

# SAFETY DATA SHEET

## 1. Identification

**Product identifier:** Ferrous Chloride, 4-Hydrate

**Other means of identification**

**Synonyms:** Iron (II) Chloride Tetrahydrate

**Product No.:** 2064

**Recommended use and restriction on use**

**Recommended use:** Not available.

**Restrictions on use:** Not known.

**Details of the supplier of the safety data sheet**

**Manufacturer**

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

**Telephone:** Customer Service: 855-282-6867

**Fax:** 610-573-2610  
**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**

|                                   |             |
|-----------------------------------|-------------|
| Acute toxicity (Oral)             | Category 4  |
| Serious Eye Damage/Eye Irritation | Category 1  |
| Skin Corrosion/Irritation         | Category 1B |

**Label Elements**

**Hazard Symbol:**



**Signal Word:** Danger

**Hazard Statement:** Harmful if swallowed.  
Causes severe skin burns and eye damage.

## Precautionary Statement

|                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|-----------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Prevention:</b>                                              | Wash thoroughly after handling. Do not eat, drink or smoke when using this product. Wear eye protection/face protection. Do not breathe dust.                                                                                                                                                                                                                                                                                                         |
| <b>Response:</b>                                                | IF SWALLOWED: Rinse mouth. Do NOT induce vomiting. IF ON SKIN (or hair): Remove/take off immediately all contaminated clothing. Rinse skin with water/shower. IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Immediately call a POISON CENTER or doctor/physician. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. |
| <b>Storage:</b>                                                 | Store locked up.                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Disposal:</b>                                                | Dispose of contents/container to an appropriate treatment and disposal facility in accordance with applicable laws and regulations, and product characteristics at time of disposal.                                                                                                                                                                                                                                                                  |
| <b>Other hazards which do not result in GHS classification:</b> | None.                                                                                                                                                                                                                                                                                                                                                                                                                                                 |

## 3. Composition/information on ingredients

### Substances

| Chemical Identity                | Common name and synonyms | CAS number | Content in percent (%)* |
|----------------------------------|--------------------------|------------|-------------------------|
| FERROUS CHLORIDE<br>TETRAHYDRATE |                          | 13478-10-9 | 99 - 100%               |

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

## 4. First-aid measures

|                             |                                                                                                                                                                                         |
|-----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>General information:</b> | Get medical advice/attention if you feel unwell. Show this safety data sheet to the doctor in attendance.                                                                               |
| <b>Ingestion:</b>           | Rinse mouth thoroughly. Get medical attention if symptoms occur.                                                                                                                        |
| <b>Inhalation:</b>          | Move to fresh air. Get medical attention if symptoms occur.                                                                                                                             |
| <b>Skin Contact:</b>        | Wash the skin immediately with soap and water. Get medical attention if irritation persists after washing.                                                                              |
| <b>Eye contact:</b>         | IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Call a physician or poison control center immediately. |

### Most important symptoms/effects, acute and delayed

**Symptoms:** Causes severe skin burns and eye damage.

### Indication of immediate medical attention and special treatment needed

**Treatment:** Treat symptomatically. Symptoms may be delayed.

## 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

**Personal precautions, protective equipment and emergency procedures:** Keep unauthorized personnel away. Use personal protective equipment. See Section 8 of the SDS 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. Inform authorities if large amounts are involved.

**Environmental Precautions:** Prevent further leakage or spillage if safe to do so. Avoid discharge into drains, water courses or onto the ground.

## 7. Handling and storage

**Precautions for safe handling:** Use personal protective equipment as required. Avoid contact with eyes, skin, and clothing. Avoid inhalation of dust. Wash thoroughly after handling.

**Conditions for safe storage, including any incompatibilities:** Keep containers tightly closed. Store in cool, dry place. Store in a well-ventilated place.

## 8. Exposure controls/personal protection

### Control Parameters

#### Occupational Exposure Limits

| Chemical Identity                        | type | Exposure Limit Values | Source                                             |
|------------------------------------------|------|-----------------------|----------------------------------------------------|
| FERROUS CHLORIDE<br>TETRAHYDRATE - as Fe | TWA  | 1 mg/m3               | US. ACGIH Threshold Limit Values (2011)            |
|                                          | REL  | 1 mg/m3               | US. NIOSH: Pocket Guide to Chemical Hazards (2010) |
|                                          | TWA  | 1 mg/m3               | US. OSHA Table Z-1-A (29 CFR 1910.1000) (1989)     |

## Appropriate Engineering Controls

No data available.

