SECTION 1: Identification

1.1. Identification

Product form: Substance
Substance name: Ferric Ammonium Citrate
Chemical name: Ammonium iron (III) Citrate
CAS No: 1185-57-5
Product code: 2390, 2391, 2392 & 2399
Formula: C₆H₈O₇•xFe•xNH₄
Synonyms: 1,2,3-propanetricarboxylic acid, 2-hydroxy-, ammonium iron(3+) salt / 2-hydroxy-1,2,3-propanetricarboxylic acid, ammonium iron(3+) salt / ammonium ferric citrate / ammonium ferric citrate, brown / ammonium ferric citrate, green / ammonium iron(III) citrate, green / ammonium iron(III) citrate, red-brown / citric acid ammonium iron(III) salt / citric acid, ammonium iron(3+) salt / FAC / ferric ammonium citrate / ferric ammonium citrate, brown / ferric ammonium citrate, green / iron ammonium citrate / iron(III) ammonium citrate
BIG no: 14814

1.2. Relevant identified uses of the substance or mixture and uses advised against

Use of the substance/mixture: Photographic and reprographic articles

1.3. Details of the supplier of the safety data sheet

Jost Chemical Co.
8150 Lackland Rd.
Saint Louis, Missouri 63114
T 314-428-4300 - F 314-428-4366
justin.kuehnel@jostchemical.com - www.jostchemical.com

1.4. Emergency telephone number

Emergency number: CHEMTREC 800-424-9300

SECTION 2: Hazard(s) identification

2.1. Classification of the substance or mixture

GHS-US classification
Skin Irrit. 2  H315 - Causes skin irritation
Eye Irrit. 2A H319 - Causes serious eye irritation
STOT SE 3  H335 - May cause respiratory irritation

Full text of H-phrases: see section 16

2.2. Label elements

GHS-US labeling
Hazard pictograms (GHS-US): !

Signal word (GHS-US): Warning
Hazard statements (GHS-US): H315 - Causes skin irritation
H319 - Causes serious eye irritation
H335 - May cause respiratory irritation

Precautionary statements (GHS-US): P261 - Avoid breathing dust
P264 - Wash hands, forearms and face thoroughly after handling
P271 - Use only outdoors or in a well-ventilated area
P280 - Wear protective gloves, eye protection
P302+P352 - If on skin: Wash with plenty of water
P304+P340 - If inhaled: Remove person to fresh air and keep comfortable for breathing
P305+P351+P338 - If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
P312 - Call a doctor if you feel unwell
P321 - Specific treatment (see First aid measures on this label)
P332+P313 - If skin irritation occurs: Get medical advice/attention
Ferric Ammonium Citrate
Safety Data Sheet
according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

2.3. Other hazards
Other hazards not contributing to the classification: None under normal conditions.

2.4. Unknown acute toxicity (GHS US)
Not applicable

SECTION 3: Composition/Information on ingredients

3.1. Substance
Substance type: Mono-constituent

<table>
<thead>
<tr>
<th>Name</th>
<th>Product identifier</th>
<th>%</th>
<th>GHS-US classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ferric Ammonium Citrate</td>
<td>(CAS No) 1185-57-5</td>
<td>100</td>
<td>Skin Irrit. 2, H315</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Eye Irrit. 2A, H319</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>STOT SE 3, H335</td>
</tr>
</tbody>
</table>

Full text of H-phrases: see section 16

3.2. Mixture
Not applicable

SECTION 4: First aid measures

4.1. Description of first aid measures

First-aid measures after inhalation: Remove person to fresh air and keep comfortable for breathing. Remove the victim into fresh air. Respiratory problems: consult a doctor/medical service. Call a poison center/doctor/physician if you feel unwell.

First-aid measures after skin contact: Rinse with water. Soap may be used. Take victim to a doctor if irritation persists. Take off contaminated clothing. If skin irritation occurs: Get medical advice/attention.

First-aid measures after eye contact: Rinse with water. Do not apply neutralizing agents. Take victim to an ophthalmologist if irritation persists. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention.


4.2. Most important symptoms and effects, both acute and delayed
Symptoms/injuries after inhalation: Slight irritation. May cause respiratory irritation.
Symptoms/injuries after skin contact: Slight irritation. Irritation.
Symptoms/injuries after eye contact: Slight irritation. Eye irritation.

4.3. Indication of any immediate medical attention and special treatment needed
Treat symptomatically.

SECTION 5: Firefighting measures

5.1. Extinguishing media

Unsuitable extinguishing media: No unsuitable extinguishing media known.

