1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

Product identifier
Product Name: Ferrous Sulfate Monohydrate
CAS-No.: 17375-41-6

Other means of identification
Synonyms: Copperas, Iron (II) Sulfate

Recommended use of the chemical and restrictions on use
Recommended Use: For use as a feed supplement and water treatment
Uses advised against: Not intended for human or animal consumption.

Distributed by:
Supplier Name: Pestell Minerals & Ingredients
Supplier Address: 141 Hamilton Rd, New Hamburg Ontario Canada N3A 2H1
Supplier Phone Number: 1 519 662-2877
Supplier Email: qa@pestell.com

Emergency telephone number
CANUTEC 1 613 996-6666

2. HAZARDS IDENTIFICATION

Classification
Acute Toxicity, Oral Category 4
Skin irritation Category 2
Eye Irritation Category 2A

GHS Label elements, including precautionary statements
Pictogram:

![Pictogram]

Signal word: Warning

Hazard statement(s):
- Harmful if swallowed.
- Causes skin irritation.
- Causes serious eye irritation.

Precautionary statement(s):
- Wash skin thoroughly after handling.
- Do not eat, drink, or smoke when using this product.
- Wear protective gloves/eye protection/face protection.
IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell.
IF ON SKIN: Wash with plenty of soap and water.
IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
Specific treatment (see supplemental first aid instructions on this label).
Rinse mouth.
If skin irritation occurs: Get medical advice/attention.
If eye irritation persists: Get medical advice/attention.
Remove contaminated clothing and wash before reuse.
Dispose of contents/container to an approved waste disposal plant.

Hazards not otherwise classified (HNOC): None

3. COMPOSITION/INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Substances</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Synonyms:</td>
<td>Ferrous Sulfate Monohydrate</td>
</tr>
<tr>
<td>Formula:</td>
<td>FeSO₄ · H₂O</td>
</tr>
<tr>
<td>Molecular Weight:</td>
<td>169.92 g/mol</td>
</tr>
<tr>
<td>CAS-No.:</td>
<td>17375-41-6</td>
</tr>
<tr>
<td>Weight %:</td>
<td>&gt;99%</td>
</tr>
</tbody>
</table>

Hazardous components

<table>
<thead>
<tr>
<th>Component:</th>
<th>Classification:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ferrous Sulfate Monohydrate</td>
<td>Acute Tox. 4; Skin Irrit. 2; Eye Irrit. 2A; H302, H315, H319</td>
</tr>
</tbody>
</table>

4. FIRST AID MEASURES

Description of first aid measures

General advice: Consult a physician. Show this safety data sheet to the doctor in attendance. Move out of dangerous area.

If inhaled: If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

In case of skin contact: Wash off with soap and plenty of water. Consult a physician.

In case of eye contact: Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician.

If swallowed: Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

Most important symptoms and effects, both acute and delayed: The most important known symptoms and effects are described in the labelling (see Section 2.2) and/or in Section 11.

Indication of any immediate medical attention and special treatment needed: No data available.
5. FIREFIGHTING MEASURES

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

Special hazards arising from the substance or mixture: Sulphur oxides, Iron oxides.

Advice for firefighters: Wear self-contained breathing apparatus for firefighting if necessary.

Further information: The product itself does not burn.

6. ACCIDENTAL RELEASE MEASURES

Use personal protective equipment. Avoid dust formation. Avoid breathing vapors, mist, or gas. Ensure adequate ventilation. Avoid breathing dust. For personal protection see Section 8.

Environmental precautions: Do not let product enter drains.

Methods and materials for containment and cleaning up: Pick up and arrange disposal without creating dust. Sweep up and shovel. Keep in suitable, closed containers for disposal.

Reference to other sections: For disposal see Section 13.

7. HANDLING AND STORAGE

Precautions for safe handling: Avoid contact with skin and eyes. Avoid formation of dust and aerosols. Provide appropriate exhaust ventilation at places where dust is formed. For precautions see Section 2.

Conditions for safe storage, including any incompatibilities: Keep container tightly closed in a dry and well-ventilated place. Air sensitive. Store under inert gas. Hygroscopic.

