
<tr>
<td>Upper Explosion Limit (%): No information available</td>
<td>pH: No information available</td>
<td>Melting point/range(°C/°F): No information available</td>
</tr>
<tr>
<td>Decomposition temperature(°C/°F): No information available</td>
<td>Boiling point/range(°C/°F): 230°C/ 446°F</td>
<td>Bulk density: No information available</td>
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<tr>
<td>Density (g/cm3): 1.2-1.4</td>
<td>Specific gravity: No information available</td>
<td>Vapor pressure @ 20°C (kPa): No information available</td>
</tr>
<tr>
<td>Evaporation rate: No information available</td>
<td>Vapor density: No information available</td>
<td>VOC content (g/L): No information available</td>
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<tr>
<td>Odor threshold (ppm): No information available</td>
<td>Partition coefficient (n-octanol/water): No information available</td>
<td>Viscosity: No information available</td>
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<tr>
<td>Miscibility: No information available</td>
<td>Solubility: Soluble in Water</td>
<td></td>
</tr>
</tbody>
</table>

## 10. STABILITY AND REACTIVITY

**Reactivity**
- Reactive with oxidizing agents
- Reacts with strong bases

**Product code:** F1045  **Product name:** FERRIC SULFATE, POWDER, REAGENT
Chemical stability

Stability: Hygroscopic. Stable under recommended storage conditions.

Possibility of Hazardous Reactions: Hazardous polymerization does not occur


Other Information

Corrosivity: No information available

Special Remarks on Corrosivity: No information available

11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

Principal Routes of Exposure:
Inhalation. Ingestion.

Acute Toxicity

Component Information

Ferric Sulfate - 10028-22-5

LD50/oral/rat = 500 mg/kg Oral LD50 Rat
LD50/oral/mouse = No information available
LD50/dermal/rabbit = No information available
LD50/dermal/rat = No information available
LC50/inhalation/rat = No information available
LC50/inhalation/mouse = No information available
Other LD50 or LC50 information = No information available

Product Information

LD50/oral/rat =
VALUE- Acute Tox Oral = 500mg/kg

LD50/oral/mouse =
Value - Acute Tox Oral = No information available

LD50/dermal/rabbit
VALUE-Acute Tox Dermal = No information available

LD50/dermal/rat
VALUE -Acute Tox Dermal = No information available

LC50/inhalation/rat
VALUE-Vapor = No information available
VALUE-Gas = No information available
VALUE-Dust/Mist = No information available

LC50/Inhalation/mouse

Product code: F1045
Product name: FERRIC SULFATE, POWDER, REAGENT
VALUE-Vapor = No information available
VALUE - Gas = No information available
VALUE - Dust/Mist = No information available

Symptoms

Skin Contact: Causes skin irritation.
Eye Contact: Causes serious eye irritation.
Inhalation: Irritating to respiratory system. Symptoms may include coughing and wheezing.

Ingestion
Harmful if swallowed. Ingestion of large doses may cause gastrointestinal tract irritation with abdominal pain, nausea, vomiting, diarrhea, and black stool. Pink urine is a strong indicator of iron poisoning. Lack of appetite, Liver damage, renal failure, hypotension, cardiac failure, central nervous system effects/changes in behavior (lethargy, restlessness, confusion, seizures), leukocytosis, acidosis, coma, and death have also been recorded from acute iron poisoning. May cause metabolic acidosis.

Aspiration hazard No information available

Delayed and immediate effects as well as chronic effects from short and long-term exposure

Chronic Toxicity
Prolonged or repeated ingestion may affect the liver
Prolonged or repeated ingestion may lead to too much Iron build-up in the body, particularly in the liver
Prolonged or repeated ingestion may cause nausea, vomiting, stomach pain, constipation, black bowel movements. Hemochromatosis may rarely occur after chronic ingestion of excessive iron or iron salts
Prolonged eye contact may cause a brownish discoloration of the eyes

Sensitization: No information available

Mutagenic Effects: May affect genetic material

Carcinogenic effects: Not considered carcinogenic

<table>
<thead>
<tr>
<th>Components</th>
<th>IARC</th>
<th>ACGIH - Carcinogens</th>
<th>NTP</th>
<th>OSHA HCS - Carcinogens</th>
<th>Australia - Notifiable Carcinogenic Substances</th>
<th>Australia - Prohibited Carcinogenic Substances</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ferric Sulfate</td>
<td>Not listed</td>
<td>Not listed</td>
<td>Not listed</td>
<td>Not listed</td>
<td>Not listed</td>
<td>Not listed</td>
</tr>
</tbody>
</table>

Reproductive toxicity No data is available

Reproductive Effects: No information available
Teratogenic Effects: No information available
Developmental Effects: No information available

Specific Target Organ Toxicity

STOT - single exposure Respiratory system.
STOT - repeated exposure No information available
Target Organs: Kidneys. Liver.
12. ECOLOGICAL INFORMATION

Ecotoxicity

Ecotoxicity effects: No data available.

