Agrium Material Safety Data Sheet

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

Section I. Chemical Product and Company Identification

PRODUCT NAME/ TRADE NAME	**Gran-U-Mite Plus**

SYNONYM	Gran-U-Mite	**MSDS NUMBER:**	**14277**
CHEMICAL NAME	Not applicable; a complex mixture of essential plant micronutrients.	**REVISION NUMBER**	1.0
CHEMICAL FAMILY	Inorganic salt mixture.	**MSDS prepared by the Environment, Health and Safety Department on:**	**June 20, 2006**
CHEMICAL FORMULA	Not applicable.	**24 HR EMERGENCY TELEPHONE NUMBER:**	
MATERIAL USES	Agricultural use: Micronutrient Fertilizer.	**Transportation Emergency: 1 (800) 792-8311** **Medical Emergency: 1 (888) 670-8123**	

MANUFACTURER

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

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**
Zinc sulfate	7733-02-0	---						1-5 as Zn
Zinc oxide	1314-13-2	2 (R)		10 (R)				1-5 as Zn
Magnesium oxide	3-7 as Mg	10 (I)						3-7 as Mg
Magnesium sulfate	7487-88-9	---						1-5 as Mg
Iron sulfate	7720-78-7	1 as Fe						1-5 as Fe
Manganese sulfate	7785-87-7	0.2 as Mn						2 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

Zinc sulfate
Rat oral LD50, Acute: 1710 mg/kg, RTECS.
Zn poisoning causes inflammed gills in fish. Threshold concentration for fish: 0.1 PPM Zn.

Zinc oxide
Mouse oral LD50, Acute: 7950 mg/kg, RTECS.

Manganese sulfate:
Rat Oral LD50, Acute: 2150 mg/kg, RTECS.

Continued on Next Page

Iron sulfate:
Rat Oral LD50, Acute: 319 mg/kg, RTECS.

Section III. Hazards Identification.

POTENTIAL ACUTE HEALTH EFFECTS	May cause irritation of the digestive tract if swallowed, including nausea and vomiting. May cause severe eye irritation. May cause skin irritation. Over-exposure by inhalation may cause respiratory tract irritation.
POTENTIAL CHRONIC HEALTH EFFECTS	Inhalation of large quantities of manganese containing dusts over many years may result in damage to the central nervous system, with symptoms of sleepiness, tremors and weakness in the legs, slurred speech, emotional disturbances, loss of balance, and in more advanced cases, an irreversible condition with symptoms similar to Parkinsons or Lou Gehrig's disease including a mask-like facial expression, spastic gait, tremors, slurred speech, fatigue, anorexia, apathy, and inability to concentrate in more advanced cases. High levels of manganese in the blood may increase anemia by interfering with iron absorption. Iron deficiency may increase an individual's susceptibility to manganese. Studies suggest that populations at risk of adverse effects due to manganese exposure are infants and those with existing iron deficiency. Disorders may be reversible if recognized early and overexposure is eliminated. Not classifiable as a human or animal carcinogen, teratogen or mutagen.

Section IV. First Aid Measures

EYE CONTACT	Immediately flush eyes with water for at least 15 minutes. Use warm water if available. Get 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	Allow to rest in a well ventilated area. Seek medical attention, if not feeling well.
SEVERE INHALATION	No additional information.
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 if irritation persists.
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	Not applicable.

Continued on Next Page

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	Material will not burn. Undergoes thermal decomposition at elevated temperatures to release irritating and toxic fumes. Fires involving this material may be extinguished by any means consistent with surrounding materials. As in any fire, wear NIOSH approved pressure-demand self-contained breathing apparatus, or equivalent and full protective gear.
SPECIAL REMARKS ON FIRE HAZARDS	A self contained breathing apparatus should be used to avoid inhalation of toxic fumes.
SPECIAL REMARKS ON EXPLOSION HAZARDS	No additional information.

Section VI. Accidental Release Measures

SMALL SPILL	Use appropriate tools or equipment to place the spilled solid in a suitable container for reuse or disposal. Flush or wash the contaminated surface. Recover wash water and dispose of according to local and regional authority requirements.
LARGE SPILL	Stop leak if without risk. Prevent entry into sewers, basements or confined areas. Cleanup personnel should be protected against dust inhalation and eye and skin contact. 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. Do not breathe dust. After handling, always wash hands thoroughly with soap and water. Use process enclosures, local exhaust ventilation, or other engineering controls to keep airborne levels below recommended exposure limits.
STORAGE	Keep container tightly closed. Store in a dry, cool and well ventilated area. Keep away from food, drink and animal feeds. Keep out of reach of children.