Specific end use(s): Apart from the uses mentioned in Section 1 no other specific uses are stipulated.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control Parameters

Components with workplace control parameters

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS-No.</th>
<th>Value</th>
<th>Control parameters</th>
<th>Basis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ferrous sulfate Monohydrate</td>
<td>17375-41-6</td>
<td>TWA</td>
<td>1 mg/m³</td>
<td>USA. ACGIH Threshold Limit Values (TLV)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Remarks Upper Respiratory Tract &amp; skin irritation varies</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>TWA 1 mg/m³</td>
<td>USA. OSHA - TABLE Z-1 Limits for Air Contaminants - 1910.1000</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>TWA 1 mg/m³</td>
<td>USA. NIOSH Recommended Exposure Limits</td>
</tr>
</tbody>
</table>

Exposure Controls

Appropriate engineering controls: Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.
**Personal Protective Equipment**

**Eye/face protection:** Safety glasses with side-shields.

**Skin protection:** Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove’s outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

**Body protection:** Complete suit protecting against chemicals, the type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

**Respiratory protection:** For nuisance exposures use a particle respirator. For higher level protection use type, wear NIOSH approved air-purifying respirator with cartridges/canisters.

**Control of environmental exposure:** Do not let product enter drains.

<table>
<thead>
<tr>
<th>Physical and Chemical Properties</th>
<th>Values</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Physical State:</strong></td>
<td>Solid, powdery</td>
</tr>
<tr>
<td><strong>Appearance:</strong></td>
<td>Grey, acidic/sour</td>
</tr>
<tr>
<td><strong>Color:</strong></td>
<td>Grey</td>
</tr>
<tr>
<td><strong>Odor:</strong></td>
<td>No data available</td>
</tr>
<tr>
<td><strong>Odor Threshold:</strong></td>
<td>No data available</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Property</th>
<th>Values</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>pH</strong></td>
<td>3.0 – 4.0 @ 50 g/l @ 25º C (77º F)</td>
</tr>
<tr>
<td><strong>Melting/freezing point</strong></td>
<td>Melting point/range: 64º C (147º F) Loses water</td>
</tr>
<tr>
<td><strong>Flash Point</strong></td>
<td>No data available</td>
</tr>
<tr>
<td><strong>Evaporation Rate</strong></td>
<td>No data available</td>
</tr>
<tr>
<td><strong>Flammability (solid, gas)</strong></td>
<td>No data available</td>
</tr>
<tr>
<td><strong>Flammability Limit in Air</strong></td>
<td>No data available</td>
</tr>
<tr>
<td><strong>Upper flammability limit</strong></td>
<td>N/A</td>
</tr>
<tr>
<td><strong>Lower flammability limit</strong></td>
<td>N/A</td>
</tr>
<tr>
<td><strong>Vapor pressure</strong></td>
<td>No data available</td>
</tr>
<tr>
<td><strong>Vapor density</strong></td>
<td>No data available</td>
</tr>
<tr>
<td><strong>Specific Gravity</strong></td>
<td>No data available</td>
</tr>
<tr>
<td><strong>Water solubility</strong></td>
<td>No data available</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Property</th>
<th>Values</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Solubility in other solvents</strong></td>
<td>No data available</td>
</tr>
<tr>
<td><strong>Partition coefficient: n-octanol/water</strong></td>
<td>No data available</td>
</tr>
<tr>
<td><strong>Autoignition temperature</strong></td>
<td>No data available</td>
</tr>
<tr>
<td><strong>Decomposition temperature</strong></td>
<td>No data available</td>
</tr>
<tr>
<td><strong>Kinematic viscosity</strong></td>
<td>No data available</td>
</tr>
<tr>
<td><strong>Dynamic viscosity</strong></td>
<td>No data available</td>
</tr>
<tr>
<td><strong>Explosive properties</strong></td>
<td>No data available</td>
</tr>
<tr>
<td><strong>Oxidizing properties</strong></td>
<td>No data available</td>
</tr>
</tbody>
</table>

**Other Information**

**Bulk density** | 1,100 kg/m³
10. STABILITY AND REACTIVITY

**Reactivity:** No data available.

**Chemical Stability:** Stable under recommended storage conditions.

**Possibility of Hazardous Reactions:** No data available.

**Hazardous:** Polymerization: No data available.

**Conditions to Avoid:** No data available.

**Incompatible Materials:** Strong oxidizing agents.

**Hazardous Decomposition Products:** Other decomposition products – no data available. In the event of a fire see Section 5.