5.2. Special hazards arising from the substance or mixture
Fire hazard: No data available.
Explosion hazard: No available data.
## 5.3. Advice for firefighters

| Precautionary measures for fire | Exposure to fire/heat: keep upwind. Exposure to fire/heat: consider evacuation. Exposure to fire/heat: have neighbourhood close doors and windows. |
| Firefighting instructions | Cool tanks/drum with water spray/remove them into safety. Dilute toxic gases with water spray. |
| Protection during firefighting | Heat/fire exposure: compressed air/oxygen apparatus. Do not attempt to take action without suitable protective equipment. Complete protective clothing. |

## SECTION 6: Accidental release measures

### 6.1. Personal precautions, protective equipment and emergency procedures

#### 6.1.1. For non-emergency personnel

| Emergency procedures | Ventilate spillage area. Mark the danger area. Prevent dust cloud formation, e.g., by wetting. No naked flames. Wash contaminated clothes. Avoid breathing dust/fume/gas/mist/vapors/spray. Avoid contact with skin and eyes. |

#### 6.1.2. For emergency responders

| Protective equipment | Do not attempt to take action without suitable protective equipment. For further information refer to section 8: "Exposure controls/personal protection". |
| Emergency procedures | Avoid contact with skin and eyes. |

### 6.2. Environmental precautions

Avoid release to the environment. Prevent entry to sewers and public waters.

### 6.3. Methods and material for containment and cleaning up

**For containment**
- Contain released substance, pump into suitable containers. Consult "Material-handling" to select material of containers. Plug the leak, cut off the supply. Knock down/dilute dust cloud with water spray.

**Methods for cleaning up**
- Recover mechanically the product. Stop dust cloud by covering with sand/earth. Scoop solid spill into closing containers. See "Material-handling" for suitable container materials. Clean contaminated surfaces with an excess of water. Wash clothing and equipment after handling.

**Other information**
- Dispose of materials or solid residues at an authorized site.

### 6.4. Reference to other sections

For further information refer to section 13.

## SECTION 7: Handling and storage

### 7.1. Precautions for safe handling

| Precautions for safe handling | Comply with the legal requirements. Clean contaminated clothing. Thoroughly clean/dry the installation before use. Powdered form: no compressed air for pumping over. Keep away from naked flames/heat. Finely divided: spark- and explosionproof appliances. Finely divided: keep away from ignition sources/sparks. Observe normal hygiene standards. Keep container tightly closed. Measure the concentration in the air regularly. Carry operations in the open/under local exhaust/ventilation or with respiratory protection. Use only outdoors or in a well-ventilated area. Avoid breathing dust/fume/gas/mist/vapors/spray. Avoid contact with skin and eyes. Wear personal protective equipment. |
| Hygiene measures | Wash contaminated clothing before reuse. Do not eat, drink or smoke when using this product. Always wash hands after handling the product. |

### 7.2. Conditions for safe storage, including any incompatibilities

| Technical measures | Take all necessary measures to avoid accidental discharge of products into drains and waterways due to the rupture of containers or transfer systems. |
| Storage conditions | Protect from sunlight. Store in a dry place. Store locked up. Store in a well-ventilated place. Keep container tightly closed. Keep cool. |
| Heat-ignition | heat sources. Ignition sources. |
| Prohibitions on mixed storage | oxidizing agents. water/moisture. |
| Storage area | Store at room temperature. Store in a dry area. Store in a dark area. Keep container in a well-ventilated place. Meet the legal requirements. |
| Packaging materials | cardboard. synthetic material. |
SECTION 8: Exposure controls/personal protection

8.1. Control parameters

<table>
<thead>
<tr>
<th>Ferric Ammonium Citrate (1185-57-5)</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>ACGIH</td>
<td>ACGIH TWA (mg/m³)</td>
<td>1 mg/m³ (Iron salts, soluble, as Fe; USA; Time-weighted average exposure limit 8 h; TLV - Adopted Value)</td>
</tr>
<tr>
<td>OSHA</td>
<td>OSHA PEL (TWA) (mg/m³)</td>
<td>15 mg/m³ Total Dust 5 mg/m³ Respirable Dust</td>
</tr>
</tbody>
</table>

8.2. Exposure controls

Appropriate engineering controls: Extraction to remove dust at its source. Eye fountain. Ensure good ventilation of the work station.


Materials for protective clothing: Wear suitable protective clothing, gloves and eye/face protection.

Hand protection: Gloves.


Skin and body protection: Protective clothing.

Respiratory protection: Dust production: dust mask with filter type P1.

