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	**Ultra Yield Micronutrient Bean Mix 20Mn-9S-4Zn-1B**

SYNONYM	Bean Mix	**MSDS NUMBER:**	**14165**
CHEMICAL NAME	Not applicable; a complex mixture of essential plant micronutrients.	**REVISION NUMBER**	4.8
CHEMICAL FAMILY	Metal.	**MSDS prepared by the Environment, Health and Safety Department on:**	**April 28, 2005**
CHEMICAL FORMULA	Not applicable.	**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.
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**
Manganese sulfate	7785-87-7	0.2 as Mn						20 as Mn
Iron sulfate	7720-78-7	1 as sol. salts						3 as Fe
Zinc oxide	1314-13-2	2 (R)		10 (R)				1-5
Zinc sulfate	7733-02-0	---						0.5-1
Ulexite	1319-33-1	2		6				1 as B

TOXICOLOGICAL DATA ON INGREDIENTS

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

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

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

Borax:
Rat Oral LD50, Acute: 2660 mg/kg, RTECS.

Continued on Next Page

Algal toxicity: Green algae, Scenedesmus subspicatus 96-hr EC10 = 24 mg B/L
Invertebrate toxicity: Daphnids, Daphnia magna Straus 24-hr EC50 = 242 mg B/L
Fish toxicity,Seawater: Dab, Limanda limanda 96-hr LC50 = 74 mg B/L
Fish toxicity, Freshwater: Rainbow trout, S. gairdneri (embryo-larval stage) 24-day LC50 = 88 mg B/L; 32-day LC50 = 54 mg B/L
Goldfish, Carassius auratus(embryo-larval stage) 7-day LC50 = 65 mg B/L; 3-day LC50 = 71 mg B/L

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. May cause severe eye irritation. May cause skin irritation. Over-exposure by inhalation may cause respiratory tract irritation.
POTENTIAL CHRONIC HEALTH EFFECTS	Repeated or prolonged over-exposure to manganese can produce damage to the nervous system from damage to the cells of the basal ganglia. Symptoms of workers with chronic over-exposure to manganese dusts may include mask-like facial expression, spastic gait, tremors, slurred speech, fatigue, anorexia, apathy, and inability to concentrate. 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	Immediately flush eyes with water for at least 15 minutes. Use warm water if available. Get medical attention if irritation persists.
MINOR SKIN CONTACT	After contact with the skin, wash immediately with plenty of water. Gently and thoroughly wash the contaminated skin with running water and non-abrasive soap. Cover the irritated skin with an emollient. 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 be irritating to the mouth, throat and stomach. May be irritating to the digestive tract and bowels resulting in nausea and diahrrea. Have affected person drink several glasses of water to assist in purging system. Obtain medical attention if feeling ill.
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.
FIRE HAZARD IN THE PRESENCE OF VARIOUS SUBSTANCES	Not applicable.

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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 toxic and combustible gases. Fires involving this material may be extinguished by any means consistent with surrounding materials. As in any fire, wear MSHA/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. DO NOT get water inside container. Prevent entry into sewers, basements or confined areas; dike if needed. 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 is in compliance 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 must be available in the area in the event of emergency. Wear appropriate respirator when ventilation is inadequate. Where skin and eye contact may occur as a result of brief periodic exposures, wear clothing with long sleeves, coverals, chemical resistant gloves, impervious chemical resistant jacket and pants, and safety glasses with side shields.
PERSONAL PROTECTION IN CASE OF LARGE RELEASE	No further information.
EXPOSURE LIMITS	Borate compounds, inorganic: ACGIH TLV-TWA 2 mg/m^3; STEL 6 mg/m Iron Salts, Soluble: ACGIH TLV-TWA 1mg/m^3 MI OSHA Permissible Exposure Limit: 1mg/m^3 MI 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: ACGIH TLV-TWA 10 mg/m^3 Fed OSHA Permissible Exposure Limit: Table Z-1 8-hr Time Weighted Avg: 15 mg/m^3 as total dust

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MI OSHA Permissible Exposure Limit: R325.51103 Table G-1-A, 8-hr Time Weighted Avg: 10 mg/m^3 as total dust

Zinc sulfate:
MI and Fed OSHA Permissible Exposure Limit: 15 mg/m^3 (as Particulates Not Otherwise Regulated)

Particulates Not Otherwise Regulated:
MI and Fed OSHA Permissible Exposure Limit: 15 mg/m^3 total dust

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 grey.
pH (10% SOLN/WATER)	6.0 - 7.0	**ODOR**	Metallic (Slight.)
BOILING POINT	Decomposes. (850°C or 1562°F)	**ODOR THRESHOLD**	Not available.
MELTING POINT	700°C (1292°F)	**TASTE**	Nauseous metallic.
CRITICAL TEMPERATURE	Not available.	**VOLATILITY**	Not available.
SPECIFIC GRAVITY g/cc	1.28 (Water = 1)	**SOLUBILITY**	Soluble in cold water, hot water, methanol.
BULK DENSITY kg/m³ ; lbs/ft³	80 lbs/ft^3; 1280 kg/m^3	**DISPERSION PROPERTIES**	Will slowly dissolve, releasing nutrients over a period of several months.
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 information.
INCOMPATABILITY WITH VARIOUS SUBSTANCES	Highly reactive with oxidizing agents. Slightly reactive with moisture.
CORROSIVITY	Highly corrosive in the presence of steel, or copper. Corrosive in presence of aluminum or 304 stainless steel. Slightly corrosive in the presence of 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.

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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 spilled material and use for intended purpose.

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).

Federal Secondary Drinking Water Regulations EPA:

Iron	0.3mg/L,
Manganese	0.05mg/L
Sulfate	250 mg/L
Zinc	5mg/L

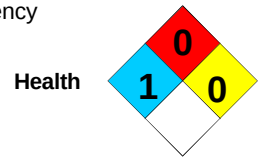
TSCA (Toxic Substance Control Act): This product is listed on the TSCA Inventory.
CANADIAN ENVIRONMENTAL PROTECTION ACT (CEPA): This product is on the Domestic Substances List (DSL), and is acceptable for use under the provisions of CEPA.

OTHER CLASSIFICATIONS

HCS (U.S.A.)	HCS CLASS: May be toxic for the nervous system.
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, 2005.
-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 (2005). 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. (2005); HSDB: Hazardous Substances Data Bank. National Library of Medicine, Bethesda, Maryland (2005);

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IRIS: Integrated Risk Information System. U.S. Environmental Protection Agency, Washington, D.C. (2005); NIOSH: Pocket Guide to Chemical Hazards. National Institute for Occupational Safety and Health, Cincinnati, Ohio (2005); OHM/TADS: Oil and Hazardous Materials Technical Assistance Data System. U.S. Environmental Protection Agency, Washington, D.C. (2005); REPROTOX®: Scialli A.R. Georgetown University Medical Center and Reproductive Toxicology Center, Columbia Hospital for Women Medical Center, Washington, D.C. (2005); RTECS®: Registry of Toxic Effects of Chemical Substances. National Institute for Occupational Safety and Health, Cincinnati, Ohio (2005); and SHEPARDS: Shepard T.H.: Shepard's Catalog of Teratogenic Agents (2005).
-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** **Environment, Health and Safety Department** **Telephone (403) 225-7380 or Fax (403) 225-7608**

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