Agrium Material Safety Data Sheet

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

Section I. Chemical Product and Company Identification

PRODUCT NAME/ TRADE NAME	**Ultra Yield Manganese Oxy-Sulfate 40%**

SYNONYM	Not available	**MSDS NUMBER:**	**14174**
CHEMICAL NAME	Not applicable; a complex mixture of essential plant micronutrients.	**REVISION NUMBER**	4.7
CHEMICAL FAMILY	An inorganic metal salt.	**MSDS prepared by the Environment, Health and Safety Department on:**	**January 25, 2007**
CHEMICAL FORMULA	Not available.	**24 HR EMERGENCY TELEPHONE NUMBER:**	
MATERIAL USES	Agricultural use: Fertilizer ingredient.	**Transportation Emergency: 1 (800) 792-8311** **Medical Emergency: 1 (888) 670-8123**	

MANUFACTURER

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

Agrium U.S. Inc.
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Denver, Colorado, U.S.A., 80237

SUPPLIER

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Section II. Hazardous Ingredients

		Exposure Limits (ACGIH)						
NAME	**CAS #**	**TLV-TWA mg/m³**	**TLV-TWA ppm**	**STEL mg/m³**	**STEL ppm**	**CEIL mg/m³**	**CEIL ppm**	**% by Weight**
Manganese sulfate	7785-87-7	0.2 as Mn						10-30 as Mn
Manganese oxide	1375-35-7	0.2 as Mn						10-30 as Mn

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

Manganese sulfate:
LD50, Acute: 2330 mg/kg Mouse oral, RTECS
Manganese oxide:
LDLo, 375 mg/kg Rat intratracheal, RTECS

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Section III. Hazards Identification.

POTENTIAL ACUTE HEALTH EFFECTS	Acute systemic intoxication rarely occurs as it is poorly absorbed from the lungs or the gut. Systemic poisoning may result from chronic inhalation or chronic ingestion; chronic exposure to low concentrations may lead to the accumulation of toxic concentrations in critical organs. May cause eye and skin irritation.
POTENTIAL CHRONIC HEALTH EFFECTS	The usual form of chronic manganese poisoning primarily involves the CNS. The brain appears to sustain permanent cellular damage at exposure levels which do not otherwise affect a person. The characteristic pathological lesion in man is destruction of the ganglion cells of the basal ganglia, although symptoms appear before damage becomes discernible. Onset of chronic poisoning is insidious. Early symptoms include languor, sleepiness, tremors and weakness in legs. A stolid mask like appearance of face, slurred speech, emotional disturbances such as anorexia, apathy, and inability to concentrate, uncontrollable laughter, and loss of balance with a spastic gait and a tendency to fall while walking are findings in more advanced cases. While high levels of manganese may increase anemia by interfering with iron absorption, iron deficiency may increase an individual's susceptibility to manganese. Experimental studies suggest that populations at greatest risk of adverse effects due to manganese exposure are the very young and those with iron deficiency. Effects have been reported in the scientific literature at or below the U.S. OSHA Permissible Exposure Limit of 5 mg/m ^{3} as a ceiling value. Although permanently disabled unless treated; chronic manganese poisoning is not a fatal disease. Not classifiable as a human or animal carcinogen, teratogen or mutagen. 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.

Section IV. First Aid Measures

EYE CONTACT	May cause eye irritation due to mechanical action. Flush with plenty of water for at least 15 minutes, occasionally lifting the upper and lower eyelids. Obtain medical attention if irritation persists.
MINOR SKIN CONTACT	May cause skin irritation. Wash contaminated skin with soap and water. Cover irritated skin with a good quality skin cream. If irritation persists, obtain medical attention. Wash contaminated clothing before reusing.
EXTENSIVE SKIN CONTACT	No additional information.
MINOR INHALATION	Allow to rest in a well ventilated area. Seek medical attention, if not feeling well.
SEVERE INHALATION	Over-exposure by inhalation may cause respiratory irritation. Rescuers should put on appropriate protective gear. Remove from area of exposure. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Keep warm. Get 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.

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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 produce sulfur oxides.
FIRE HAZARD IN THE PRESENCE OF VARIOUS SUBSTANCES	Not applicable.
EXPLOSION HAZARD IN THE PRESENCE OF VARIOUS SUBSTANCES	This substance is non-explosive.
FIRE FIGHTING MEDIA AND INSTRUCTIONS	Non-flammable.
SPECIAL REMARKS ON FIRE HAZARDS	No additional remark.
SPECIAL REMARKS ON EXPLOSION HAZARDS	No additional remark.

Section VI. Accidental Release Measures

SMALL SPILL	Use appropriate tools to put spilled solid in a suitable container for intended use or disposal. Clean up spills immediately, observing precautions in the Protective Equipment section.
LARGE SPILL	No additional information.