Environmental exposure controls: Avoid release to the environment.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

<table>
<thead>
<tr>
<th>Physical state</th>
<th>Solid</th>
</tr>
</thead>
<tbody>
<tr>
<td>Color</td>
<td>Green to red-brown</td>
</tr>
<tr>
<td>Odor</td>
<td>Mild odour Ammonia odour</td>
</tr>
<tr>
<td>Odor threshold</td>
<td>No data available</td>
</tr>
<tr>
<td>pH</td>
<td>No data available</td>
</tr>
<tr>
<td>pH solution</td>
<td>10 g/l (Aqueous Solution)</td>
</tr>
<tr>
<td>Melting point</td>
<td>No data available</td>
</tr>
<tr>
<td>Freezing point</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Boiling point</td>
<td>No data available</td>
</tr>
<tr>
<td>Flash point</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Relative evaporation rate (butyl acetate=1)</td>
<td>No data available</td>
</tr>
<tr>
<td>Flammability (solid, gas)</td>
<td>No data available</td>
</tr>
<tr>
<td>Explosion limits</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Explosive properties</td>
<td>No data available</td>
</tr>
<tr>
<td>Oxidizing properties</td>
<td>No data available</td>
</tr>
<tr>
<td>Vapor pressure</td>
<td>No data available</td>
</tr>
<tr>
<td>Relative density</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Relative vapor density at 20 °C</td>
<td>No data available</td>
</tr>
<tr>
<td>Specific gravity / density</td>
<td>1800 kg/m³</td>
</tr>
<tr>
<td>Solubility</td>
<td>Soluble in water. Water: 120 g/100ml</td>
</tr>
<tr>
<td>Log Pow</td>
<td>No data available</td>
</tr>
<tr>
<td>Auto-ignition temperature</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Decomposition temperature</td>
<td>No data available</td>
</tr>
<tr>
<td>Viscosity</td>
<td>No data available</td>
</tr>
<tr>
<td>Viscosity, kinematic</td>
<td>Not applicable</td>
</tr>
</tbody>
</table>
Ferric Ammonium Citrate
Safety Data Sheet
according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

### 9.2. Other information

- **Viscosity, dynamic**: No data available
- **VOC content**: 0 %
- **Other properties**: Translucent. Hygroscopic. Physical properties depending on the composition.

### SECTION 10: Stability and reactivity

#### 10.1. Reactivity

No additional information available

#### 10.2. Chemical stability

Unstable on exposure to light. Hygroscopic.

#### 10.3. Possibility of hazardous reactions

No dangerous reactions known under normal conditions of use.

#### 10.4. Conditions to avoid

None under recommended storage and handling conditions (see section 7).

#### 10.5. Incompatible materials

No additional information available

#### 10.6. Hazardous decomposition products

Thermal decomposition generates: Carbon dioxide, Carbon monoxide, Ammonia, Nitrogen oxides.

### SECTION 11: Toxicological information

#### 11.1. Information on toxicological effects

- **Likely routes of exposure**: Skin and eye contact
- **Acute toxicity**: Not classified (Lack of data)
- **Skin corrosion/irritation**: Causes skin irritation.
- **Serious eye damage/irritation**: Causes serious eye irritation.
- **Respiratory or skin sensitization**: Not classified (Lack of data)
- **Germ cell mutagenicity**: Not classified (Lack of data)
- **Carcinogenicity**: Not classified
- **Reproductive toxicity**: Not classified (Lack of data)
- **Specific target organ toxicity (single exposure)**: May cause respiratory irritation.
- **Specific target organ toxicity (repeated exposure)**: Not classified (Lack of data)
- **Aspiration hazard**: Not classified (Not applicable)
- **Symptoms/injuries after inhalation**: Slight irritation. May cause respiratory irritation.
- **Symptoms/injuries after skin contact**: Slight irritation. Irritation.
- **Symptoms/injuries after eye contact**: Slight irritation. Eye irritation.

### SECTION 12: Ecological information

#### 12.1. Toxicity

- **Ecology - general**: The product is not considered harmful to aquatic organisms or to cause long-term adverse effects in the environment.
- **Ecology - air**: Not classified as dangerous for the ozone layer (Regulation (EC) No 1005/2009).
### Ecology - water
Mild water pollutant (surface water). Maximum concentration in drinking water: 0.50 mg/l (ammonium) (Directive 98/83/EC); 0.200 mg/l (iron) (Directive 98/83/EC). May cause eutrophication. Harmful to aquatic organisms.

