SAFETY DATA SHEET

1. IDENTIFICATION

Product code: F1001
Product Name: FERRIC AMMONIUM CITRATE, GREEN, POWDER, FCC

Other means of identification
Synonyms: Ammonium Ferric Citrate; Ammonium iron (III) citrate; Iron (III) ammonium citrate; 1,2,3-Propanetricarboxylic acid, 2-hydroxy, ammonium iron (3+) salt; Citric Acid, ammonium iron (3+) salt
CAS #: 1185-57-5
RTECS #: GE7540000
CI#: Not available

Recommended use of the chemical and restrictions on use
Recommended use: Pigment. In photography. For blueprints.
Uses advised against: No information available

Supplier: Spectrum Chemicals and Laboratory Products, Inc.
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 by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)

| Serious eye damage/eye irritation | Category 2B |

Label elements

Warning

Hazard statements
Causes eye irritation

Hazards not otherwise classified (HNOC)
Not Applicable

Product code: F1001
Product name: FERRIC AMMONIUM CITRATE, GREEN, POWDER, FCC
Other hazards
Causes mild skin irritation

Precautionary Statements - Prevention
Wash face, hands and any exposed skin thoroughly after handling
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 skin irritation occurs: Get medical advice/attention

3. COMPOSITION/INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS-No.</th>
<th>Weight %</th>
<th>Trade Secret</th>
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<tbody>
<tr>
<td>Ferric Ammonium Citrate, green 1185-57-5</td>
<td>1185-57-5</td>
<td>100</td>
<td>*</td>
</tr>
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</table>

4. FIRST AID MEASURES

First aid measures
General Advice: Poison information centres in each State capital city can provide additional assistance for scheduled poisons (13 1126)

Skin Contact: Wash off immediately with soap and plenty of water removing all contaminated clothes and shoes. Get medical attention if irritation develops. Consult a physician if necessary.

Eye Contact: Flush eye 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. Get medical attention.

Ingestion: Do not induce vomiting without medical advice. Never give anything by mouth to an unconscious person. Consult a physician if necessary.

Most important symptoms and effects, both acute and delayed
Symptoms: Irritating to eyes and skin. Irritating to mouth, throat and stomach. Vomiting. May cause diarrhea.

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: Carbon dioxide (CO2). Dry chemical. Water spray mist or foam.

Unsuitable Extinguishing Media: No information available.

Specific hazards arising from the chemical

Product code: F1001  Product name: FERRIC AMMONIUM CITRATE, GREEN, POWDER, FCC
Hazardous Combustion Products: Carbon monoxide; Carbon dioxide; iron oxides; ammonia; nitrogen oxides

Specific hazards: May be combustible at high temperatures. Fine dust dispersed in air in sufficient concentrations, and in the presence of an ignition source is a potential dust explosion hazard.

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.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Personal Precautions: Ensure adequate ventilation. Use personal protective equipment. Avoid contact with skin, eyes and clothing. Avoid dust formation. Remove all sources of ignition.

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. Avoid dust formation. All equipment used when handling the product must be grounded. Keep away from incompatible materials.

Safe Handling Advice:
Wear personal protective equipment. Avoid contact with skin, eyes and clothing. Keep away from heat and sources of ignition. Avoid dust formation. Do not ingest. Do not breathe vapours/dust. Handle in accordance with good industrial hygiene and safety practice.

Conditions for safe storage, including any incompatibilities

Technical Measures/Storage Conditions:

Incompatible Materials:
Strong oxidizing agents. iodides. tannins. acacia preparations.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters

Product code: F1001
Product name: FERRIC AMMONIUM CITRATE, GREEN, POWDER, FCC
National occupational exposure limits

U.S Occupational Exposure Limits: Not determined

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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<td>Ferric Ammonium Citrate, green -1185-57-5</td>
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Canada

Canada Occupational Exposure Limits: Not determined

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<tr>
<th>Components</th>
<th>Alberta</th>
<th>British Columbia</th>
<th>Ontario</th>
<th>Quebec</th>
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<td>Ferric Ammonium Citrate, green -1185-57-5</td>
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Australia and Mexico

Occupational Exposure Limits for Australia and Mexico: Not determined

<table>
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<tr>
<th>Components</th>
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<th>Mexico</th>
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</thead>
<tbody>
<tr>
<td>Ferric Ammonium Citrate, green -1185-57-5</td>
<td>None</td>
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</tbody>
</table>

Appropriate engineering controls

Engineering measures to reduce exposure: Ensure adequate ventilation. 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. Safety glasses with side-shields.

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

Respiratory protection: Effective dust mask. Wear respirator with dust filter..

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

9. PHYSICAL AND CHEMICAL PROPERTIES
9. PHYSICAL AND CHEMICAL PROPERTIES

Physical state: Solid.

Odor: Odorless. Faint Ammonia.

