Material Safety Data Sheet

Section I. Chemical Product and Company Identification

PRODUCT NAME/ TRADE NAME
Ultra Yield Iron Sulfate 20%

SYNONYM
Iron sulfate

CHEMICAL NAME
Ferrous sulfate

CHEMICAL FAMILY
Metal salt.

CHEMICAL FORMULA
FeSO₄

MATERIAL USES
Agricultural use: Fertilizer ingredient.

MANUFACTURER
Agrium
North American Wholesale
13131 Lake Fraser Drive, S.E.
Calgary, Alberta, Canada, T2J 7E8

Agrium U.S. Inc.
Suite 1700, 4582 South Ulster St.
Denver, Colorado, U.S.A., 80237

SUPPLIER
Agrium
North American Wholesale
13131 Lake Fraser Drive, S.E.
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MSDS NUMBER: 14171

REVISION NUMBER 4.7

MSDS prepared by the Environment, Health and Safety Department on:
February 6, 2007

24 HR EMERGENCY TELEPHONE NUMBER:
Transportation: 1-800-792-8311
Medical: 1-888-670-8123

Section II. Composition / Information on Ingredients

<table>
<thead>
<tr>
<th>NAME</th>
<th>CAS #</th>
<th>TLV-TWA mg/m³</th>
<th>STEL ppm</th>
<th>CEIL ppm</th>
<th>% by Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Magnesium sulfate</td>
<td>7487-88-9</td>
<td>-----</td>
<td>10(I)</td>
<td>2(R)</td>
<td>1-5 as Mg</td>
</tr>
<tr>
<td>Magnesium oxide</td>
<td>1309-48-4</td>
<td>1314-13-2</td>
<td>-----</td>
<td>5(R)</td>
<td>3-5 as Mg</td>
</tr>
<tr>
<td>Zinc oxide</td>
<td>7733-02-0</td>
<td>1309-37-1</td>
<td>-----</td>
<td>1.0</td>
<td>1-3 as Zn</td>
</tr>
<tr>
<td>Zinc sulfate</td>
<td>7720-78-7</td>
<td></td>
<td></td>
<td></td>
<td>&lt;1 as Zn</td>
</tr>
<tr>
<td>Iron oxide</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>10-20 as Fe</td>
</tr>
<tr>
<td>Ferrous sulfate</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>5-15 as Fe</td>
</tr>
</tbody>
</table>

ACGIH TLV notations:
(C) - Ceiling - the concentration not to be exceeded at any time
(R) - measured as the Respirable fraction of the aerosol
(I) - measured as the Inhalable fraction of the aerosol
(T) - measured as the Thoracic fraction of the aerosol

TOXICOLOGICAL DATA ON INGREDIENTS

Ferrous sulfate:
LD₅₀: 319 mg/kg Rat Oral, RTECS.
Iron oxide:
Rat inhalation (TCLo): 0.5mg/m3 continuous, 61 days RTECS.

Zinc oxide
Mouse oral LD₅₀, Acute: 7950 mg/kg, RTECS.
Zinc sulfate:
LD₅₀: 1710 mg/kg Rat Oral, RTECS.

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Ultra Yield Iron Sulfate 20%

Magnesium oxide:
TCLo: acute: 400mg/m³, human, inhalation

Magnesium sulfate:
LDLo: acute: 5000 mg/kg mouse, oral

Section III. Hazards Identification.

POTENTIAL ACUTE HEALTH EFFECTS
Low order of toxicity on ingestion. May cause eye and skin irritation. Over-exposure may result in nausea and gastro-intestinal irritation. Over-exposure by inhalation may cause respiratory tract irritation.

POTENTIAL CHRONIC HEALTH EFFECTS
CARCINOGENIC EFFECTS: NONE by ACGIH, EPA, IARC, NTP, OSHA.
MUTAGENIC EFFECTS: NONE by ACGIH, EPA, IARC, NTP, OSHA.
TERATOGENIC EFFECTS: NONE by ACGIH, EPA, IARC, NTP, OSHA.
There is no known effect from chronic exposure to this product.

Section IV. First Aid Measures

EYE CONTACT
May cause eye irritation. Check for and remove any contact lenses. Immediately flush eyes with running water for at least 15 minutes, keeping eyelids open. Obtain medical attention if irritation persists.

