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

<table>
<thead>
<tr>
<th>1.1. Product identifier</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Product form</strong></td>
</tr>
<tr>
<td><strong>Trade name</strong></td>
</tr>
<tr>
<td><strong>Chemical name</strong></td>
</tr>
<tr>
<td><strong>CAS No</strong></td>
</tr>
<tr>
<td><strong>Product code</strong></td>
</tr>
<tr>
<td><strong>Formula</strong></td>
</tr>
<tr>
<td><strong>Synonyms</strong></td>
</tr>
<tr>
<td><strong>BIG no</strong></td>
</tr>
</tbody>
</table>

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

Use of the substance/mixture: Chemical substance for research

**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)
Not classified

**2.2. Label elements**

GHS-US labeling
No labeling applicable

**2.3. Other hazards**

Other hazards not contributing to the classification: None to our knowledge.

**2.4. Unknown acute toxicity (GHS US)**

Not applicable

**SECTION 3: Composition/information on ingredients**

**3.1. Substance**

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 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. Take victim to a doctor if irritation persists.

First-aid measures after eye contact: Rinse immediately with plenty of water. Take victim to an ophthalmologist.

4.2. Most important symptoms and effects, both acute and delayed

Symptoms/injuries after eye contact: Irritation of the eye tissue.

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.
Reactivity: Upon combustion: CO and CO2 are formed.

5.3. Advice for firefighters

Precautionary measures fire: Exposure to fire/heat: keep upwind. Exposure to fire/heat: have neighbourhood close doors and windows.
Firefighting instructions: No specific fire-fighting instructions required.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

6.1.1. For non-emergency personnel

Emergency procedures: Mark the danger area. Prevent dust cloud formation, e.g. by wetting.
Measures in case of dust release: In case of dust production: keep upwind. Dust production: have neighbourhood close doors and windows.

6.1.2. For emergency responders

Protective equipment: Do not attempt to take action without suitable protective equipment. Do not attempt to take action without suitable protective equipment. For further information refer to section 8: Exposure controls/personal protection". For further information refer to section 8: Exposure controls/personal protection".

6.2. Environmental precautions

Avoid release to the environment. Do not allow product to spread into the environment. Do not discharge into drains or rivers.

6.3. Methods and material for containment and cleaning up

For containment: Contain released substance, pump into suitable containers. Plug the leak, cut off the supply. Knock down/dilute dust cloud with water spray.
Methods for cleaning up: Stop dust cloud by covering with sand/earth. Scoop solid spill into closing containers. 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". For further information refer to section 8: Exposure-controls/personal protection".

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Precautions for safe handling: Comply with the legal requirements. Avoid raising dust. Keep container tightly closed. Carry operations in the open/under local exhaust/ventilation or with respiratory protection.
Hygiene measures: 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: Does not require any specific or particular measures.
Storage conditions: Keep container tightly closed and dry. Protect from light. Store in a cool, well-ventilated place. Store in a well-ventilated place. Keep cool.
Incompatible materials: Strong oxidizing agents.
Heat-ignition: KEEP SUBSTANCE AWAY FROM: heat sources.
Prohibitions on mixed storage: KEEP SUBSTANCE AWAY FROM: oxidizing agents.
Storage area: Store in a cool area. Store in a dry area. Store in a dark area. Meet the legal requirements.
Special rules on packaging: SPECIAL REQUIREMENTS: closing. opaque. correctly labelled. meet the legal requirements. Secure fragile packagings in solid containers.
Packaging materials: SUITABLE MATERIAL: No data available. MATERIAL TO AVOID: No data available.

7.3. Specific end use(s)
No additional information available

SECTION 8: Exposure controls/personal protection
8.1. Control parameters
No additional information available

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

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: Solid
Appearance: Crystalline solid. Crystalline powder.
Color: Red-brown. On exposure to light: colourless
Odor: Odourless
Odor threshold: No data available
pH: No data available
Melting point: No data available
Freezing point: Not applicable
Boiling point: Not applicable
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: Not explosive.
Oxidizing properties: Non oxidizing material according to EC criteria.
### Ferric Citrate

**Safety Data Sheet**

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

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<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<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>Molecular mass</td>
<td>244.95 g/mol</td>
</tr>
<tr>
<td>Solubility</td>
<td>Soluble in water.</td>
</tr>
<tr>
<td>Log Pow</td>
<td>No data available</td>
</tr>
<tr>
<td>Log Kow</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>
<tr>
<td>Viscosity, dynamic</td>
<td>No data available</td>
</tr>
</tbody>
</table>

#### 9.2. Other information

- **VOC content**: 0 %

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**SECTION 10: Stability and reactivity**

**10.1. Reactivity**

Upon combustion: CO and CO2 are formed.

