SAFETY DATA SHEET

Product code: F1054
Product Name: FERROUS FUMARATE, FCC

Other means of identification
Synonyms: 2-Butenedioic acid (E)-, iron(2+) salt (1:1) (9CI)
            Cpiron
            Erco-Fer
            Ercoferro
            Feostat
            Feroton
            Ferofume
            Ferronat
            Ferrone
            Ferrotemp
            Fersamal
            Firon
            Fumafer
            Fumar
            Fumar-F
            Fumiron
            Galfer
            Hemoton
            Iiron
            Iron fumarate
            One-iron
            Palafer
            Toleron
            Tolferain
            Tolifer

CAS #: 141-01-5
RTECS #: LT1950000
CI#: Not available

Recommended use of the chemical and restrictions on use
Recommended use: No information available.
Uses advised against: No information available

Supplier: Spectrum Chemicals and Laboratory Products, Inc.
14422 South San Pedro St.
Gardena, CA 90248
(310) 516-8000

Order Online At: https://www.spectrumchemical.com

Emergency telephone number: Chemtrec 1-800-424-9300
Contact Person: Martin LaBenz (West Coast)
2. HAZARDS IDENTIFICATION

Classification

This chemical is not considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200)
Not a dangerous substance or mixture according to the Globally Harmonized System (GHS)

Label elements

Not classified

Hazards not otherwise classified (HNOC)
Not Applicable

Other hazards
May be harmful if swallowed

3. COMPOSITION/INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS-No.</th>
<th>Weight %</th>
<th>Trade Secret</th>
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<tbody>
<tr>
<td>Ferrous Fumarate</td>
<td>141-01-5</td>
<td>100</td>
<td>*</td>
</tr>
</tbody>
</table>

4. FIRST AID MEASURES

First aid measures

General Advice: Poison information centers in each State capital city can provide additional assistance for scheduled poisons (13 1126)

Skin Contact: Wash off immediately with soap and plenty of water removing all contaminated clothes and shoes. Get medical attention if irritation develops.

Eye Contact: Flush eye with water for 15 minutes. Get medical attention if irritation occurs. If symptoms persist, call a physician.

Inhalation: Move to fresh air. If breathing is difficult, give oxygen. In case of shortness of breath, give oxygen. Get medical attention.

Ingestion: Do not induce vomiting without medical advice. Never give anything by mouth to an unconscious person. Consult a physician if necessary.

Most important symptoms and effects, both acute and delayed

Symptoms: Health injuries are not known or expected under normal use.

Indication of any immediate medical attention and special treatment needed

Notes to Physician: Treat symptomatically

Product code: F1054 Product name: FERROUS FUMARATE, FCC
Protection of first-aiders
First-Aid Providers: Avoid exposure to blood or body fluids. Wear gloves and other necessary protective clothing. Dispose of contaminated clothing and equipment as bio-hazardous waste

### 5. FIRE-FIGHTING MEASURES

**Extinguishing Media**

**Suitable Extinguishing Media:** Carbon dioxide (CO2), Dry chemical. Water spray mist or foam.

**Unsuitable Extinguishing Media:** No information available.

**Specific hazards arising from the chemical**

**Hazardous Combustion Products:** Carbon monoxide; Carbon dioxide; iron oxides

**Special Protective Actions for Firefighters**

**Specific Methods:** No information available.

**Special Protective Equipment for Firefighters:** As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear

### 6. ACCIDENTAL RELEASE MEASURES

**Personal precautions, protective equipment and emergency procedures**

**Personal Precautions:** Ensure adequate ventilation. Use personal protective equipment. Avoid contact with skin, eyes and clothing. Avoid dust formation. Remove all sources of ignition.

**Environmental precautions** Prevent further leakage or spillage if safe to do so. Prevent product from entering drains.

**Methods and material for containment and cleaning up**

**Methods for containment** Stop leak if you can do it without risk. Cover with plastic sheet to prevent spreading.

**Methods for cleaning up** Sweep up and shovel into suitable containers for disposal. Clean contaminated surface thoroughly.

### 7. HANDLING AND STORAGE

**Precautions for safe handling**

**Technical Measures/Precautions:** Provide sufficient air exchange and/or exhaust in work rooms. Avoid dust formation. All equipment used when handling the product must be grounded. Keep away from incompatible materials.

**Safe Handling Advice:** Wear personal protective equipment. Avoid contact with skin, eyes and clothing. Avoid dust formation. Do not ingest. Do not breathe vapours/dust. Keep away from heat and sources of ignition. Handle in accordance with good industrial hygiene and safety practice.