MINOR SKIN CONTACT
May cause skin irritation. Wash contaminated skin with soap and water. Cover dry or irritated skin with a good quality skin lotion. If irritation persists, seek medical attention. Wash contaminated clothing before reusing.

EXTENSIVE SKIN CONTACT
No additional information.

MINOR INHALATION
Repeated or prolonged inhalation of dust may lead to respiratory irritation. Loosen tight clothing around the person's neck and waist. Allow the person to rest in a well ventilated area. Obtain medical attention if irritation persists.

SEVERE INHALATION
In emergency situations use proper respiratory protection to evacuate affected individuals to a safe area as soon as possible. Loosen tight clothing around the person's neck and waist. Oxygen may be administered if breathing is difficult. If the person is not breathing, perform artificial respiration. Obtain immediate medical attention.

SLIGHT INGESTION
Do not induce vomiting. May cause digestive tract irritation, with accompanying nausea, vomiting and diarrhea. If spontaneous vomiting does occur, lower the head so that the vomit will not reenter the mouth and throat.

If tolerated, give no more than 1 cup of milk or water for adults or 1/2 cup for children to rinse the mouth and throat, dilute the stomach contents, and minimize irritation. Obtain medical attention.

EXTENSIVE INGESTION
No additional information.

Section V. Fire and Explosion Data

THE PRODUCT IS
Non-flammable.

AUTO-IGNITION TEMPERATURE
Not applicable.

FLASH POINT
Not applicable.

FLAMMABILITY LIMITS
Not applicable.

PRODUCTS OF COMBUSTION
Material will not burn. Undergoes thermal decomposition at elevated temperatures to release sulfur oxides.

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### Section VI. Accidental Release Measures

#### SMALL SPILL
Use appropriate tools to put the spilled solid in a suitable container for intended use or disposal.

#### LARGE SPILL
Prevent additional discharge of material, if possible to do so without hazard. Prevent spills from entering sewers, watercourses, wells, etc. Product will promote algae growth which may degrade water quality and taste. Notify downstream water users. Sulfate in potable drinking water should be maintained below 250 mg/L (U.S.) or 500 mg/L (Canada). Will dissolve and disperse in water. Reclaiming material may not be viable. Recover and place material in suitable containers for recycle, reuse, or disposal. Ensure disposal complies with government requirements and local regulations.

### Section VII. Handling and Storage

#### PRECAUTIONS
Avoid contact with skin and eyes. After handling, always wash hands thoroughly with soap and water. Do not breathe dust. Keep away from food, drink and animal feed. Avoid contact with incompatible substances. Keep out of reach of children.

#### STORAGE
Store in a dry, cool and well ventilated area.

### Section VIII. Exposure Controls/Personal Protection

#### ENGINEERING CONTROLS
Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits. If user operations generate dust, use ventilation to keep exposure to airborne contaminants below the exposure limit.

#### PERSONAL PROTECTION
The selection of personal protective equipment varies, depending upon conditions of use. Under well controlled conditions where contact with the substance is limited and exposures are below the occupational exposure limit, normal work clothing may suffice. Where skin and eye contact may occur as a result of brief periodic exposures, wear long sleeved clothing or coveralls and safety glasses with side shields.

Wear appropriate respirator when ventilation is inadequate. A filtering facepiece dust mask is adequate for most applications. A NIOSH approved full facepiece or half mask dust respirator with N-100 or P-100 filters should be used under conditions where airborne concentrations may exceed occupational exposure limits. A respiratory protection program that meets OSHA 29 CFR 1910.134 requirements must be followed whenever workplace conditions warrant a respirator's use.

#### PERSONAL PROTECTION IN CASE OF LARGE RELEASE
No additional information.

#### EXPOSURE LIMITS
Iron salts, soluble:
- ACGIH TLV-TWA: 1.0 mg/m³ as Fe
- MI OSHA PEL: 1 mg/m³ as Fe

Iron Oxide:
- ACGIH TLV-TWA: 5 mg/m³ as Fe₂O₃ (Respirable dust)
- MI OSHA PEL: 10 mg/m³ as Fe₂O₃ (fume)
Magnesium oxide:
ACGIH TLV-TWA: 10 mg/m³ as Inhalable dust
MI OSHA PEL: 15 mg/m³ as as Particulates Not Otherwise Regulated

