SECTION 1: Identification of the substance/mixture and of the company/undertaking

1.1. Product identifier

Product form : Substance
Trade name : Ferric Ammonium Citrate - Brown Aqueous Solution
Chemical name : Ferric Ammonium Citrate - Brown Aqueous Solution
CAS No : 1185-57-5
Product code : 6391
Formula : C$_6$H$_8$O$_7$•xFe•xNH$_4$
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 : No data available

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
www.jostchemical.com

1.4. Emergency telephone number

Emergency number : CHEMTREC 800-424-9300

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification (GHS-US)
Skin Irrit. 2 H315
Eye Irrit. 2A H319
STOT SE 3 H335

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
P337+P313 - If eye irritation persists: Get medical advice/attention
P362+P364 - Take off contaminated clothing and wash it before reuse
P403+P233 - Store in a well-ventilated place. Keep container tightly closed
P405 - Store locked up
P501 - Dispose of contents/container to hazardous or special waste collection point, in accordance with local, regional, national and/or international regulation

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
Name: Ferric Ammonium Citrate - Brown Aqueous Solution
CAS No: 1185-57-5

<table>
<thead>
<tr>
<th>Name</th>
<th>Product identifier</th>
<th>%</th>
<th>Classification (GHS-US)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ferric Ammonium Citrate</td>
<td>(CAS No) 1185-57-5</td>
<td>100</td>
<td>Skin Irr. 2, H315</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Eye Irr. 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.

First-aid measures after skin contact: Rinse with water. Soap may be used. Do not apply (chemical) neutralizing agents. Take victim to a doctor if irritation persists. Wash skin with plenty of water. 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. 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.


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. Irritation to eyes.

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: DIRECT FIRE HAZARD. No data available on direct fire hazard. INDIRECT FIRE HAZARD. No data available on indirect fire hazard.

Explosion hazard: DIRECT EXPLOSION HAZARD. No data available on direct explosion hazard. INDIRECT EXPLOSION HAZARD. No data available on indirect explosion hazard.


5.3. Advice for firefighters

Precautionary measures 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/drums with water spray/remove them into safety. Dilute toxic gases with water spray.


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 [message=<specify applicable conditions>]. INHALATION. 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 8: Exposure-controls/personal protection**.

SECTION 7: Handling and storage

7.1. Precautions for safe handling


Hygiene measures: Do not eat, drink or smoke when using this product. Always wash hands after handling the product. Wash contaminated clothing before reuse.
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: Keep container tightly closed. Keep cool. Protect from sunlight. Store in a well-ventilated place. Store in a dry place. Store locked up.

Heat-ignition: KEEP SUBSTANCE AWAY FROM heat sources. ignition sources.

Prohibitions on mixed storage: KEEP SUBSTANCE AWAY FROM 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.

Special rules on packaging: SPECIAL REQUIREMENTS: closing. watertight. dry. opaque. correctly labelled. meet the legal requirements. Secure fragile packagings in solid containers.

Packaging materials: SUITABLE MATERIAL: cardboard. synthetic material.

7.3. Specific end use(s)

No additional information available

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

<table>
<thead>
<tr>
<th>Ferric Ammonium Citrate - Brown Aqueous Solution (1185-57-5)</th>
<th>ACGIH</th>
<th>ACGIH TWA (mg/m³)</th>
<th>1 mg/m³</th>
</tr>
</thead>
<tbody>
<tr>
<td>OSHA</td>
<td>OSHA PEL (TWA) (mg/m³)</td>
<td>15 mg/m³ Total Dust</td>
<td>5 mg/m³ Respirable Dust</td>
</tr>
</tbody>
</table>

Ferric Ammonium Citrate (1185-57-5)

<table>
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<tr>
<th>ACGIH</th>
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</tr>
</tbody>
</table>

8.2. Exposure controls

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


Materials for protective clothing: GIVE EXCELLENT RESISTANCE: No data available. GIVE GOOD RESISTANCE: No data available. GIVE LESS RESISTANCE: No data available. GIVE POOR RESISTANCE: No data available.

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

Physical state: Liquid


Color: Green to red-brown

Odor: Mild odour Ammonia odour

Odor threshold: No data available

pH: 6 - 8

pH solution: 10 g/l (Aqueous Solution)

Melting point: No data available

Freezing point: Not applicable

Boiling point: No data available
Ferric Ammonium Citrate - Brown Aqueous Solution
Safety Data Sheet
according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

- Flash point: Not applicable
- Relative evaporation rate (butyl acetate=1): No data available
- Flammability (solid, gas): No data available
- Explosion limits: Not applicable
- Explosive properties: No data available
- Oxidizing properties: No data available
- Vapor pressure: No data available
- Relative density: Not applicable
- Relative vapor density at 20 °C: No data available
- Specific gravity / density: 1800 kg/m³
- Solubility: Soluble in water.
  Water: 120 g/100ml
- Log Pow: No data available
- Log Kow: No data available
- Auto-ignition temperature: Not applicable
- Decomposition temperature: No data available
- Viscosity: No data available
- Viscosity, kinematic: Not applicable
- Viscosity, dynamic: No data available

9.2 Other information
VOC content: 0 %
Other properties: Translucent. Hygroscopic. Physical properties depending on the composition.

