SAFETY DATA SHEET
According to JIS Z 7253:2019
Revision Date 28-Sep-2020
Version 3.02

Section 1: PRODUCT AND COMPANY IDENTIFICATION

<table>
<thead>
<tr>
<th>Product name</th>
<th>Iron(III) Triammonium Trioxalate Trihydrate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product code</td>
<td>090-00825</td>
</tr>
</tbody>
</table>

Manufacturer
FUJIFILM Wako Pure Chemical Corporation
1-2 Doshomachi 3-Chome
Chuo-ku, Osaka 540-8605, Japan
Phone: +81-6-6203-3741
Fax: +81-6-6203-5964

Supplier
FUJIFILM Wako Pure Chemical Corporation
1-2 Doshomachi 3-Chome, Chuo-ku, Osaka 540-8605, Japan
Phone: +81-6-6203-3741
Fax: +81-6-6203-2029

Emergency telephone number
+81-6-6203-3741 / +81-3-3270-8571

Recommended uses and restrictions on use
For research purposes

Section 2: HAZARDS IDENTIFICATION

GHS classification
Classification of the substance or mixture

<table>
<thead>
<tr>
<th>Skin corrosion/irritation</th>
<th>Category 2</th>
</tr>
</thead>
<tbody>
<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>
<tr>
<td>Category 3</td>
<td>Respiratory tract irritation</td>
</tr>
</tbody>
</table>

Pictograms

Signal word
Warning

Hazard statements
H315 - Causes skin irritation
H319 - Causes serious eye irritation
H335 - May cause respiratory irritation

Precautionary statements-(Prevention)
• Wash face, hands and any exposed skin thoroughly after handling
• Wear protective gloves/protective clothing/eye protection/face protection
• Avoid breathing dust/fume/gas/mist/vapors/spray
• Use only outdoors or in a well-ventilated area

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 soap and water
• If skin irritation occurs: Get medical advice/attention
• Take off contaminated clothing and wash before reuse
• IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.
• Call a POISON CENTER or doctor/physician if you feel unwell.

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

Others
Other hazards Not available

Section 3: COMPOSITION/INFORMATION ON INGREDIENTS

Single Substance or Mixture Substance

Formula Fe(NH₄)₃(C₂O₄)₃·3H₂O

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Weight-%</th>
<th>Molecular weight</th>
<th>ENCS</th>
<th>ISHL No.</th>
<th>CAS RN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iron(III) Triammonium Trioxalate Trihydrate</td>
<td>95.0</td>
<td>428.06</td>
<td>N/A</td>
<td>N/A</td>
<td>14221-47-7</td>
</tr>
</tbody>
</table>

Impurities and/or Additives : Not applicable

Section 4: FIRST AID MEASURES

Inhalation
Remove to fresh air. If symptoms persist, call a physician.

Skin contact
Wash off immediately with soap and plenty of water. If symptoms persist, call a physician.

Eye contact
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediate medical attention is required.

Ingestion
Rinse mouth. Never give anything by mouth to an unconscious person. Call a physician or poison control center immediately. Do not induce vomiting without medical advice.

Protection of first-aiders
Use personal protective equipment as required.

Section 5: FIRE FIGHTING MEASURES

Suitable extinguishing media
Use extinguishing measures that are appropriate to local circumstances and the surrounding environment

Unsuitable extinguishing media
No information available

Specific hazards arising from the chemical product
Thermal decomposition can lead to release of irritating and toxic gases and vapors.

Special extinguishing method
No information available

Special protective actions for fire-fighters
Use personal protective equipment as required. Firefighters should wear self-contained breathing apparatus and full firefighting turnout gear.

Section 6: ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures
For indoor, provide adequate ventilation process until the end of working. Deny unnecessary entry other than the people involved by, for example, using a rope. While working, wear appropriate protective equipments to avoid adhering it on skin,
or inhaling the gas. Work from windward, and retract the people downwind.

**Environmental precautions**
- To be careful not discharged to the environment without being properly handled waste water contaminated.

**Methods and materials for contaminant and methods and materials for cleaning up**
- Sweep up and gather scattered particles, and collect it in an empty airtight container.

**Recovery, neutralization**
- No information available

**Secondary disaster prevention measures**
- Clean contaminated objects and areas thoroughly observing environmental regulations.

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**Section 7: HANDLING AND STORAGE**

**Handling**

**Technical measures**
- Avoid contact with strong oxidizing agents. Use with local exhaust ventilation.

**Precautions**
- Do not rough handling containers, such as upsetting, falling, giving a shock, and dragging. Prevent leakage, overflow, and scattering. Not to generate steam and dust in vain. Seal the container after use. After handling, wash hands and face, and then gargle. In places other than those specified, should not be smoking or eating and drinking. Should not be brought contaminated protective equipment and gloves to rest stops. Deny unnecessary entry of non-emergency personnel to the handling area.