*Ferric Sulfate* - 10028-22-5

**Freshwater Fish Species Data:**
37.2 mg/L LC50 Gambusia affinis 96 h static 1

**Persistence and degradability:** No information available

**Bioaccumulative potential:**
No information available

**Mobility:**
No information available

13. DISPOSAL CONSIDERATIONS

Disposal Methods

**Waste from residues / unused products:**
Waste must be disposed of in accordance with Federal, State and Local regulation.

**Contaminated packaging:**
Empty containers should be taken for local recycling, recovery or waste disposal

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Ferric Sulfate</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
</tr>
</tbody>
</table>

14. TRANSPORT INFORMATION

**DOT**

**UN-No:** Not Regulated

**Proper Shipping Name:** No information available

**Hazard Class:** No information available

**Subsidiary Risk:** No information available

**Packing Group:** None

**ERG No:** No information available

**Marine Pollutant**

**No data available**

**DOT RQ (lbs):** No information available

**Special Provisions**

**No Information available**

**Symbol(s):** No information available

**TDG (Canada)**

**UN-No:** Not Regulated

**Proper Shipping Name:** No information available

**Hazard Class:** No information available

**Subsidiary Risk:** No information available

**Packing Group:** No information available

**Marine Pollutant**

**No Information available**

**ADR**

Product code: F1045

**Product name:** FERRIC SULFATE, POWDER, REAGENT
14. TRANSPORT INFORMATION

UN-No: Not Regulated
Proper Shipping Name: No information available
Hazard Class: No information available
Packing Group: No information available
Subsidiary Risk: No information available

IMO / IMDG
UN-No: Not Regulated
Proper Shipping Name: No information available
Hazard Class: No information available
Subsidiary Risk: No information available
Packing Group: No information available
Marine Pollutant: No information available

RID
UN-No: Not Regulated
Proper Shipping Name: No information available
Hazard Class: No information available
Subsidiary Risk: No information available
Packing Group: No information available

ICAO
UN-No: Not Regulated
Proper Shipping Name: No information available
Hazard Class: No information available
Subsidiary Risk: No information available
Packing Group: No information available

IATA
UN-No: Not Regulated
Proper Shipping Name: No information available
Hazard Class: No information available
Subsidiary Risk: No information available
Packing Group: No information available
ERG Code: No information available
Special Provisions: No information available

15. REGULATORY INFORMATION

International Inventories

<table>
<thead>
<tr>
<th>Components</th>
<th>U.S. TSCA</th>
<th>KOREA KECL</th>
<th>Philippines (PICCS)</th>
<th>Japan ENCS</th>
<th>CHINA</th>
<th>Australia (AICS)</th>
<th>EINECS-No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ferric Sulfate</td>
<td>Present</td>
<td>Present</td>
<td>Present</td>
<td>Present</td>
<td>Present</td>
<td>Present</td>
<td>Present 233-072-9</td>
</tr>
</tbody>
</table>

U.S. Regulations

Ferric Sulfate

Massachusetts RTK: Present
New Jersey RTK Hazardous Substance List: 0925
New Jersey - Discharge Prevention - List of Hazardous Substances: Present
Pennsylvania RTK: Environmental hazard
Pennsylvania RTK - Environmental Hazard List Present
Pennsylvania RTK - Special Hazardous Substances Present
Ferric Sulfate

New York Release Reporting - List of Hazardous Substances:
- = 100 lb RQ
- = 1000 lb RQ

Louisiana Reportable Quantity List for Pollutants: Listed

California Directors List of Hazardous Substances: Present

FDA - Food Additives Generally Recognized as Safe (GRAS): 21 CFR 184.1307

**FDA - 21 CFR - Total Food Additives** 184.1307 582.80


Chemicals Known to the State of California to Cause Cancer:
This product does not contain a chemical requiring a warning under California Prop. 65. (See table below)