Molecular/Formula weight: No information available

Flash Point Tested according to: Not available

Autoignition Temperature (°C/°F): No information available

Boiling point/range(°C/°F): No information available

Density (g/cm3): No information available

Evaporation rate: No information available

Odor threshold (ppm): No information available

Miscibility: No information available


Formula: This compound is a complex salt of undetermined structure, composed of Iron, Ammonia, and Citric Acid

Flashpoint (°C/°F): No information available.

10. STABILITY AND REACTIVITY

Reactivity
Reactive with oxidizing agents

Chemical stability
Stability: Stable at normal conditions

Possibility of Hazardous Reactions: Hazardous polymerization does not occur

Conditions to avoid: Heat. Exposure to light. Exposure to moist air. Exposure to moisture. Avoid dust formation. Dust may form explosive mixture in air. Fine dust dispersed in air in sufficient concentrations, and in the presence of an ignition source is a potential dust explosion hazard.

Incompatible Materials: Strong oxidizing agents. iodides. tannins. acacia preparations.


Other Information
Corrosivity: No information available

Product code: F1001
Product name: FERRIC AMMONIUM CITRATE, GREEN, POWDER, FCC
Special Remarks on Corrosivity: No information available

| 11. TOXICOLOGICAL INFORMATION |

Information on likely routes of exposure

Principal Routes of Exposure:
Ingestion. Inhalation.

**Acute Toxicity**

Component Information

*Ferric Ammonium Citrate, green - 1185-57-5*

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<td>&gt;2000 mg/kg</td>
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<td>LD$_{50}$/oral/mouse</td>
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**Product Information**

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<tr>
<td>LC$_{50}$/inhalation/mouse</td>
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</table>

**Symptoms**

- **Skin Contact:** Mild skin irritation.
- **Eye Contact:** Causes eye irritation.
- **Inhalation:** May cause irritation of respiratory tract. May cause nose, throat, and lung irritation. Symptoms may include coughing and wheezing, and shortness of breath.
- **Ingestion:** Irritating to mouth, throat and stomach. May cause vomiting. May cause hypermotility, diarrhea.

**Product code:** F1001  
**Product name:** FERRIC AMMONIUM CITRATE, GREEN, POWDER, FCC
Aspiration hazard  No information available

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

Chronic Toxicity  Prolonged eye contact may cause a brownish discoloration of the eyes
Sensitization:  No information available
Mutagenic Effects:  No information available

Carcinogenic effects:  Not considered carcinogenic.

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

Reproductive toxicity  No data is available

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

Specific Target Organ Toxicity

STOT - single exposure  No information available
STOT - repeated exposure  No information available

12. ECOLOGICAL INFORMATION

Ecotoxicity

Ecotoxicity effects:  No data available.

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

Product code: F1001  Product name: FERRIC AMMONIUM CITRATE, GREEN, POWDER, FCC
Product code: F1001  
Product name: FERRIC AMMONIUM CITRATE, GREEN, POWDER, FCC
14. TRANSPORT INFORMATION

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
- Description: 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
- Description: 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>
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<tr>
<td>Ferric Ammonium Citrate, green</td>
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<td>Present KE-01694</td>
<td>Present</td>
<td>Present (2)-895 (2)-1318</td>
<td>Present [26079]</td>
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<td>Present 214-686-6</td>
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U.S. Regulations

Ferric Ammonium Citrate, green
- Massachusetts RTK: Present
- New Jersey RTK Hazardous Substance List: Present
- 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
- 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


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>
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<td>Not Listed</td>
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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>
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<td>Ferric Ammonium Citrate, green</td>
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U.S. TSCA

<table>
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<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>
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<tr>
<td>Ferric Ammonium Citrate, green</td>
<td>Not Applicable</td>
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</tbody>
</table>

Canada

WHMIS hazard class:
Non-controlled

Ferric Ammonium Citrate, green
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>
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<table>
<thead>
<tr>
<th>Components</th>
<th>CEPA Schedule I - Toxic Substances</th>
<th>CEPA - 2010 Greenhouse Gases Subject to Mandatory Reporting</th>
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<tbody>
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<td>Ferric Ammonium Citrate, green</td>
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EU Classification

R-phrase(s)
not determined

S-phrase(s)
none

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<th>Classification</th>
<th>Concentration Limits:</th>
<th>Safety Phrases</th>
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<td>Ferric Ammonium Citrate, green</td>
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</table>

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

Indication of danger:
Not dangerous

16. OTHER INFORMATION

Product code: F1001
Product name: FERRIC AMMONIUM CITRATE, GREEN, POWDER, FCC
**16. OTHER INFORMATION**

<table>
<thead>
<tr>
<th>NFPA</th>
<th>HMIS</th>
<th>Personal Protective Equipment</th>
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</thead>
<tbody>
<tr>
<td>![Image]</td>
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</tbody>
</table>

**Preparation Date:** 12/11/2014  
**Revision Date:** 12/11/2014  
**Prepared by:** Sonia Owen

**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.

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**End of Safety Data Sheet**