**Conditions for safe storage, including any incompatibilities**
Technical Measures/Storage Conditions:
Keep container tightly closed in a dry and well-ventilated place. Store at room temperature in the original container. Store away from incompatible materials.

Incompatible Materials:
Oxidizing agents.

### 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

#### Control parameters

#### National occupational exposure limits

#### U.S Occupational Exposure Limits:

<table>
<thead>
<tr>
<th>Components</th>
<th>OSHA</th>
<th>NIOSH</th>
<th>ACGIH</th>
<th>AIHA WHEEL</th>
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</thead>
<tbody>
<tr>
<td>Ferrous Fumarate - 141-01-5</td>
<td>None</td>
<td>None</td>
<td>1 mg/m³TWA (as Fe)</td>
<td>None</td>
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</table>

#### Canada

Canada Occupational Exposure Limits:

<table>
<thead>
<tr>
<th>Components</th>
<th>Alberta</th>
<th>British Columbia</th>
<th>Ontario</th>
<th>Quebec</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ferrous Fumarate - 141-01-5</td>
<td>1 mg/m³TWA (as Fe)</td>
<td>1 mg/m³TWA (as Fe)</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2 mg/m³STEL (as Fe)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Australia and Mexico

Occupational Exposure Limits for Australia and Mexico:

<table>
<thead>
<tr>
<th>Components</th>
<th>Australia</th>
<th>Mexico</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ferrous Fumarate - 141-01-5</td>
<td>1 mg/m³TWA (as Fe)</td>
<td>1 mg/m³TWA (as Fe)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2 mg/m³STEL (as Fe)</td>
</tr>
</tbody>
</table>

#### Appropriate engineering controls

Engineering measures to reduce exposure:
Ensure adequate ventilation. Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. If user operations generate dust, fume or mist, use ventilation to keep exposure to airborne contaminants below the exposure limit.

#### Individual protection measures, such as personal protective equipment

**Personal Protective Equipment**

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

**Skin and body protection:** Long sleeved clothing. Chemical resistant apron. Gloves.

**Respiratory protection:** Wear respirator with dust filter..

**Hygiene measures:** Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling the product. When using, do not eat, drink or smoke.

### 9. PHYSICAL AND CHEMICAL PROPERTIES
9. PHYSICAL AND CHEMICAL PROPERTIES

Physical state: Solid.

Appearance: Powder.


Odor: None.

Taste: No information available

Molecular/Formula weight: 169.9

Formula: C4-H2-Fe-O4

Flash point (°C): No data available

Flashpoint (°C/°F): No information available

Flash Point Tested according to: Not available

Lower Explosion Limit (%): No information available

Upper Explosion Limit (%): No information available

Autoignition Temperature (°C/°F): No information available

pH: No information available

Melting point/range(°C/°F): >280 °C/>536 °F

Boiling point/range(°C/°F): No information available

Decomposition temperature(°C/°F): No information available

Specific gravity: No information available

Vapor pressure @ 20°C (kPa): No information available

Density (g/cm3): 2.435 @ 25 °C

Evaporation rate: No information available

Vapor density: No information available

VOC content (g/L): No information available

Odor threshold (ppm): No information available

Partition coefficient (n-octanol/water): No information available

Miscibility: No information available

Solubility: Slightly soluble in water
Solubility in Water: 0.14 g/100 ml @ 25 °C
Very slightly soluble in Ethanol

10. STABILITY AND REACTIVITY

Reactivity
Reactive with oxidizing agents

Chemical stability
Stability: Stable under recommended storage conditions

Possibility of Hazardous Reactions: Hazardous polymerization does not occur

Conditions to avoid:
Heat. Avoid dust formation. Dust may form explosive mixture in air. Fine dust dispersed in air in sufficient concentrations, and in the presence of an ignition source is a potential dust explosion hazard. Incompatible materials.

Incompatible Materials: Oxidizing agents.


Other Information
Corrosivity: No information available

Special Remarks on Corrosivity: No information available

Product code: F1054
Product name: FERROUS FUMARATE, FCC
11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

Principal Routes of Exposure:
Ingestion. Inhalation.