Chemicals Known to the State of California to Cause Reproductive Toxicity:
This product does not contain a chemical requiring a warning under California Prop. 65. (See table below)

<table>
<thead>
<tr>
<th>Components</th>
<th>Carcinogen</th>
<th>Developmental Toxicity</th>
<th>Male Reproductive Toxicity</th>
<th>Female Reproductive Toxicity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ferric Sulfate</td>
<td>Not Listed</td>
<td>Not Listed</td>
<td>Not Listed</td>
<td>Not Listed</td>
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</table>

**CERCLA/SARA**

<table>
<thead>
<tr>
<th>Components</th>
<th>CERCLA - Hazardous Substances and their Reportable Quantities</th>
<th>Section 302 Extremely Hazardous Substances and TPQs</th>
<th>Section 302 Extremely Hazardous Substances and RQs</th>
<th>Section 313 - Chemical Category</th>
<th>Section 313 - Reporting de minimis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ferric Sulfate</td>
<td>≈ 454 kg final RQ</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
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</tbody>
</table>

**U.S. TSCA**

<table>
<thead>
<tr>
<th>Components</th>
<th>TSCA Section 5(a)2 - Chemicals With Significant New Use Rules (SNURS)</th>
<th>TSCA 8(d) - Health and Safety Reporting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ferric Sulfate</td>
<td>Not Applicable</td>
<td>Not Applicable</td>
</tr>
</tbody>
</table>

**Canada**

WHMIS hazard class:
D1B  Toxic materials
D2B  Toxic materials

Ferric Sulfate
- Uncontrolled product according to WHMIS classification criteria

Canada Controlled Products Regulation:
This product has been classified according to the hazard criteria of the CPR (Controlled Products Regulation) and the MSDS contains all of the information required by the CPR.

**Inventory**

<table>
<thead>
<tr>
<th>Components</th>
<th>Canada (DSL)</th>
<th>Canada (NDSL)</th>
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<tbody>
<tr>
<td>Ferric Sulfate</td>
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<table>
<thead>
<tr>
<th>Components</th>
<th>CEPA Schedule I - Toxic Substances</th>
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<tbody>
<tr>
<td>Ferric Sulfate</td>
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<table>
<thead>
<tr>
<th>Components</th>
<th>CEPA - 2010 Greenhouse Gases Subject to Mandatory Reporting</th>
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</thead>
<tbody>
<tr>
<td>Ferric Sulfate</td>
<td>Not listed</td>
</tr>
</tbody>
</table>

**Product code:** F1045  **Product name:** FERRIC SULFATE, POWDER, REAGENT
EU Classification

R-phrase(s)
R22 - Harmful if swallowed.
R36/37/38 - Irritating to eyes, respiratory system and skin.

S-phrase(s)
S26 - In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
S37 - Wear suitable gloves.
S46 - If swallowed, seek medical advice immediately and show this container or label.

<table>
<thead>
<tr>
<th>Components</th>
<th>Classification</th>
<th>Concentration Limits:</th>
<th>Safety Phrases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ferric Sulfate</td>
<td></td>
<td>No information</td>
<td></td>
</tr>
</tbody>
</table>

The product is classified in accordance with Annex VI to Directive 67/548/EEC

Indication of danger:
Xn - Harmful.
Xi - Irritant.

16. OTHER INFORMATION

Product code: F1045
Product name: FERRIC SULFATE, POWDER, REAGENT
Disclaimer:

All chemicals may pose unknown hazards and should be used with caution. This Safety Data Sheet (SDS) applies only to the material as packaged. If this product is combined with other materials, deteriorates, or becomes contaminated, it may pose hazards not mentioned in this SDS. The physical properties reported in this SDS are obtained from the literature and do not constitute product specifications. Information contained herein does not constitute a warranty, whether expressed or implied, as to the safety, merchantability or fitness of the goods for a particular purpose. Spectrum Chemicals & Laboratory Products, Inc. assumes no responsibility for results obtained or for incidental or consequential damages, including lost profits, arising from the use of these data. No warranty against infringement of any patent, copyright or trademark is made or implied. It shall be the user's responsibility to develop proper methods of handling and personal protection based on the actual conditions of use. While this SDS is based on technical data judged to be reliable, Spectrum assumes no responsibility for the completeness or accuracy of the information contained herein.

End of Safety Data Sheet