Zinc oxide:
ACGIH TLV-TWA 2 mg/m³ (Respirable dust)
Fed OSHA Permissible Exposure Limit: Table Z-1 8-hr Time Weighted Avg: 15 mg/m³ as total dust
MI OSHA Permissible Exposure Limit: R325.51103 Table G-1-A, 8-hr Time Weighted Avg: 10 mg/m³ as total dust

Zinc sulfate:
MI and Fed OSHA Permissible Exposure Limit: 15 mg/m³ (as Particulates Not Otherwise Regulated)

Federal, State, and Provincial exposure limits may vary. Consult local officials for acceptable exposure limits in your jurisdiction.

### Section IX. Physical and Chemical Properties

<table>
<thead>
<tr>
<th>PHYSICAL STATE AND APPEARANCE</th>
<th>Granular solid.</th>
</tr>
</thead>
<tbody>
<tr>
<td>MOLECULAR WEIGHT</td>
<td>Not available.</td>
</tr>
<tr>
<td>pH (10% SOLN/WATER)</td>
<td>3.0 - 4.0</td>
</tr>
<tr>
<td>BOILING POINT</td>
<td>Decomposes.</td>
</tr>
<tr>
<td>MELTING POINT</td>
<td>300°C (572°F)</td>
</tr>
<tr>
<td>CRITICAL TEMPERATURE</td>
<td>Not available.</td>
</tr>
<tr>
<td>SPECIFIC GRAVITY g/cc</td>
<td>Not available.</td>
</tr>
<tr>
<td>BULK DENSITY kg/m³; lbs/ft³</td>
<td>1200 kg/m³; 75 lbs/ft³</td>
</tr>
<tr>
<td>VAPOR PRESSURE</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>VAPOR DENSITY</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>COLOR</td>
<td>Light brown.</td>
</tr>
<tr>
<td>ODOR</td>
<td>Odorless.</td>
</tr>
<tr>
<td>ODOR THRESHOLD</td>
<td>17 PPM (Ammonia)</td>
</tr>
<tr>
<td>TASTE</td>
<td>Acrid. (Slight.)</td>
</tr>
<tr>
<td>VOLATILITY</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>SOLUBILITY</td>
<td>Easily soluble in hot water. Soluble in cold water.</td>
</tr>
<tr>
<td>DISPERSION PROPERTIES</td>
<td>See solubility in water.</td>
</tr>
<tr>
<td>WATER/OIL DIST. COEFF.</td>
<td>Not available.</td>
</tr>
</tbody>
</table>

### Section X. Stability and Reactivity Data

| STABILITY | The product is stable. |
| INSTABILITY TEMPERATURE | Not available. |
| CONDITIONS OF INSTABILITY | No additional remark. |
| INCOMPATABILITY WITH VARIOUS SUBSTANCES | Slightly reactive to reactive with oxidizing agents. Very slightly to slightly reactive with metals, alkalis, moisture. |
| CORROSIVITY | Highly corrosive in presence of aluminum, zinc, and copper. Slightly corrosive to steel, and 304 stainless steel. Non-corrosive to 316 stainless steel. |
| SPECIAL REMARKS ON REACTIVITY | Avoid contact with moisture. Hydrolysis will slowly produce acids corrosive to metals. |
| SPECIAL REMARKS ON CORROSIVITY | Incompatible with copper alloys. Corrosive to brass. Corrosive to ferrous metals and alloys. Contact your sales representative or a metallurgical specialist to ensure compatibility with system equipment. |
Section XI. Toxicological Information

**SIGNIFICANT ROUTES OF EXPOSURE**
Ingestion. Inhalation.

**TOXICITY TO ANIMALS**
Causes skin and eye irritation. Dust irritating to respiratory tract. Ingestion of this substance may produce irritation of the gastro-intestinal tract, characterized by burning and diarrhea.

**SPECIAL REMARKS ON TOXICITY TO ANIMALS**
May be harmful to fish, livestock, and wildlife. Dissolved mineral salts may cause irritation of the digestive tract.