Acute Toxicity

Component Information

Ferrous Fumarate - 141-01-5

<table>
<thead>
<tr>
<th>Route</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>LD50/oral/rat</td>
<td>3850 mg/kg Oral LD50 Rat</td>
</tr>
<tr>
<td>LD50/oral/mouse</td>
<td>1570 mg/kg Oral LD50 Mouse</td>
</tr>
<tr>
<td>LD50/dermal/rat</td>
<td>No information available</td>
</tr>
<tr>
<td>LC50/inhalation/rat</td>
<td>No information available</td>
</tr>
<tr>
<td>LC50/inhalation/mouse</td>
<td>No information available</td>
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Product Information

<table>
<thead>
<tr>
<th>Route</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>LD50/oral/rat</td>
<td>VALUE - Acute Tox Oral = 3850mg/kg</td>
</tr>
<tr>
<td>LD50/oral/mouse</td>
<td>VALUE - Acute Tox Oral = 1570mg/kg</td>
</tr>
<tr>
<td>LD50/dermal/rabbit</td>
<td>VALUE-Acute Tox Dermal = No information available</td>
</tr>
<tr>
<td>LD50/dermal/rat</td>
<td>VALUE -Acute Tox Dermal = No information available</td>
</tr>
<tr>
<td>LC50/inhalation/rat</td>
<td>VALUE-Vapor = No information available</td>
</tr>
<tr>
<td>LC50/inhalation/mouse</td>
<td>VALUE - Gas = No information available</td>
</tr>
<tr>
<td>LC50/inhalation/mouse</td>
<td>VALUE - Dust/Mist = No information available</td>
</tr>
</tbody>
</table>

Symptoms

Skin Contact: May cause skin irritation.
Eye Contact: May cause eye irritation.
Inhalation: May cause irritation of respiratory tract.
Ingestion: Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea.
Aspiration hazard: No information available

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

Product code: F1054
Product name: FERROUS FUMARATE, FCC
Chronic Toxicity: Prolonged or repeated ingestion may lead to too much Iron build-up in the body, particularly in the liver.

Sensitization: No information available

Mutagenic Effects: No information available

Carcinogenic effects: Not considered carcinogenic

<table>
<thead>
<tr>
<th>Components</th>
<th>ACGIH - Carcinogens</th>
<th>IARC</th>
<th>NTP</th>
<th>OSHA HCS - Carcinogens</th>
<th>Australia - Prohibited Carcinogenic Substances</th>
<th>Australia - Notifiable Carcinogenic Substances</th>
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<tbody>
<tr>
<td>Ferrous Fumarate</td>
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<td>Not listed</td>
<td>Not listed</td>
<td>Not listed</td>
<td>Not listed</td>
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</table>

Reproductive toxicity: No data is available

Reproductive Effects: No information available

Developmental Effects: No information available

Teratogenic Effects: No information available

Specific Target Organ Toxicity

STOT - single exposure: No information available

STOT - repeated exposure: No information available

Target Organs: Liver.

12. ECOLOGICAL INFORMATION

Ecotoxicity

Ecotoxicity effects: No data available.

Persistence and degradability: No information available

Bioaccumulative potential: No information available

Mobility: No information available

13. DISPOSAL CONSIDERATIONS

Disposal Methods

Waste from residues / unused products: Waste must be disposed of in accordance with Federal, State and Local regulation.

Contaminated packaging: Empty containers should be taken for local recycling, recovery or waste disposal

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<thead>
<tr>
<th></th>
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<tbody>
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<td>Ferrous Fumarate</td>
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Product code: F1054

Product name: FERROUS FUMARATE, FCC
### DOT

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<tr>
<td>UN-No:</td>
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<tr>
<td>Proper Shipping Name</td>
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<tr>
<td>Hazard Class:</td>
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<tr>
<td>Subsidiary Risk:</td>
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<tr>
<td>Packing Group:</td>
<td>None</td>
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<tr>
<td>ERG No:</td>
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<tr>
<td>Marine Pollutant</td>
<td>No data available</td>
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<tr>
<td>DOT RQ (lbs):</td>
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### TDG (Canada)

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<tr>
<td>Hazard Class:</td>
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<td>Subsidiary Risk:</td>
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<td>Packing Group:</td>
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<tr>
<td>Description:</td>
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### ADR

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<tbody>
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<tr>
<td>Description:</td>
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<tr>
<td>CEFIC Tremcard No:</td>
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### IMO / IMDG

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<tbody>
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<tr>
<td>Hazard Class:</td>
<td>No information available</td>
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<tr>
<td>Subsidiary Risk:</td>
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<tr>
<td>Packing Group:</td>
<td>No information available</td>
</tr>
<tr>
<td>Description:</td>
<td>No information available</td>
</tr>
<tr>
<td>IMDG Page:</td>
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<tr>
<td>Marine Pollutant</td>
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<td>MFAG:</td>
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<td>Maximum Quantity:</td>
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### RID

<table>
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<tbody>
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<td>Hazard Class:</td>
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<td>Subsidiary Risk:</td>
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### ICAO

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<tr>
<td>Hazard Class:</td>
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</table>

Product code: F1054  
Product name: FERROUS FUMARATE, FCC
14. TRANSPORT INFORMATION

Subsidiary Risk: No information available
Packing Group: No information available
Description: No information available