SECTION 10: Stability and reactivity

10.1 Reactivity
On burning: release of toxic and corrosive gases/vapours (ammonia, nitrous vapours, carbon monoxide - carbon dioxide). Decomposes on exposure to light.

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

SECTION 11: Toxicological information

11.1 Information on toxicological effects

Likely routes of exposure: Skin and eyes contact.
Acute toxicity: Not classified
  (Lack of data)

Skin corrosion/irritation: Causes skin irritation.
  (Based on available data, the classification criteria are not met)
  pH: 6 - 8

Serious eye damage/irritation: Causes serious eye irritation.
  (Based on available data, the classification criteria are not met)
  pH: 6 - 8

Respiratory or skin sensitization: Not classified
  (Lack of data)
Ferric Ammonium Citrate - Brown Aqueous Solution
Safety Data Sheet
according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

| Germ cell mutagenicity                      | Not classified (Lack of data) |
| Carcinogenicity                             | Not classified (Lack of data)  |
| Reproductive toxicity                       | Not classified (Lack of data)  |
| Specific target organ toxicity (single exposure) | May cause respiratory irritation. (Lack of data) |
| 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. Irritation to eyes. |

**SECTION 12: Ecological information**

**12.1. Toxicity**

Ecology - general: The product is not considered harmful to aquatic organisms nor 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 - Brown Aqueous Solution (1185-57-5)**
Persistence and degradability: Biodegradability in water: no data available.

**Ferric Ammonium Citrate (1185-57-5)**
Persistence and degradability: Biodegradability in water: no data available.

**12.3. Bioaccumulative potential**

**Ferric Ammonium Citrate - Brown Aqueous Solution (1185-57-5)**
Bioaccumulative potential: Not bioaccumulative.

**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**
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

Additional information
Other information: No supplementary information available.

Transport by sea
No additional information available

Air transport
No additional information available

SECTION 15: Regulatory information

15.1. US Federal regulations

Ferric Ammonium Citrate - Brown Aqueous Solution (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

Ferric Ammonium Citrate (1185-57-5)
Listed on the United States TSCA (Toxic Substances Control Act) inventory
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15.2. International regulations

CANADA
Ferric Ammonium Citrate - Brown Aqueous Solution (1185-57-5)
Listed on the Canadian DSL (Domestic Substances List) inventory.

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

EU-Regulations
Ferric Ammonium Citrate - Brown Aqueous Solution (1185-57-5)
Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances) substances.

Ferric Ammonium Citrate (1185-57-5)
Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances) substances.

Classification according to Regulation (EC) No. 1272/2008 [CLP]
Not classified

Classification according to Directive 67/548/EEC [DSD] or 1999/45/EC [DPD]
Not classified

National regulations

Ferric Ammonium Citrate - Brown Aqueous Solution (1185-57-5)
Listed on the AICS (the Australian Inventory of Chemical Substances)
Listed on Inventory of Existing Chemical Substances (IECSC)
Listed on the Japanese ENCS (Existing & New Chemicals Substances) inventory.
Listed on the Korean ECL (Existing Chemical List) inventory.
Listed on INSQ (Mexican national Inventory of Chemical Substances)
Listed on New Zealand - Inventory of Chemicals (NZIoC)
Listed on Inventory of Chemicals and Chemical Substances (PICCS)

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15.3. US State regulations

<table>
<thead>
<tr>
<th>Ferric Ammonium Citrate - Brown Aqueous Solution (1185-57-5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>State or local regulations</td>
</tr>
<tr>
<td>U.S. - Massachusetts - Right To Know List</td>
</tr>
<tr>
<td>U.S. - New Jersey - Right to Know Hazardous Substance List</td>
</tr>
<tr>
<td>U.S. - Pennsylvania - RTK (Right to Know) List</td>
</tr>
</tbody>
</table>

SECTION 16: Other information

Indication of changes: Initial SDS.

Full text of H-phrases:

<table>
<thead>
<tr>
<th>Phrase</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eye Irrit. 2A</td>
<td>Serious eye damage/eye irritation Category 2A</td>
</tr>
<tr>
<td>Skin Irrit. 2</td>
<td>Skin corrosion/irritation Category 2</td>
</tr>
<tr>
<td>STOT SE 3</td>
<td>Specific target organ toxicity (single exposure) Category 3</td>
</tr>
<tr>
<td>H315</td>
<td>Causes skin irritation</td>
</tr>
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<td>H319</td>
<td>Causes serious eye irritation</td>
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<tr>
<td>H335</td>
<td>May cause respiratory irritation</td>
</tr>
</tbody>
</table>

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.

HMIS III Rating

Health: 1 Slight Hazard - Irritation or minor reversible injury possible

Flammability: 0 Minimal Hazard - Materials that will not burn

Physical: 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.

Personal Protection: E

E - Safety glasses, Gloves, Dust respirator

SDS US Custom (-ADR)

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.