Section VII. Handling and Storage

PRECAUTIONS	DO NOT breathe dust or ingest product. After handling, always wash hands thoroughly with soap and water. Keep container tightly closed and dry. Keep out of reach of children. Use only in well ventilated areas.
STORAGE	Keep container tightly closed. Contains moisture sensitive material; store in a dry place. Product will absorb moisture and will cake when dried. Keep away from food, drink and animal feed.

Section VIII. Exposure Controls/Personal Protection

ENGINEERING CONTROLS	Local exhaust ventilation may be necessary to control any air contaminants to within their TLVs during the use of this product. If user operations generate dust, fume or mist, 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 no direct contact with the substance exists and exposures are below the occupational exposure limit, normal work clothing may suffice. However, protective clothing and appropriate respiratory protection must be available in the area in the event of emergency.
PERSONAL PROTECTION IN CASE OF LARGE RELEASE	Wear a NIOSH approved dust respirator if engineering, work practise or other control measures are not adequate to prevent overexposure. Where skin and eye contact may occur as a result of prolonged or repeated exposures, wear long sleeved clothing, coveralls, leather gloves, and safety glasses with side shields. For U.S. work sites where respiratory protection is required, ensure that a respiratory protection meeting 29 CFR 1910.134 is in place.
EXPOSURE LIMITS	

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Manganese and Inorganic Compounds:
ACGIH TLV-TWA: 0.2 mg/m^3 as Mn
Fed OSHA Permissible Exposure Limit: 5 mg/m^3 Ceiling
MI OSHA Permissible Exposure Limit: 1 mg/m^3 (fume), 5 mg/m^3 Ceiling

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 applicable.	**COLOR**	Dark brown or grey.
pH (10% SOLN/WATER)	6.0 - 7.0	**ODOR**	Odorless.
BOILING POINT	Decomposes.	**ODOR THRESHOLD**	Not available.
MELTING POINT	~700°C (1292°F)	**TASTE**	Not available.
CRITICAL TEMPERATURE	Not available.	**VOLATILITY**	Not available.
SPECIFIC GRAVITY g/cc	1.44 particle density (Water = 1)	**SOLUBILITY**	Soluble in hot or cold water.
BULK DENSITY kg/m^3 ; lbs/ft^3	1600 kg/m^3; 100 lbs/ft^3	**DISPERSION PROPERTIES**	See solubility in water.
VAPOR PRESSURE	Not available.	**WATER/OIL DIST. COEFF.**	Not available.
VAPOR DENSITY	Not available.		

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	Highly reactive with oxidizing agents.
CORROSIVITY	No specific information is available in our data base regarding the corrosivity of this product in presence of various materials. Slightly corrosive to copper, iron, and steel.
SPECIAL REMARKS ON REACTIVITY	Avoid strong oxidizing agents
SPECIAL REMARKS ON CORROSIVITY	Contact your sales representative or metallurgical specialist to ensure compatibility with your equipment.

Section XI. Toxicological Information

SIGNIFICANT ROUTES OF EXPOSURE	Ingestion.
TOXICITY TO ANIMALS	See Section II.
SPECIAL REMARKS ON TOXICITY TO ANIMALS	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.

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OTHER EFFECTS ON HUMANS	No additional information is available in our database regarding other toxic effects of this material.
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	No additional information.
BOD and COD	Not available.
PRODUCTS OF DEGRADATION	Some metallic oxides. Sulfur oxides (SO_2, SO_3 ...).
TOXICITY OF THE PRODUCTS OF DEGRADATION	The products of degradation are as toxic as the original product.
SPECIAL REMARKS ON THE PRODUCTS OF DEGRADATION	Oxides of sulfur and manganese

Section XIII. Disposal Considerations

WASTE DISPOSAL OR RECYCLING	Recover spilled material and use for intended purpose. Consult your environmental advisor for information on recycling or disposal alternatives.

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 acceptable for use under the provisions of CEPA. TSCA (Toxic Substance Control Act): This product is listed on the TSCA Inventory. CERCLA/SUPERFUND, 40 CFR 117,302: This product contains no Reportable Quantity (RQ) Substances. This product is not considered as a priority pollutant as regulated under the Clean Water Act. This product contains the following chemicals subject to the reporting requirements of SARA Section 313 and 40 CFR 372: a) Manganese compounds, chemical category N450, 20% of total product weight is Mn. 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.)**	HCS CLASS: Target organ effects. May be toxic for the nervous system.
	DSCL (EEC)	Not available.

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National Fire Protection Association (U.S.A.)	Hazards presented under acute emergency conditions only: **Health** 1 **Fire Hazard** 0 **Reactivity** 0 **Specific Hazard**
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	-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.
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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