**OTHER EFFECTS ON HUMANS**
Our data base contains no additional remark on the toxicity of this product

**SPECIAL REMARKS ON OTHER EFFECTS ON HUMANS**
No additional remark.

**SPECIAL REMARKS ON CHRONIC EFFECTS ON HUMANS**
No additional remark.

Section XII. Ecological Information

**ECOTOXICITY**
Low toxicity for humans or animals under normal conditions of use. May be harmful to livestock and wildlife if ingested. Clean up all spilled material, especially where bulk fertilizer loading of equipment occurs to prevent animal exposure.

Aquatic/Marine Toxicity: Avoid spills or release to watercourses. Will disperse with current. Release to watercourses may cause effects down stream from the point of release. U.S. D.O.T.: This material NOT listed as a Marine pollutant.

**BOD and COD**
Not available.

**PRODUCTS OF DEGRADATION**
Sulfur oxides (SO\(_2\), SO\(_3\) ...) Inorganic mineral salts and oxides.

**TOXICITY OF THE PRODUCTS OF DEGRADATION**
The products of biodegradation are not harmful under normal conditions of slow metabolic release.

**SPECIAL REMARKS ON THE PRODUCTS OF DEGRADATION**
Product will promote algae growth which may degrade water quality and taste. Notify downstream water users. Will dissolve and disperse in water. Reclaiming material may not be viable.

Section XIII. Disposal Considerations

**WASTE DISPOSAL OR RECYCLING**
Recover and place material in a suitable container for intended use or disposal. Ensure disposal complies with government requirements and local regulations.

Section XIV. Transport Information

**DOT / TDG CLASSIFICATION**
Not controlled under TDG (Canada) or D.O.T. (U.S.A.)

**PIN and Shipping Name**
Not applicable.

**SPECIAL PROVISIONS FOR TRANSPORT**
No additional remark.

**DOT (U.S.A) (Pictograms)**

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Section XV. Other Regulatory Information and Pictograms

OTHER REGULATIONS

CANADIAN ENVIRONMENTAL PROTECTION ACT (CEPA): This product is on the Domestic Substances List (DSL), and is acceptable for use under the provisions of CEPA.

TSCA (Toxic Substance Control Act): This product or its components are listed on the TSCA 8(b)Inventory of Existing Chemical Substances. Federal Drinking Water Guidelines: EPA 0.3mg/L, Iron

Clean Water Act Requirements:
Designated as a hazardous substance under section 311(b)(2)(A) of the Federal Water Pollution Control Act and further regulated by the Clean Water Act Amendments of 1977 and 1978. These regulations apply to discharges of this substance.

CERCLA Reportable Quantities:
Persons in charge of vessels or facilities are required to notify the National Response Center (NRC) immediately, when there is a release of this designated hazardous substance, in an amount equal to or greater than its reportable quantity of 1000 lb or 454 kg. The toll free number of the NRC is (800) 424-8802. The rule for determining when notification is required is stated in 40 CFR 302.4 (section IV. D.3.b).

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all of the information required by the Controlled Products Regulations.

HCS (U.S.A.)
Not controlled under the HCS (United States). Exempt under 1910.1200(b)(6)(x).

DSCL (EEC)
Not controlled under DSCL (Europe).

National Fire Protection Association (U.S.A.)
Hazards presented under acute emergency conditions only:

<table>
<thead>
<tr>
<th>Health</th>
<th>Fire Hazard</th>
<th>Reactivity</th>
<th>Specific Hazard</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

TDG (Pictograms - Canada)
Not Available
No Disponible
Pas Disponible

DSCL (Europe) (Pictograms)
Not Available
No Disponible
Pas Disponible

ADR (Europe) (Pictograms)
Not Available
No Disponible
Pas Disponible

Section XVI. Other Information

REFERENCES
- Domestic Substances List, Canadian Environmental Protection Act.
- 29 CFR Part 1910
- 33 CFR Parts 151, 153, 154, 156
- 40 CFR Parts 1-799
- 46 CFR Part 153
- 49 CFR Parts 1-199
- American Conference of Governmental Industrial Hygienists, Threshold Limit Values for Chemical Substances, 2007.

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OTHER SPECIAL CONSIDERATIONS

| FOR FURTHER SAFETY, HEALTH, OR ENVIRONMENTAL INFORMATION ON THIS PRODUCT, CONTACT | AGRIMUM Wholesale Environment, Health and Safety Telephone (780) 998-6906 or Fax (780) 998-6677 |

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