# Material Safety Data Sheet

**NFPA Classification**

<table>
<thead>
<tr>
<th>Flammability</th>
<th>Reactivity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health</td>
<td>Specific Hazard</td>
</tr>
</tbody>
</table>

**DOT / TDG Pictograms**

- [ ]

**WHMIS Classification**

<table>
<thead>
<tr>
<th>Health</th>
<th>Flammability</th>
<th>Reactivity</th>
<th>PPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0</td>
<td>0</td>
<td>E</td>
</tr>
</tbody>
</table>

**PROTECTIVE CLOTHING**

- [ ]

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## Section I. Chemical Product and Company Identification

**PRODUCT NAME/TRADE NAME**

Ultra Yield Iron Oxy-Sulfate 40%

**SYNONYM**

Iron oxide sulfate

**CHEMICAL NAME**

Iron hydroxide sulfate

**CHEMICAL FAMILY**

Metal salt.

**CHEMICAL FORMULA**

Fe₄H₂O₂₂S₅

**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.
Calgary, Alberta, Canada, T2J 7E8

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

**MSDS NUMBER:**

14170

**REVISION NUMBER**

4.7

**MSDS prepared by the Environment, Health and Safety Department on:**

January 25, 2007

**24 HR EMERGENCY TELEPHONE NUMBER:**

Transportation: 1-800-792-8311
Medical: 1-888-670-8123

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## Section II. Hazardous Ingredients

**Exposure Limits (ACGIH)**

<table>
<thead>
<tr>
<th>NAME</th>
<th>CAS #</th>
<th>TLV-TWA mg/m³</th>
<th>TLV-TWA ppm</th>
<th>STEL mg/m³</th>
<th>STEL ppm</th>
<th>CEIL mg/m³</th>
<th>CEIL ppm</th>
<th>% by Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iron salts, soluble</td>
<td>N/A 1309-37-1</td>
<td>1 as Fe 5(R)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Iron oxide</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1-5 as Fe 10-30</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:

Rat Oral LD50: 319 mg/kg, RTECS.

Iron oxide:

Rat Intraperitoneal, LD50: 5500 mg/kg, RTECS.
Section III. Hazards Identification.

<table>
<thead>
<tr>
<th>POTENTIAL ACUTE HEALTH EFFECTS</th>
<th>Low order of toxicity on ingestion. Iron oxide and iron salts may be expected to be irritating to the eyes and respiratory tract due to mechanical action. Over-exposure by inhalation may cause respiratory tract irritation. Over-exposure may also result in nausea and gastro-intestinal irritation.</th>
</tr>
</thead>
<tbody>
<tr>
<td>POTENTIAL CHRONIC HEALTH EFFECTS</td>
<td>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. Repeated skin exposure may produce local skin damage or dermatitis. Exposure to excessive quantities of iron oxide over many years may lead to siderosis, an accumulation of iron particles in the lung which may lead to chronic inflammation.</td>
</tr>
</tbody>
</table>

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 due to the drying action of mineral salts. Wash contaminated skin with soap and water. Cover irritated skin with an emollient. If irritation persists, obtain 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 individual'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. |
| FIRE HAZARD IN THE PRESENCE OF VARIOUS SUBSTANCES | Not applicable. |
| EXPLOSION HAZARD IN THE PRESENCE OF VARIOUS SUBSTANCES | This product is non-explosive. |
Material will not burn. Undergoes thermal decomposition at elevated temperatures to release toxic gases. Use extinguishing media suitable for surrounding materials.

Non combustible. Toxic gases will form at elevated temperatures (＞300 °C) by thermal decomposition (sulfur oxides). A self contained breathing apparatus should be used to avoid inhalation of toxic fumes.

Non additional remark.

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

Prevent additional discharge of material, if possible to do so without hazard. Prevent spills from entering sewers, watercourses, wells, etc. Product may degrade water quality and taste. Notify downstream water users. Sulfate in potable drinking water should be maintained below 250 mg/L. 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.

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.

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.

The selection of personal protective equipment varies, depending upon conditions of use. Wear appropriate respiratory protection for dust/mist when ventilation is inadequate. A filtering facepiece dust mask is recommended for most applications if respiratory protection is needed. Where skin and eye contact may occur as a result of brief periodic exposures, wear long sleeved clothing, coveralls, chemical resistant gloves, and safety glasses with side shields. A NIOSH/MSHA approved dust and mist respirator may be used under conditions where airborne concentrations may exceed occupational exposure limits. Protection provided by air purifying respirators may be limited. A positive pressure supplied air respirator should be used if concentrations are unknown or under any other other circumstances where air purifying respirators may be inadequate. A respiratory protection program that meets OSHA 29 CFR 1910.134 requirements must be followed whenever workplace conditions warrant a respirator's use.

Iron salts, soluble:
ACGIH TLV-TWA: 1 mg/m³ as Fe
MI OSHA PEL: 1 mg/m³ as Fe
Iron oxide:
ACGIH TLV-TWA: 5 mg/m³ as Fe (respirable fraction)
Zinc oxide:
ACGIH TLV-TWA 2 mg/m³ (respirable fraction)
OSHA PEL, Fed and MI for Zinc oxide: 15 mg/m³ as total dust, 5 mg/m³ as respirable dust, and 5 mg/m³ as zinc oxide fume.

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>Color</td>
<td>Dark brown or grey.</td>
</tr>
<tr>
<td>pH (10% Soln/Water)</td>
<td>5.0 - 6.0</td>
</tr>
<tr>
<td>Odor</td>
<td>Odorless.</td>
</tr>
<tr>
<td>Boiling Point</td>
<td>Decomposes.</td>
</tr>
<tr>
<td>Odor Threshold</td>
<td>17 PPM (Ammonia)</td>
</tr>
<tr>
<td>Melting Point</td>
<td>Not available.</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>1680 kg/m³ ; 105 lbs/ft³</td>
</tr>
<tr>
<td>Vapor Pressure</td>
<td>Not applicable.</td>
</tr>
<tr>
<td>Vapor Density</td>
<td>Not applicable.</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.  |
| Incompatibility 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. Slow hydrolysis will produce corrosive acids. |
| 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 your equipment. |

### Section XI. Toxicological Information

| Significant Routes of Exposure | Ingestion. Inhalation. |
| toxicity to Animals            | Dust irritating to respiratory tract. Harmful if inhaled or swallowed. 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 Chronic Effects on Humans | No additional remark. |
| Special Remarks on Other Effects on Humans | No additional remark. |
Section XII. Ecological Information

ECOTOXICITY
Non-persistent. Non-cumulative when applied using normal agricultural practises. 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 (SO₂, SO₃ ...)

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 may degrade water quality and taste. Notify downstream water users. Sulfate in potable drinking water should be maintained below 250mg/L. 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.

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. 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.

OTHER CLASSIFICATIONS
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).

Continued on Next Page
### 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, 2006.
- The Fertilizer Institute Product Testing Program Results, March 2003
- Michigan Office of Regulatory Reform R325.51108

**OTHER SPECIAL CONSIDERATIONS**

HMIS information added in this revision.

**FOR FURTHER SAFETY, HEALTH, OR ENVIRONMENTAL INFORMATION ON THIS PRODUCT, CONTACT**

AGRIUM Wholesale Environment, Health and Safety
Telephone (780) 998-6906 or Fax (780) 998-6677

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<table>
<thead>
<tr>
<th>NOTICE TO READER</th>
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<tr>
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