**Safety handling precautions**
- Avoid contact with skin, eyes or clothing. Use personal protective equipment as required.

**Storage**

**Safe storage conditions**
- Store away from sunlight in well-ventilated place at room temperature (preferably cool).
- Keep container tightly closed. Store locked up.

**Safe packaging material**
- Glass

**Incompatible substances**
- Strong oxidizing agents

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**Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION**

**Engineering controls**
- In case of indoor workplace, seal the source or use a local exhaust system. Provide the safety shower facility, and hand- and eye-wash facility. And display their position clearly.

**Exposure limits**

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>JSOH (Japan)</th>
<th>ISHL (Japan)</th>
<th>ACGIH</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iron(III) Triammonium Trioxalate Trihydrate 14221-47-7</td>
<td>N/A</td>
<td>N/A</td>
<td>TWA: 1 mg/m³ Fe</td>
</tr>
</tbody>
</table>

**Personal protective equipment**

- **Respiratory protection**
  - Dust mask
- **Hand protection**
  - Protection gloves
- **Eye protection**
  - protective eyeglasses or chemical safety goggles
- **Skin and body protection**
  - Long-sleeved work clothes

**General hygiene considerations**
- Handle in accordance with good industrial hygiene and safety practice.

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**Section 9: PHYSICAL AND CHEMICAL PROPERTIES**

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Form</td>
<td>yellowish green</td>
</tr>
<tr>
<td>Color</td>
<td>crystals</td>
</tr>
<tr>
<td>Odor</td>
<td>No data available</td>
</tr>
<tr>
<td>Melting point/freezing point</td>
<td>No data available</td>
</tr>
<tr>
<td>Boiling point, initial boiling point and boiling range</td>
<td>No data available</td>
</tr>
<tr>
<td>Flammability</td>
<td>No data available</td>
</tr>
<tr>
<td>Evaporation rate</td>
<td>No data available</td>
</tr>
</tbody>
</table>
Flammability (solid, gas): No data available
Upper/lower flammability or explosive limits
  Upper : No data available  
  Lower : No data available
Flash point: No data available
Auto-ignition temperature: No data available
Decomposition temperature: 160-170 °C
Viscosity (coefficient of viscosity) No data available
Dynamic viscosity: No data available
Solubilities: Water : soluble
n-Octanol/water partition coefficient: (log Pow) No data available
Vapour pressure: No data available
Specific Gravity / Relative density: No data available
Vapour density: No data available
Particle characteristics: No data available

Section 10: STABILITY AND REACTIVITY

Stability
Reactivity: No data available
Chemical stability: Stable under recommended storage conditions.
Hazardous reactions
  None under normal processing
Conditions to avoid
  Extremes of temperature and direct sunlight
Incompatible materials
  Strong oxidizing agents
Hazardous decomposition products
  Carbon monoxide (CO), Carbon dioxide (CO2), Nitrogen oxides (NOx), Metal oxides

Section 11: TOXICOLOGICAL INFORMATION

Acute toxicity

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Acute toxicity -oral- source information</th>
<th>Acute toxicity -dermal- source information</th>
<th>Acute toxicity -inhalation gas-source information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iron(III) Triammonium Trioxalate Trihydrate</td>
<td>Based on the NITE GHS classification results.</td>
<td>Based on the NITE GHS classification results.</td>
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</tr>
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</table>

Skin irritation/corrosion

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Skin corrosion/irritation source information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iron(III) Triammonium Trioxalate Trihydrate</td>
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</tbody>
</table>

Serious eye damage/irritation

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<thead>
<tr>
<th>Chemical Name</th>
<th>Serious eye damage/irritation source information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iron(III) Triammonium Trioxalate Trihydrate</td>
<td>Based on the NITE GHS classification results.</td>
</tr>
</tbody>
</table>

Respiratory or skin sensitization

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Respiratory or Skin sensitization source information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iron(III) Triammonium Trioxalate Trihydrate</td>
<td>Based on the NITE GHS classification results.</td>
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</tbody>
</table>

Reproductive cell mutagenicity

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Germ cell mutagenicity source information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iron(III) Triammonium Trioxalate Trihydrate</td>
<td>Based on the NITE GHS classification results.</td>
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</tbody>
</table>

Carcinogenicity

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Carcinogenicity source information</th>
</tr>
</thead>
</table>

Iron(III) Triammonium Trioxalate Trihydrate
Iron(III) Triammonium Trioxalate Trihydrate  Based on the NITE GHS classification results.

