

SAFETY DATA SHEET

1. Identification

Product identifier: FERRIC AMMONIUM CITRATE

Other means of identification

Product No.: 1980, 1977

Recommended use and restriction on use

Recommended use: Not available.

Restrictions on use: Not known.

Manufacturer/Importer/Supplier/Distributor information

Manufacturer

Company Name: Avantor Performance Materials, Inc.
Address: 3477 Corporate Parkway, Suite 200
Center Valley, PA 18034

Telephone: Customer Service: 855-282-6867

Fax:
Contact Person: Environmental Health & Safety
e-mail: info@avantormaterials.com

Emergency telephone number:

24 Hour Emergency: 908-859-2151

Chemtrec: 800-424-9300

2. Hazard(s) identification

Hazard classification

Health hazards

Serious eye damage/eye irritation Category 2B

Label elements

Hazard symbol: No symbol

Signal word: Warning

Hazard statement: Causes eye irritation.

Precautionary statement

Prevention: Wash thoroughly after handling.

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.

Other hazards which do not result in GHS classification: None.

3. Composition/information on ingredients

Substances

| Chemical identity | Common name and synonyms | CAS number | Content in percent (%)* |
|-------------------------|--------------------------|------------|-------------------------|
| FERRIC AMMONIUM CITRATE | | 1185-57-5 | 90 - 100% |

* All concentrations are percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.

4. First-aid measures

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| General information: | Get medical advice/attention if you feel unwell. Show this safety data sheet to the doctor in attendance. |
| Ingestion: | Rinse mouth. Call a POISON CENTER or doctor/physician if you feel unwell. |
| Inhalation: | Move to fresh air. Get medical attention if symptoms persist. |
| Skin contact: | Wash skin thoroughly with soap and water. Get medical attention if symptoms occur. Wash contaminated clothing before reuse. |
| Eye contact: | Immediately flush with plenty of water for at least 15 minutes. If easy to do, remove contact lenses. Get medical attention. |

Most important symptoms/effects, acute and delayed

Symptoms: Irritating to eyes, respiratory system and skin.

Indication of immediate medical attention and special treatment needed

Treatment: Treat symptomatically.

5. Fire-fighting measures

General fire hazards: No unusual fire or explosion hazards noted.

Suitable (and unsuitable) extinguishing media

Suitable extinguishing media: Use fire-extinguishing media appropriate for surrounding materials.

Unsuitable extinguishing media: None known.

Specific hazards arising from the chemical: During fire, gases hazardous to health may be formed.

Special protective equipment and precautions for firefighters

Special fire fighting procedures: Move containers from fire area if you can do so without risk. Use water spray to keep fire-exposed containers cool. Cool containers exposed to flames with water until well after the fire is out.

Special protective equipment for fire-fighters: Firefighters must use standard protective equipment including flame retardant coat, helmet with face shield, gloves, rubber boots, and in enclosed spaces, SCBA.

6. Accidental release measures

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| Personal precautions, protective equipment and emergency procedures: | Keep unauthorized personnel away. Ventilate closed spaces before entering them. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Avoid inhalation of dust. See Section 8 of the MSDS for Personal Protective Equipment. |
| Methods and material for containment and cleaning up: | Sweep up and place in a clearly labeled container for chemical waste. Clean surface thoroughly to remove residual contamination. |
| Notification Procedures: | Prevent entry into waterways, sewer, basements or confined areas. Stop the flow of material, if this is without risk. Inform authorities if large amounts are involved. |
| Environmental precautions: | Do not contaminate water sources or sewer. Prevent further leakage or spillage if safe to do so. |

7. Handling and storage

| | |
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| Precautions for safe handling: | Avoid contact with eyes, skin, and clothing. Avoid inhalation of dust. Wash hands thoroughly after handling. See Section 8 of the MSDS for Personal Protective Equipment. |
| Conditions for safe storage, including any incompatibilities: | Keep container tightly closed in a cool, well-ventilated place. |