## Individual protection measures, such as personal protective equipment

|                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|--------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>General information:</b>    | 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. An eye wash and safety shower must be available in the immediate work area. |
| <b>Eyeface protection:</b>     | Wear safety glasses with side shields (or goggles).                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Skin Protection</b>         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Hand Protection:</b>        | Use suitable protective gloves if risk of skin contact.                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Other:</b>                  | Wear suitable protective clothing.                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Respiratory Protection:</b> | In case of inadequate ventilation, use respiratory protection.                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Hygiene measures:</b>       | 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

|                                                              |                      |
|--------------------------------------------------------------|----------------------|
| <b>Physical state:</b>                                       | solid                |
| <b>Form:</b>                                                 | Crystals             |
| <b>Color:</b>                                                | Pale green           |
| <b>Odor:</b>                                                 | Odorless             |
| <b>Odor threshold:</b>                                       | No data available.   |
| <b>pH:</b>                                                   | 2.5 (100 g/l, 20 °C) |
| <b>Melting point/freezing point:</b>                         | 105 °C               |
| <b>Initial boiling point and boiling range:</b>              | No data available.   |
| <b>Flash Point:</b>                                          | not applicable       |
| <b>Evaporation rate:</b>                                     | No data available.   |
| <b>Flammability (solid, gas):</b>                            | No data available.   |
| <b>Upper/lower limit on flammability or explosive limits</b> |                      |
| <b>Flammability limit - upper (%):</b>                       | No data available.   |
| <b>Flammability limit - lower (%):</b>                       | No data available.   |
| <b>Explosive limit - upper (%):</b>                          | No data available.   |
| <b>Explosive limit - lower (%):</b>                          | No data available.   |
| <b>Vapor pressure:</b>                                       | 1.3 kPa (700 °C)     |
| <b>Vapor density:</b>                                        | No data available.   |
| <b>Relative density:</b>                                     | 1.93 (20 °C)         |
| <b>Solubility(ies)</b>                                       |                      |
| <b>Solubility in water:</b>                                  | Soluble              |
| <b>Solubility (other):</b>                                   | No data available.   |
| <b>Partition coefficient (n-octanol/water):</b>              | No data available.   |
| <b>Auto-ignition temperature:</b>                            | No data available.   |
| <b>Decomposition temperature:</b>                            | No data available.   |
| <b>Viscosity:</b>                                            | No data available.   |

**Other information****Molecular weight:** 198.81 g/mol ( $\text{Cl}_2\text{Fe} \cdot 4\text{H}_2\text{O}$ )**10. Stability and reactivity**

|                                            |                                                             |
|--------------------------------------------|-------------------------------------------------------------|
| <b>Reactivity:</b>                         | No dangerous reaction known under conditions of normal use. |
| <b>Chemical Stability:</b>                 | Material is unstable under normal conditions.               |
| <b>Possibility of Hazardous Reactions:</b> | Hazardous polymerization does not occur.                    |
| <b>Conditions to Avoid:</b>                | Contact with incompatible materials.                        |
| <b>Incompatible Materials:</b>             | Potassium Strong oxidizing agents.                          |
| <b>Hazardous Decomposition Products:</b>   | By heating and fire, toxic vapors/gases may be formed.      |

**11. Toxicological information****Information on likely routes of exposure**

|                      |                                                                     |
|----------------------|---------------------------------------------------------------------|
| <b>Ingestion:</b>    | Harmful if swallowed.                                               |
| <b>Inhalation:</b>   | Dust may irritate throat and respiratory system and cause coughing. |
| <b>Skin Contact:</b> | Causes skin burns.                                                  |
| <b>Eye contact:</b>  | Causes serious eye damage.                                          |

**Information on toxicological effects****Acute toxicity (list all possible routes of exposure)**

|                                        |                                      |
|----------------------------------------|--------------------------------------|
| <b>Oral Product:</b>                   | No data available.                   |
| <b>Dermal Product:</b>                 | No data available.                   |
| <b>Inhalation Product:</b>             | No data available.                   |
| <b>Repeated dose toxicity Product:</b> | May cause liver and/or renal damage. |

|                                           |                    |
|-------------------------------------------|--------------------|
| <b>Skin Corrosion/Irritation Product:</b> | Causes skin burns. |
|-------------------------------------------|--------------------|

|                                                   |                            |
|---------------------------------------------------|----------------------------|
| <b>Serious Eye Damage/Eye Irritation Product:</b> | Causes serious eye damage. |
|---------------------------------------------------|----------------------------|

|                                                   |                        |
|---------------------------------------------------|------------------------|
| <b>Respiratory or Skin Sensitization Product:</b> | Not a skin sensitizer. |
|---------------------------------------------------|------------------------|

|                                 |                                                            |
|---------------------------------|------------------------------------------------------------|
| <b>Carcinogenicity Product:</b> | 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:** None known.**Specific Target Organ Toxicity - Repeated Exposure****Product:** None known.**Aspiration Hazard****Product:** Not classified**Other effects:** None known.**12. Ecological information****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:** No data available.