### Reproductive toxicity

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<thead>
<tr>
<th>Chemical Name</th>
<th>Reproductive toxicity source information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iron(III) Triammonium Trioxalate Trihydrate</td>
<td>Based on the NITE GHS classification results.</td>
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</table>

#### STOT-single exposure

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>STOT -single exposure- source information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iron(III) Triammonium Trioxalate Trihydrate</td>
<td>Based on the NITE GHS classification results.</td>
</tr>
</tbody>
</table>

#### STOT-repeated exposure

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>STOT -repeated exposure- source information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iron(III) Triammonium Trioxalate Trihydrate</td>
<td>Based on the NITE GHS classification results.</td>
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</tbody>
</table>

### Aspiration hazard

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Aspiration Hazard source information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iron(III) Triammonium Trioxalate Trihydrate</td>
<td>Based on the NITE GHS classification results.</td>
</tr>
</tbody>
</table>

### Section 12: ECOLOGICAL INFORMATION

#### Ecotoxicity

No information available

#### Other data

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Short-term (acute) hazardous to the aquatic environment</th>
<th>Long-term (chronic) hazardous to the aquatic environment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iron(III) Triammonium Trioxalate Trihydrate</td>
<td>Based on the NITE GHS classification results.</td>
<td>Based on the NITE GHS classification results.</td>
</tr>
</tbody>
</table>

#### Persistence and degradability

Degree of decomposition: 37 % by BOD (METI Existing chemical safety inspections)

#### Bioaccumulative potential

No information available

#### Mobility in soil

No information available

#### Hazard to the ozone layer

No information available

### Section 13: DISPOSAL CONSIDERATIONS

#### Waste from residues

Disposal should be in accordance with applicable regional, national and local laws and regulations.

#### Contaminated container and contaminated packaging

Disposal should be in accordance with applicable regional, national and local laws and regulations.

### Section 14: TRANSPORT INFORMATION

#### ADR/RID

Not regulated

- UN number
- Proper shipping name:
- UN classification
- Subsidiary hazard class
- Packing group
- Marine pollutant: Not applicable

#### IMDG

Not regulated

- UN number
- Proper shipping name:
- UN classification
- Subsidiary hazard class
- Packing group
- Marine pollutant (Sea): Not applicable
- Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code: No information available

#### IATA

Not regulated

- UN number
-
Proper shipping name:
UN classification
Subsidiary hazard class
Packing group
Environmentally Hazardous Substance Not applicable

Section 15: REGULATORY INFORMATION

International Inventories
- EINECS/ELINCS Listed
- TSCA Listed

Japanese regulations
- Fire Service Act Not applicable
- Poisonous and Deleterious Substances Control Law Deleterious Substances 3rd. Grade
- Industrial Safety and Health Act Notifiable Substances (Law Art.57-2, Enforcement Order Art.18-2 Attached Table No.9), No.352
- Harmful Substances Whose Names Are to be Indicated on the Label (Law Art.57, Para.1, Enforcement Order Art.18) Not applicable

Regulations for the carriage and storage of dangerous goods in ship
- Civil Aeronautics Law Not applicable
- Pollutant Release and Transfer Register Law Not applicable
- Water Pollution Control Act Harmful Substances (Law Art.2, Enforcement Order Art.2, Ordinance Designating Wastewater Standards Art.1)
- Export Trade Control Order Not applicable

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>Poisonous and Deleterious Substances Control Law</th>
<th>Industrial Safety and Health Act Substances (Law Art.57-2)</th>
<th>Pollutant Release and Transfer Register Law</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iron(III) Triammonium Trioxalate Trihydrate 14221-47-7 (95.0)</td>
<td>Applicable</td>
<td>Applicable</td>
<td>-</td>
</tr>
</tbody>
</table>

Section 16: OTHER INFORMATION

Key literature references and sources for data etc.
- NITE: National Institute of Technology and Evaluation (JAPAN)
  http://www.safe.nite.go.jp/japan/db.html
- IATA dangerous Goods Regulations
- RTECS: Registry of Toxic Effects of Chemical Substances
- Japan Industrial Safety and Health Association GHS Model SDS
- Chemical Dictionary, Kyouritsu Publishing Co., Ltd.
- etc

Disclaimer
This SDS is according to JIS Z 7253: 2019. The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.
GHS Classification is according to JIS Z7252(2019). *JIS: Japanese Industrial Standards

End of Safety Data Sheet