8. Exposure controls/personal protection

Control parameters

Occupational exposure limits

| Chemical identity | Type | Exposure Limit values | Source |
|---------------------------------|---------|-----------------------|--|
| FERRIC AMMONIUM CITRATE - as Fe | TWA | 1 mg/m ³ | US. ACGIH Threshold Limit Values (2011) |
| | REL | 1 mg/m ³ | US. NIOSH: Pocket Guide to Chemical Hazards (2010) |
| | TWA | 1 mg/m ³ | US. OSHA Table Z-1-A (29 CFR 1910.1000) (1989) |
| | TWA | 1 mg/m ³ | US. Tennessee. OELs. Occupational Exposure Limits, Table Z1A (06 2008) |
| FERRIC AMMONIUM CITRATE | ST ESL | 10 µg/m ³ | US. Texas. Effects Screening Levels (Texas Commission on Environmental Quality) (12 2010) |
| | AN ESL | 1 µg/m ³ | US. Texas. Effects Screening Levels (Texas Commission on Environmental Quality) (12 2010) |
| FERRIC AMMONIUM CITRATE - as Fe | TWA PEL | 1 mg/m ³ | US. California Code of Regulations, Title 8, Section 5155. Airborne Contaminants (08 2010) |

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|---|--------------------|
| Appropriate engineering controls | No data available. |
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Individual protection measures, such as personal protective equipment

General information: Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level.

Eye/face protection: Wear safety glasses with side shields (or goggles).

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| Skin protection | |
| Hand protection: | Chemical resistant gloves |
| Other: | Wear suitable protective clothing. |
| Respiratory protection: | In case of inadequate ventilation use suitable respirator. |
| Hygiene measures: | Provide eyewash station and safety shower. Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing to remove contaminants. Discard contaminated footwear that cannot be cleaned. |

9. Physical and chemical properties

Appearance

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| Physical state: | Solid |
| Form: | Powder. |
| Color: | Green or brown |
| Odor: | Odorless or slight odor |
| Odor threshold: | No data available. |
| pH: | No data available. |
| Melting point/freezing point: | No data available. |
| Initial boiling point and boiling range: | No data available. |
| Flash Point: | Not applicable |
| Evaporation rate: | No data available. |
| Flammability (solid, gas): | No data available. |
| Upper/lower limit on flammability or explosive limits | |
| Flammability limit - upper (%): | No data available. |
| Flammability limit - lower (%): | No data available. |
| Explosive limit - upper (%): | No data available. |
| Explosive limit - lower (%): | No data available. |
| Vapor pressure: | No data available. |
| Vapor density: | No data available. |
| Relative density: | 1.8 (20 °C) 4 °C |
| Solubility(ies) | |
| Solubility in water: | Very Soluble |
| Solubility (other): | No data available. |
| Partition coefficient (n-octanol/water): | No data available. |
| Auto-ignition temperature: | No data available. |
| Decomposition temperature: | No data available. |
| Viscosity: | No data available. |

10. Stability and reactivity

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| Reactivity: | No dangerous reaction known under conditions of normal use. |
| Chemical stability: | Material is stable under normal conditions. |
| Possibility of hazardous reactions: | Hazardous polymerization does not occur. |
| Conditions to avoid: | Contact with incompatible materials. Heat. Light. Moisture. |
| Incompatible materials: | Strong oxidizing agents. Iodides. |

Hazardous decomposition products: Thermal decomposition may produce oxides of carbon and nitrogen.

11. Toxicological information

Information on likely routes of exposure

Ingestion: May cause irritation of the gastrointestinal tract.

Inhalation: Dust may irritate respiratory system.

Skin contact: Causes mild skin irritation.

Eye contact: Causes eye irritation.

Information on toxicological effects

Acute toxicity (list all possible routes of exposure)

Oral Product: No data available.

Dermal Product: No data available.

Inhalation Product: No data available.

Repeated dose toxicity Product: No data available.

Skin corrosion/irritation Product: Causes mild skin irritation.

Serious eye damage/eye irritation Product: Causes eye irritation.

Respiratory or skin sensitization Product: Not a skin sensitizer.

Carcinogenicity Product: This substance has no evidence of carcinogenic properties.

IARC Monographs on the Evaluation of Carcinogenic Risks to Humans:
No carcinogenic components identified

US. National Toxicology Program (NTP) Report on Carcinogens:
No carcinogenic components identified

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050):
No carcinogenic components identified

Germ cell mutagenicity

In vitro Product: No mutagenic components identified

In vivo Product: No mutagenic components identified

Reproductive toxicity Product: No components toxic to reproduction

Specific target organ toxicity - single exposure

Product: Respiratory tract irritation.

Specific target organ toxicity - repeated exposure

Product: None known.

Aspiration hazard

Product: Not classified

Other effects: None known.