**10.2. Chemical stability**

Unstable on exposure to light.

**10.3. Possibility of hazardous reactions**

None under normal conditions.

**10.4. Conditions to avoid**

None to our knowledge.

**10.5. Incompatible materials**

Strong oxidizing agents.

**10.6. Hazardous decomposition products**

On combustion or on thermal decomposition (pyrolysis) releases: Carbon oxides (CO, CO2).

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**SECTION 11: Toxicological information**

**11.1. Information on toxicological effects**

- **Acute toxicity**: Not classified
- **Skin corrosion/irritation**: Not classified
- **Serious eye damage/irritation**: Not classified
- **Respiratory or skin sensitization**: Not classified
- **Germ cell mutagenicity**: Not classified
- **Carcinogenicity**: Not classified
- **Reproductive toxicity**: Not classified
- **Specific target organ toxicity (single exposure)**: Not classified
- **Specific target organ toxicity (repeated exposure)**: Not classified
- **Aspiration hazard**: Not classified

<table>
<thead>
<tr>
<th>Effect</th>
<th>Symptom</th>
</tr>
</thead>
<tbody>
<tr>
<td>Symptoms/injuries after inhalation</td>
<td>Coughing. Breathing difficulties. Anoxia (asphyxia).</td>
</tr>
<tr>
<td>Symptoms/injuries after eye contact</td>
<td>Irritation of the eye tissue.</td>
</tr>
</tbody>
</table>

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**SECTION 12: Ecological information**

**12.1. Toxicity**

**Ecology - general**: No information available, however this product is not considered to present any particular risk for the aquatic environment.
Ecology - air
: Not classified as dangerous for the ozone layer (Regulation (EC) No 1005/2009).

Ecology - water
: Severe water pollutant (surface water). Maximum concentration in drinking water: 0.200 mg/l (iron) (Directive 98/83/EC). No data available on ecotoxicity.

12.2. Persistence and degradability
No additional information available

12.3. Bioaccumulative potential
No additional information available

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 of in accordance with relevant local regulations.

Waste disposal recommendations
: Remove waste in accordance with local and/or national regulations. Hazardous waste shall not be mixed together with other waste. Different types of hazardous waste shall not be mixed together if this may entail a risk of pollution or create problems for the further management of the waste. Hazardous waste shall be managed responsibly. All entities that store, transport or handle hazardous waste shall take the necessary measures to prevent risks of pollution or damage to people or animals. Recycle/reuse. Dissolve or mix with a combustible solvent. Remove to an authorized incinerator equipped with an afterburner and a flue gas scrubber with energy recovery.

Additional information
: LWCA (the Netherlands): KGA category 05. 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
: Not applicable.

Transport by sea
No additional information available

Air transport
No additional information available

SECTION 15: Regulatory information

15.1. US Federal regulations

Ferric Citrate (2338-05-8)
: Listed on the United States TSCA (Toxic Substances Control Act) inventory

15.2. International regulations

CANADA

Ferric Citrate (2338-05-8)
: Listed on the Canadian DSL (Domestic Substances List) inventory.

EU-Regulations

Ferric Citrate (2338-05-8)
: Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances) substances.

Classification according to Regulation (EC) No. 1272/2008 [CLP]

Eye Irrit. 2
: H319

Full text of H-phrases: see section 16
Ferric Citrate
Safety Data Sheet
according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Classification according to Directive 67/548/EEC [DSD] or 1999/45/EC [DPD]
Xi; R36
Full text of R-phrases: see section 16

National regulations
Ferric Citrate (2338-05-8)
Listed on the AICS (the Australian Inventory of Chemical Substances)
Listed on the Japanese ENCS (Existing & New Chemicals Substances) inventory.
Listed on New Zealand - Inventory of Chemicals (NZIoC)
Listed on Inventory of Chemicals and Chemical Substances (PICCS)

15.3. US State regulations

SECTION 16: Other information

Indication of changes : Initial SDS.

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.

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.