

NFPA Classification	DOT / TDG Pictograms	WHMIS Classification	HMIS		PROTECTIVE CLOTHING
			Health	1	
			Flammability	0	
			Reactivity	0	
			PPE	E	

Section I. Chemical Product and Company Identification

PRODUCT NAME/ TRADE NAME Ultra Yield Iron Oxy-Sulfate 50%

SYNONYM Iron oxide sulfate

MSDS NUMBER: 14300

CHEMICAL NAME iron hydroxide sulfate

REVISION NUMBER 1.4

CHEMICAL FAMILY Metal salt.

MSDS prepared by February 16, 2007
the Environment,
Health and Safety
Department on:

CHEMICAL FORMULA Fe₄H₂O₂₂S₅

24 HR EMERGENCY TELEPHONE NUMBER:

MATERIAL USES Agricultural use: Fertilizer ingredient.

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

MANUFACTURER

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

SUPPLIER

Agrium
North American Wholesale
13131 Lake Fraser Drive, S.E.
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Agrium U.S. Inc.
Suite 1700, 4582 South Ulster St.
Denver, Colorado, U.S.A., 80237

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Section II. Hazardous Ingredients

NAME	CAS #	Exposure Limits (ACGIH)						% by Weight
		TLV-TWA mg/m ³	TLV-TWA ppm	STEL mg/m ³	STEL ppm	CEIL mg/m ³	CEIL ppm	
Ferrous sulfate	7720-78-7	1 as Fe						1-5 as Fe
Zinc sulfate	7733-02-0	N/A						0.5-1.5 as Zn

ACGIH TLV notations:

---- No assigned TLV

(C) - Ceiling - the concentration not to be exceeded at any time

(I) - measured as the Inhalable fraction of the aerosol

(R) - measured as the Respirable 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.

Zinc sulfate:
LD50: 1710 mg/kg Rat Oral, RTECS.

Section III. Hazards Identification.

POTENTIAL ACUTE HEALTH EFFECTS	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.
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. 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.

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.

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FIRE FIGHTING MEDIA AND INSTRUCTIONS	Material will not burn. Undergoes thermal decomposition at elevated temperatures to release toxic gases. Use extinguishing media suitable for surrounding materials.
SPECIAL REMARKS ON FIRE HAZARDS	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.
SPECIAL REMARKS ON EXPLOSION HAZARDS	No additional remark.

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 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.

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. 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.
PERSONAL PROTECTION IN CASE OF LARGE RELEASE	No additional information.
EXPOSURE LIMITS	<p>Iron salts, soluble: ACGIH TLV-TWA: 1 mg/m³ as Fe MI OSHA PEL: 1 mg/m³ as Fe</p> <p>Iron oxide: ACGIH TLV-TWA: 5 mg/m³ as Fe (respirable fraction)</p> <p>Zinc oxide: ACGIH TLV-TWA 2 mg/m³ as respirable dust Fed OSHA Permissible Exposure Limit: Table Z-1 8-hr Time Weighted Avg: 15 mg/m³ as total dust, 5 mg/m³ as respirable dust, and 5 mg/m³ as fume. MI OSHA Permissible Exposure Limit: 8-hr Time Weighted Avg: 10 mg/m³ as total dust, 5 mg/m³ as respirable dust, and 5 mg/m³ as fume.</p> <p>MI and Fed OSHA Permissible Exposure Limit: 15 mg/m³ (as Particulates Not Otherwise Regulated)</p>

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

Section IX. Physical and Chemical Properties

PHYSICAL STATE AND APPEARANCE	Granular solid.		
MOLECULAR WEIGHT	Not available.	COLOR	Dark brown or grey.
pH (10% SOLN/WATER)	5.0	ODOR	Odorless.
BOILING POINT	Decomposes.	ODOR THRESHOLD	Not applicable.
MELTING POINT	Not available.	TASTE	Acrid. (Slight.)
CRITICAL TEMPERATURE	Not available.	VOLATILITY	Not applicable.
SPECIFIC GRAVITY g/cc	Not available.	SOLUBILITY	Soluble in hot or cold water.
BULK DENSITY kg/m ³ ; lbs/ft ³	1680 kg/m ³ ; 105 lbs/ft ³	DISPERSION PROPERTIES	See solubility in water.
VAPOR PRESSURE	Not applicable.	WATER/OIL DIST. COEFF.	Not available.
VAPOR DENSITY	Not applicable.		

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 with oxidizing agents, metals, alkalis and 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 compatability 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.

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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.

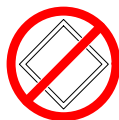
Section XIV. Transport Information

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.

DOT (U.S.A) (Pictograms)



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:

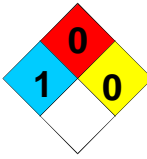
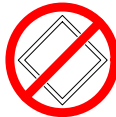
Designated as a hazardous substance under section 311(b)(2)(A) of the Federal Water Pollution Control Act and further regulated by the Clean Water Act Amendments of 1977 and 1978. These regulations apply to discharges of this substance.

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.

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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).
National Fire Protection Association (U.S.A.)	Hazards presented under acute emergency conditions only:	<div style="display: flex; align-items: center; justify-content: center;"> <div style="margin-right: 10px;">Health</div>  <div style="margin-left: 10px;"> Fire Hazard Reactivity Specific Hazard </div> </div>
TDG (Pictograms - Canada)		
DSCL (Europe) (Pictograms)	Not Available No Disponible Pas Disponible	
ADR (Europe) (Pictograms)	Not Available No Disponible Pas Disponible	

Section XVI. Other Information

REFERENCES	<ul style="list-style-type: none"> -Transportation of Dangerous Goods Act and Clear Language Regulations, current revision. -Canada Gazette Part II, Vol. 122, No. 2 Registration SOR/88-64 31 December, 1987 Hazardous Products Act "Ingredient Disclosure List". -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. -NFPA 704, National Fire Codes Online, National Fire Protection Association, current edition at time of MSDS preparation. -Corrosion Data Survey, Sixth Edition, 1985, National Association of Corrosion Engineers -TOMES® System: Heitland G & Hurlbut KM (Eds) (electronic version): MICROMEDEX, Greenwood Village, Colorado, USA. Available at: http://csi.micromedex.com (2007). The TOMES® System includes MEDITEXT® Medical Management; HAZARDTEXT® Hazard Management; INFOTEXT® Documents; ERG2000 Emergency Response Guidebook Documents; REPROTEXT®: Heitland G & Hurlbut KM (Eds); CHRIS Hazardous Chemical Data: U.S. Department of Transportation, U.S. Coast Guard, Washington, D.C. (2007); HSDB: Hazardous Substances Data Bank. National Library of Medicine, Bethesda, Maryland (2007); IRIS: Integrated Risk Information System. U.S. Environmental Protection Agency, Washington, D.C. (2007); NIOSH: Pocket Guide to Chemical Hazards. National Institute for Occupational Safety and Health, Cincinnati, Ohio (2007); OHM/TADS: Oil and Hazardous Materials Technical Assistance Data System. U.S. Environmental Protection Agency, Washington, D.C. (2007); REPROTOX®: Scialli A.R. Georgetown University Medical Center and Reproductive Toxicology Center, Columbia Hospital for Women Medical Center, Washington, D.C. (2007); RTECS®: Registry of Toxic Effects of Chemical Substances. National Institute for Occupational Safety and Health, Cincinnati, Ohio (2007); and SHEPARDS: Shepard T.H.: Shepard's Catalog of Teratogenic Agents (2007). -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.

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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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