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, fumes or mist, use adequate local exhaust or general ventilation to keep exposure to airborne contaminants below the exposure limits.
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 should be available in the area in the event of emergency. Where skin and eye contact may occur wear clothing with long sleeves or coverals, chemical resistant gloves, and safety glasses with side shields. Wear appropriate respirator when ventilation is inadequate. 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 further information.
EXPOSURE LIMITS	

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Magnesium oxide:
OSHA PEL for magnesium oxide dusts (see PNOR): 15 mg/m^3 as total particulate
ACGIH TLV-TWA for magnesium oxide, as the inhalable fraction of the dust: 10 mg/m^3

Manganese:
OSHA Ceiling Limit for manganese compounds as Mn: 5 mg/m^3
ACGIH TLV-TWA for manganese and inorganic compounds as Mn: 0.2 mg/m^3

Zinc oxide:
OSHA PEL for zinc oxide dusts (see PNOR): 15 mg/m^3 as total dust
ACGIH TLV-TWA for zinc oxide, as the respirable fraction of dust: 2 mg/m^3; STEL 10 mg/m

Iron:
ACGIH TLV-TWA for Iron salts, soluble, as Fe: 1 mg/m^3

Federal, State and Provincial exposure limits may vary. Consult local authorities 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 grey.
pH (10% SOLN/WATER)	Not available	**ODOR**	Slight metallic
BOILING POINT	Decomposes.	**ODOR THRESHOLD**	Not available.
MELTING POINT	Not applicable	**TASTE**	Nauseous metallic.
CRITICAL TEMPERATURE	Not applicable	**VOLATILITY**	Non-volatile.
SPECIFIC GRAVITY g/cc	Not available	**SOLUBILITY**	Soluble in cold or hot water.
BULK DENSITY kg/m^3 ; lbs/ft^3	Not available	**DISPERSION PROPERTIES**	Will dissolve releasing nutrients over a period of time depending on conditions.
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 applicable.
CONDITIONS OF INSTABILITY	No additional information.
INCOMPATABILITY WITH VARIOUS SUBSTANCES	Highly reactive with oxidizing agents. Slightly reactive with moisture.
CORROSIVITY	Highly corrosive to iron, mild steel, or copper. Corrosive to aluminum or 304 stainless steel. Slightly corrosive to 316 stainless steel.
SPECIAL REMARKS ON REACTIVITY	Avoid strong oxidizing agents.
SPECIAL REMARKS ON CORROSIVITY	Contact your sales representative or metallurgical specialist to ensure compatibility with system equipment.

Continued on Next Page

Section XI. Toxicological Information

SIGNIFICANT ROUTES OF EXPOSURE	Eye contact. Inhalation. Ingestion.
TOXICITY TO ANIMALS	See Section II.
SPECIAL REMARKS ON TOXICITY TO ANIMALS	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. The product itself and its products of degradation are not harmful under normal conditions of use.
OTHER EFFECTS ON HUMANS	No additional information.
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	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. Slightly soluble. Slow release to watercourses may cause effects down stream from the point of release. These effects may be limited by recovery of spilled material if recovery is conducted immediately.
BOD and COD	Not available.
PRODUCTS OF DEGRADATION	Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise. (Some metallic oxides.)
TOXICITY OF THE PRODUCTS OF DEGRADATION	The products of degradation are less toxic than the product itself.
SPECIAL REMARKS ON THE PRODUCTS OF DEGRADATION	Oxides of sulfur and manganese. Product will promote algae growth and may degrade water quality and taste. Notify downstream water users. Sulfate in potable drinking water should be maintained below 500mg/L (Canada) or 250 mg/L (U.S.). 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

OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200).

National Secondary Drinking Water Regulations: EPA, 0.05 mg/L, Manganese
National Secondary Drinking Water Regulations: EPA, 0.3 mg/L, Iron
National Secondary Drinking Water Regulations: EPA, 5.0 mg/L, Zinc

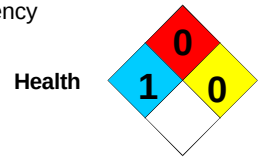
This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all of the information required by the Controlled Products Regulations. WHMIS CLASS D-2B: Material causing other toxic effects (TOXIC).

OTHER CLASSIFICATIONS

HCS (U.S.A.)	HCS CLASS: Toxic.
DSCL (EEC)	R25- Toxic if swallowed. R36/37/38- Irritating to eyes, respiratory system and skin.

National Fire Protection Association (U.S.A.)

Hazards presented under acute emergency conditions only:



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 (2006). 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. (2006); HSDB: Hazardous Substances Data Bank. National Library of Medicine, Bethesda, Maryland (2006); IRIS: Integrated Risk Information System. U.S. Environmental Protection Agency, Washington, D.C. (2006); NIOSH: Pocket Guide to Chemical Hazards. National Institute for Occupational

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	Safety and Health, Cincinnati, Ohio (2006); OHM/TADS: Oil and Hazardous Materials Technical Assistance Data System. U.S. Environmental Protection Agency, Washington, D.C. (2006); REPROTOX®: Scialli A.R. Georgetown University Medical Center and Reproductive Toxicology Center, Columbia Hospital for Women Medical Center, Washington, D.C. (2006); RTECS®: Registry of Toxic Effects of Chemical Substances. National Institute for Occupational Safety and Health, Cincinnati, Ohio (2006); and SHEPARDS: Shepard T.H.: Shepard's Catalog of Teratogenic Agents (2006). -Michigan Office of Regulatory Reform R325.51101et seq
OTHER SPECIAL CONSIDERATIONS	No additional information.
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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