**Other Adverse Effects:** The product components are not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

|                                    |
|------------------------------------|
| <b>13. Disposal considerations</b> |
|------------------------------------|

**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.

|                                  |
|----------------------------------|
| <b>14. Transport information</b> |
|----------------------------------|

**DOT**

|                               |                                                              |
|-------------------------------|--------------------------------------------------------------|
| UN Number:                    | UN 3260                                                      |
| UN Proper Shipping Name:      | Corrosive solid, acidic, inorganic, n.o.s.(FERROUS CHLORIDE) |
| Transport Hazard Class(es)    |                                                              |
| Class(es):                    | 8                                                            |
| Label(s):                     | 8                                                            |
| Packing Group:                | II                                                           |
| Marine Pollutant:             | Not a Marine Pollutant                                       |
| Special precautions for user: | —                                                            |

**IMDG**

|                               |                                                              |
|-------------------------------|--------------------------------------------------------------|
| UN Number:                    | UN 3260                                                      |
| UN Proper Shipping Name:      | CORROSIVE SOLID, ACIDIC, INORGANIC, N.O.S.(FERROUS CHLORIDE) |
| Transport Hazard Class(es)    |                                                              |
| Class(es):                    | 8                                                            |
| Label(s):                     | 8                                                            |
| EmS No.:                      | F-A, S-B                                                     |
| Packing Group:                | II                                                           |
| Marine Pollutant:             | Not a Marine Pollutant                                       |
| Special precautions for user: | —                                                            |

**IATA**

|                               |                                                              |
|-------------------------------|--------------------------------------------------------------|
| UN Number:                    | UN 3260                                                      |
| Proper Shipping Name:         | Corrosive solid, acidic, inorganic, n.o.s.(FERROUS CHLORIDE) |
| Transport Hazard Class(es):   |                                                              |
| Class(es):                    | 8                                                            |
| Label(s):                     | 8                                                            |
| Marine Pollutant:             | Not a Marine Pollutant                                       |
| Packing Group:                | II                                                           |
| Special precautions for user: | —                                                            |

**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):**

| <u>Chemical Identity</u> | <u>Reportable quantity</u> |
|--------------------------|----------------------------|
| FERROUS CHLORIDE         | 100 lbs.                   |
| TETRAHYDRATE             |                            |

**Superfund Amendments and Reauthorization Act of 1986 (SARA)****Hazard categories**

Acute (Immediate)

**SARA 302 Extremely Hazardous Substance**

None present or none present in regulated quantities.

**SARA 304 Emergency Release Notification**

| <u>Chemical Identity</u> | <u>Reportable quantity</u> |
|--------------------------|----------------------------|
| FERROUS CHLORIDE         | 100 lbs.                   |
| TETRAHYDRATE             |                            |

**SARA 311/312 Hazardous Chemical**

| <u>Chemical Identity</u> | <u>Threshold Planning Quantity</u> |
|--------------------------|------------------------------------|
| FERROUS CHLORIDE         | 10000 lbs                          |
| TETRAHYDRATE             |                                    |

**SARA 313 (TRI Reporting)**

None present or none present in regulated quantities.

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

| <u>Chemical Identity</u> | <u>Reportable quantity</u>    |
|--------------------------|-------------------------------|
| FERROUS CHLORIDE         | Reportable quantity: 100 lbs. |
| TETRAHYDRATE             |                               |

**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**

| <u>Chemical Identity</u>      |
|-------------------------------|
| FERROUS CHLORIDE TETRAHYDRATE |

**US. Massachusetts RTK - Substance List**

| <u>Chemical Identity</u>      |
|-------------------------------|
| FERROUS CHLORIDE TETRAHYDRATE |

**US. Pennsylvania RTK - Hazardous Substances**

| <u>Chemical Identity</u>      |
|-------------------------------|
| FERROUS CHLORIDE TETRAHYDRATE |

**US. Rhode Island RTK**

**Chemical Identity**

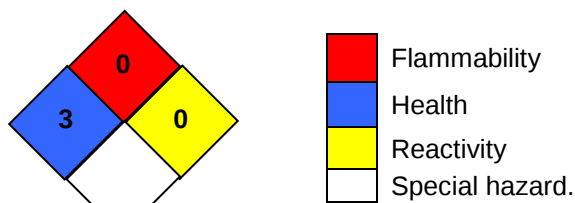
FERROUS CHLORIDE TETRAHYDRATE

**Inventory Status:**

|                                          |                                        |
|------------------------------------------|----------------------------------------|
| Australia AICS:                          | On or in compliance with the inventory |
| Canada DSL Inventory List:               | On or in compliance with the inventory |
| EINECS, ELINCS or NLP:                   | Not in compliance with the inventory.  |
| Japan (ENCS) List:                       | On or 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; RNP - Rating not possible

|                             |                    |
|-----------------------------|--------------------|
| <b>Issue Date:</b>          | 04-20-2015         |
| <b>Revision Date:</b>       | No data available. |
| <b>Version #:</b>           | 1.0                |
| <b>Further Information:</b> | No data available. |

**Disclaimer:**

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