#### 12.2. Persistence and degradability

| Ferric Ammonium Citrate (1185-57-5) | Persistence and degradability | No data available. |

#### 12.3. Bioaccumulative potential

| Ferric Ammonium Citrate (1185-57-5) | Bioaccumulative potential | Not bioaccumulative. |

#### 12.4. Mobility in soil

No additional information available

#### 12.5. Other adverse effects

Effect on the global warming: No known ecological damage caused by this product.

### SECTION 13: Disposal considerations

#### 13.1. Waste treatment methods
Dispose in a safe manner in accordance with local/national regulations.

Waste disposal recommendations: Recycle/reuse.

Additional information: Can be considered as non hazardous waste according to Directive 2008/98/EC.

### SECTION 14: Transport information

**Department of Transportation (DOT)**
In accordance with DOT
Not regulated for transport

**TDG**

| TDG Proper Shipping Name | Not regulated for transport |

**Transport by sea**

| Proper Shipping Name (IMDG) | Not regulated for transport |

**Air transport**

| Proper Shipping Name (IATA) | Not regulated for transport |

### SECTION 15: Regulatory information

#### 15.1. US Federal regulations

**Ferric Ammonium Citrate (1185-57-5)**

Listed on the United States TSCA (Toxic Substances Control Act) inventory

RQ (Reportable quantity, section 304 of EPA's List of Lists): 1000 lb

All components of this product are listed, or excluded from listing, on the United States Environmental Protection Agency Toxic Substances Control Act (TSCA) inventory

This product or mixture does not contain a toxic chemical or chemicals in excess of the applicable de minimis concentration as specified in 40 CFR §372.38(a) subject to the reporting requirements of section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR Part 372.

**Ferric Ammonium Citrate (1185-57-5)**

RQ (Reportable quantity, section 304 of EPA's List of Lists): 1000 lb

#### 15.2. International regulations

**CANADA**

**Ferric Ammonium Citrate (1185-57-5)**

Listed on the Canadian DSL (Domestic Substances List)
Ferric Ammonium Citrate
Safety Data Sheet
according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Ferric Ammonium Citrate (1185-57-5)
Listed on the Canadian DSL (Domestic Substances List)

EU-Regulations
No additional information available

National regulations
Ferric Ammonium Citrate (1185-57-5)
Listed on the AICS (Australian Inventory of Chemical Substances)
Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)
Listed on the Japanese ENCS (Existing & New Chemical Substances) inventory
Listed on the Korean ECL (Existing Chemicals List)
Listed on INSQ (Mexican national Inventory of Chemical Substances)
Listed on NZIoC (New Zealand Inventory of Chemicals)
Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)

15.3. US State regulations
Ferric Ammonium Citrate (1185-57-5)
State or local regulations
U.S. - Massachusetts - Right To Know List
U.S. - New Jersey - Right to Know Hazardous Substance List
U.S. - Pennsylvania - RTK (Right to Know) List

California Proposition 65 - This product does not contain any substances known to the state of California to cause cancer, developmental and/or reproductive harm

Ferric Ammonium Citrate (1185-57-5)
U.S. - Massachusetts - Right To Know List
U.S. - New Jersey - Right to Know Hazardous Substance List
U.S. - Pennsylvania - RTK (Right to Know) List

SECTION 16: Other information
Indication of changes: This sheet has been revised completely (changes were not marked).
Revision date: 10/04/2015

Full text of H-phrases:

- Eye Irrit. 2A: Serious eye damage/eye irritation Category 2A
- Skin Irrit. 2: Skin corrosion/irritation Category 2
- STOT SE 3: Specific target organ toxicity (single exposure) Category 3
- H315: Causes skin irritation
- H319: Causes serious eye irritation
- H335: May cause respiratory irritation

NFPA health hazard: 1 - Exposure could cause irritation but only minor residual injury even if no treatment is given.
NFPA fire hazard: 0 - Materials that will not burn.
NFPA reactivity: 0 - Normally stable, even under fire exposure conditions, and are not reactive with water.
<table>
<thead>
<tr>
<th>HMIS III Rating</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Health</td>
<td>1 Slight Hazard - Irritation or minor reversible injury possible</td>
</tr>
<tr>
<td>Flammability</td>
<td>0 Minimal Hazard - Materials that will not burn</td>
</tr>
<tr>
<td>Physical</td>
<td>0 Minimal Hazard - Materials that are normally stable, even under fire conditions, and will NOT react with water, polymerize, decompose, condense, or self-react. Non-Explosives.</td>
</tr>
</tbody>
</table>

SDS US (GHS HazCom 2012)

*This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product*