IATA
UN-No: Not Regulated
Proper Shipping Name: No information available
Hazard Class: No information available
Subsidiary Risk: No information available
Packing Group: No information available
Description: No information available

15. REGULATORY INFORMATION

International Inventories

<table>
<thead>
<tr>
<th>Components</th>
<th>U.S. TSCA</th>
<th>KOREA KECL</th>
<th>Philippines (PICCS)</th>
<th>Japan ENCS</th>
<th>CHINA</th>
<th>Australia (AICS)</th>
<th>EINECS-No.</th>
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<tbody>
<tr>
<td>Ferrous Fumarate</td>
<td>Present</td>
<td>Present KE-03969</td>
<td>Present</td>
<td>Present (2)-1094</td>
<td>Present</td>
<td>Present</td>
<td>Present 205-447-7</td>
</tr>
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</table>

U.S. Regulations

Ferrous Fumarate

Pennsylvania RTK: Present - listed as Iron salts
Pennsylvania RTK - Environmental Hazard List: Present - listed as Iron salts
Minnesota - Hazardous Substance List: Present - listed as Iron, soluble salts
California Directors List of Hazardous Substances: Present - listed as Iron, soluble salts
FDA - Food Additives Generally Recognized as Safe (GRAS): 21 CFR 184.1307(d)

FDA - Direct Food Additives 21 CFR 172.350
FDA - 21 CFR - Total Food Additives 172.350 184.1307D


Chemicals Known to the State of California to Cause Cancer:
WARNING: "This product contains a chemical known to the State of California to cause cancer. (See table below)

Chemicals Known to the State of California to Cause Reproductive Toxicity:
WARNING: "This product contains a chemical known to the State of California to cause birth defects or other reproductive harm (See table below)

Components Carcinogen Developmental Toxicity Male Reproductive Toxicity Female Reproductive Toxicity:
Ferrous Fumarate Not Listed Not Listed Not Listed Not Listed

CERCLA/SARA

Components CERCLA - Hazardous Substances and their Reportable Quantities Section 302 Extremely Hazardous Substances and TPQs Section 302 Extremely Hazardous Substances and RQs Section 313 - Chemical Category Section 313 - Reporting de minimis
Ferrous Fumarate None None None None None None

U.S. TSCA

Components TSCA Section 5(a)2 - Chemicals With Significant New Use Rules (SNURS) TSCA 8(d) -Health and Safety Reporting
Ferrous Fumarate Not Applicable Not Applicable

Canada

Product code: F1054 Product name: FERROUS FUMARATE, FCC
WHMIS hazard class:
Non-controlled

Ferrous Fumarate
Uncontrolled product according to WHMIS classification criteria

Canada Controlled Products Regulation:
This product has been classified according to the hazard criteria of the CPR (Controlled Products Regulation) and the MSDS contains all of the information required by the CPR.

Inventory

<table>
<thead>
<tr>
<th>Components</th>
<th>Canada (DSL)</th>
<th>Canada (NDSL)</th>
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<tbody>
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<td>Ferrous Fumarate</td>
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<table>
<thead>
<tr>
<th>Components</th>
<th>CEPA Schedule I - Toxic Substances</th>
<th>CEPA - 2010 Greenhouse Gases Subject to Mandatory Reporting</th>
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<tbody>
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<td>Ferrous Fumarate</td>
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EU Classification

R-phrase(s)
not determined (not applicable)

S-phrase(s)
none

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<tr>
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<th>Classification</th>
<th>Concentration Limits:</th>
<th>Safety Phrases</th>
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<tr>
<td>Ferrous Fumarate</td>
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<td>No information</td>
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</tbody>
</table>

The product is classified in accordance with Annex VI to Directive 67/548/EEC

Indication of danger:
Not dangerous

16. OTHER INFORMATION
Disclaimer:

All chemicals may pose unknown hazards and should be used with caution. This Safety Data Sheet (SDS) applies only to the material as packaged. If this product is combined with other materials, deteriorates, or becomes contaminated, it may pose hazards not mentioned in this SDS. The physical properties reported in this SDS are obtained from the literature and do not constitute product specifications. Information contained herein does not constitute a warranty, whether expressed or implied, as to the safety, merchantability or fitness of the goods for a particular purpose. Spectrum Chemicals & Laboratory Products, Inc. assumes no responsibility for results obtained or for incidental or consequential damages, including lost profits, arising from the use of these data. No warranty against infringement of any patent, copyright or trademark is made or implied. It shall be the user's responsibility to develop proper methods of handling and personal protection based on the actual conditions of use. While this SDS is based on technical data judged to be reliable, Spectrum assumes no responsibility for the completeness or accuracy of the information contained herein.

End of Safety Data Sheet