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| 12. Ecological information |
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Ecotoxicity:

Acute hazards to the aquatic environment:

Fish

Product: No data available.

Aquatic invertebrates

Product: No data available.

Chronic hazards to the aquatic environment:

Fish

Product: No data available.

Aquatic invertebrates

Product: No data available.

Toxicity to Aquatic Plants

Product: No data available.

Persistence and degradability

Biodegradation

Product: There are no data on the degradability of this product.

BOD/COD ratio

Product: No data available.

Bioaccumulative potential

Bioconcentration factor (BCF)

Product: No data available on bioaccumulation.

Partition coefficient n-octanol / water (log Kow)

Product: No data available.

Mobility in soil: The product is water soluble and may spread in water systems.

Other adverse effects: The product is mildly toxic to aquatic organisms.

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| 13. Disposal considerations |
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Disposal instructions: Discharge, treatment, or disposal may be subject to national, state, or local laws.

Contaminated packaging: Since emptied containers retain product residue, follow label warnings even after container is emptied.

14. Transport information

DOT

Not regulated.

IMDG

Not regulated.

IATA

Not regulated.

15. Regulatory information

US federal regulations

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

None present or none present in regulated quantities.

CERCLA Hazardous Substance List (40 CFR 302.4):

FERRIC AMMONIUM Reportable quantity: 1000 lbs.
CITRATE

Superfund amendments and reauthorization act of 1986 (SARA)

Hazard categories

Acute (Immediate) Chronic (Delayed) Fire Reactive Pressure Generating

SARA 302 Extremely hazardous substance

None present or none present in regulated quantities.

SARA 304 Emergency release notification

| Chemical identity | RQ |
|-------------------|-----------|
| FERRIC AMMONIUM | 1000 lbs. |
| CITRATE | |

SARA 311/312 Hazardous chemical

| Chemical identity | Threshold Planning Quantity |
|-------------------|-----------------------------|
| FERRIC AMMONIUM | |
| CITRATE | |
| FERRIC AMMONIUM | 500 lbs |
| CITRATE | |

SARA 313 (TRI reporting)

None present or none present in regulated quantities.

Clean Water Act Section 311 Hazardous Substances (40 CFR 117.3)

FERRIC AMMONIUM Reportable quantity: 1000 lbs.
CITRATE

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130):

None present or none present in regulated quantities.

US state regulations

US. California Proposition 65

No ingredient regulated by CA Prop 65 present.

US. New Jersey Worker and Community Right-to-Know Act

FERRIC AMMONIUM Listed
CITRATE

US. Massachusetts RTK - Substance List

FERRIC AMMONIUM Listed
CITRATE

US. Pennsylvania RTK - Hazardous Substances

FERRIC AMMONIUM Listed
CITRATE

US. Rhode Island RTK

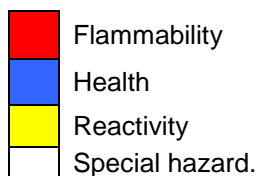
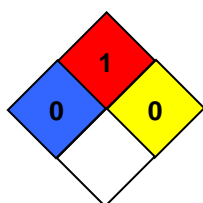
FERRIC AMMONIUM Listed
CITRATE

Inventory Status:

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| Australia AICS: | On or in compliance with the inventory |
| Canada DSL Inventory List: | On or in compliance with the inventory |
| EU EINECS List: | On or in compliance with the inventory |
| EU ELINCS List: | Not in compliance with the inventory. |
| Japan (ENCS) List: | Not in compliance with the inventory. |
| EU No Longer Polymers List: | Not in compliance with the inventory. |
| China Inv. Existing Chemical Substances: | On or in compliance with the inventory |
| Korea Existing Chemicals Inv. (KECI): | On or in compliance with the inventory |
| Canada NDSL Inventory: | Not in compliance with the inventory. |
| Philippines PICCS: | On or in compliance with the inventory |
| US TSCA Inventory: | On or in compliance with the inventory |
| New Zealand Inventory of Chemicals: | On or in compliance with the inventory |
| Japan ISHL Listing: | On or in compliance with the inventory |
| Japan Pharmacopoeia Listing: | Not in compliance with the inventory. |

16. Other information, including date of preparation or last revision

NFPA Hazard ID



Hazard rating: 0 - Minimal; 1 - Slight; 2 - Moderate; 3 - Serious; 4 - Severe

Issue date: 04-18-2014
Revision date: No data available.
Version #: 1.0
Further information: No data available.

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