11. TOXICOLOGICAL INFORMATION

**Information on likely routes of exposure**

<table>
<thead>
<tr>
<th>Product information</th>
<th>Inhalation</th>
<th>Eye contact</th>
<th>Skin contact</th>
<th>Ingestion</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No data available</td>
<td>No data available</td>
<td>No data available</td>
<td>Harmful if swallowed</td>
</tr>
</tbody>
</table>

**Component Information**

**Information on toxicological effects**

**Symptoms**
No data available

**Delayed and immediate effects as well as chronic effects from short & long-term exposure**

- **Sensitization:** No data available.
- **Mutagenic effects:** No data available.
- **Carcinogenicity:** No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.
- **STOT-single exposure:** No data available.
- **STOT-repeated exposure:** No data available.
- **Chronic toxicity:** No data available.
- **Target organ exposure:** No data available.
- **Aspiration hazard:** No data available.

**Numerical measure of toxicity product information**
The following values are calculated based on Section 3 of the GHS document: No data available.

12. ECOLOGICAL INFORMATION

**Ecotoxicity:** No data available.

**Persistence and Degradability:** No data available.

**Bioaccumulation:** No data available.

**Other adverse effects:** No data available.
13. DISPOSAL CONSIDERATIONS

Waste treatment methods

Disposal methods
Offer surplus and non-recyclable solutions to a licensed disposal company. Contact a licensed professional waste disposal service to dispose of this material.

Contaminated packaging
Dispose of as unused product.

14. TRANSPORT INFORMATION

DOT (US)
Not regulated as dangerous goods in non-bulk packages.

Packages greater than 454 kg (1000 lbs) are a Reportable Quantity on paperwork:

UN Number: 3077 Class: 9 Packing group: III Environmentally hazardous substance, solid, n.o.s. (Ferrous Sulfate Monohydrate) Reportable Quantity (RQ): 1,000 lbs Marine pollutant: No Poison Inhalation Hazard: No

TDG (CA)
Not regulated as dangerous goods.

IMDG
Not regulated as dangerous goods

IATA
Not regulated as dangerous goods

15. REGULATORY INFORMATION

INTERNATIONAL INVENTORIES

TSCA:
CAS# 17375-41-6 is not on the TSCA Inventory because it is a hydrate. It is considered to be listed if the CAS# for the anhydrous form is on the inventory (40CFR720.3(u)(2)).
CAS# 17375-41-6 is listed on the TSCA Inventory.

DSL:
CAS# 17375 41 6 is listed on Canada’s DSL List.

US Federal Regulations

SARA 313:
SARA 313: This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA + Title III, Section 313.

SARA 311/312 Hazard Categories:
Acute health hazard
Chronic health hazard

CWA (Clean Water Act)
Section 311 Hazardous Substances (40 CFR 117.3) Sulfuric acid, Iron (2) salt (1:1), Monohydrate Reportable quantity: 1000 lbs.
CERCLA

(40 CFR 302.4)
Sulfuric acid, Iron (2) salt (1:1), Monohydrate
Reportable quantity: 1000 lbs.

US State Regulations

California Prop. 65 Components
This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

US State Right-to-Know Regulations
Massachusetts Right-to-Know Components:
  Ferrous Sulfate Monohydrate  CAS-No. 17375-41-6  Revision Date: 1993-04-24

Pennsylvania Right-to-Know Components:
  Ferrous Sulfate Monohydrate  CAS-No. 17375-41-6  Revision Date: 1993-04-24

New Jersey Right-to-Know Components:
  Ferrous Sulfate Monohydrate  CAS-No. 17375-41-6  Revision Date: 1993-04-24

International Regulations

Canada  WHMIS Hazard Class: Uncontrolled product; Disclosure at 1%.

16. OTHER INFORMATION

<table>
<thead>
<tr>
<th>NFPA Rating</th>
<th>Health hazard: 2</th>
<th>Fire Hazard: 0</th>
<th>Reactivity Hazard: 0</th>
</tr>
</thead>
<tbody>
<tr>
<td>HMIS Rating</td>
<td>Health hazard: 2</td>
<td>Chronic Health Hazard: Flammability: 0</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Physical Hazard 0</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Further information
The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Pestell Minerals & Ingredients and its Affiliates shall not be held liable for any damage resulting from handling or from contact with the above product.

Version: 2

Version Date  March 12, 2019