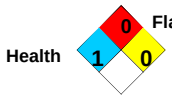
Agrium Material Safety Data Sheet

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

Section I. Chemical Product and Company Identification

PRODUCT NAME/ TRADE NAME	**PACMIX**

SYNONYM	Calcium Magnesium Micronutrient Mix	**MSDS NUMBER:**	**14294**
CHEMICAL NAME	Not applicable; a complex co-granulated mixture of essential plant nutrients.	**REVISION NUMBER**	1.1
CHEMICAL FAMILY	Inorganic metal salt mixture.	**MSDS prepared by the Environment, Health and Safety Department on:**	**August 17, 2007**
CHEMICAL FORMULA	Not applicable.	**24 HR EMERGENCY TELEPHONE NUMBER:**	
MATERIAL USES	Agricultural industry: 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

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**
Magnesium sulfate	7487-88-9	-----						2-5 as Mg
Magnesium oxide	1309-48-4	10 (I)						5-10 as Mg
Zinc sulfate	7733-02-0	-----						<1 as Zn
Zinc oxide	1314-13-2	2 (R)		10 (R)				1-2 as Zn
Manganese sulfate	7785-87-7	0.2 as Mn						<1 as Mn
Manganese dioxide	1311-13-9	0.2 as Mn						1-3 as Mn
Ferrous sulfate	7720-78-7	1 as Fe						<1 as Fe
Iron oxide	1309-37-1	5 as Fe						5-10 as Fe
Cuprous oxide	1317-39-1	1as Cu						1-3 as Cu
Cupric oxide	1317-38-0	1 as Cu						1-3 as Cu
Copper sulfate	7758-98-7	1 as Cu						<1 as Cu
Disodium molybdate	7631-95-0	0.5 (R) as Mo						<1 as Mo

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

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TOXICOLOGICAL DATA ON INGREDIENTS

Magnesium oxide:
Human TCLo, Acute: 400 mg/m^3, RTECS

Magnesium sulfate (Epsom salts):
Human TCLo, Acute: 351-428 mg/kg, RTECS

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.

Manganese dioxide:
Rat LD50, Acute: 3478 mg/kg, RTECS

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

Iron oxide:
Rat TDLo Subcutaneous: 135 mg/kg - RTECS

Cuprous oxide:
Rat Oral LD50, Acute: 470 mg/kg, RTECS.

Cupric oxide:
Rat Oral LD50, Acute: 470 mg/kg, RTECS.

Copper sulfate:
Rat Oral LD50, Acute: 300 mg/kg, RTECS.

Disodium molybdate:
Rat Oral LD50, Acute: 250 mg/kg, RTECS.

Section III. Hazards Identification.

POTENTIAL ACUTE HEALTH EFFECTS

Inhalation of dust and mists of copper salts can cause irritation of the nasal membranes, the throat, and on occasion, ulceration of the nasal septum. If copper salts reach the gastrointestinal tract, they can act as irritants producing salivation, nausea, vomiting, gastric pain, hemorrhagic gastritis, and diarrhea. In humans, a metallic taste, nausea, vomiting, and stomach pain are the first symptoms reported in nearly all cases of acute over-exposure. Severe and possibly life threatening liver and kidney damage may result from ingestion unless promptly treated. May cause severe irritation on eye contact, but irritation subsides on removal. May cause skin irritation on contact.

Fumes generated from high temperatures such as from welding and cutting on metals contaminated with this product may result in formation of zinc oxide fumes at levels above the occupational exposure limit, which can cause "metal fume fever", a flu-like condition involving fever, chills, sweats, nausea, vomiting, muscular aches and pains and breathing disturbance. Symptoms may appear a few hours after exposure and subside within 24-48 hours with no permanent effect.

This product may irritate eyes and skin upon prolonged or repeated contact. Over-exposure by inhalation may cause respiratory tract irritation. Ingestion of this substance may produce irritation of the gastro-intestinal tract, characterized by burning, diarrhea, and a metallic taste.

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 or prolonged overexposure to manganese can produce damage to the nervous system producing 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. Chronic zinc sulfate inhalation overexposures may result in lung irritation and inflamation.

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Chronic copper poisoning due to excessive intake is rarely seen in man. Chronic overdosage of copper salts in normal humans is unlikely to result in liver or kidney damage due to the capability of the body clearance mechanisms. However, a rare hereditary condition known as Wilson's disease makes individuals with this condition susceptible to toxic effects from copper at levels of exposure which cause no symptoms to others in the community. Chronic iron sulfate or zinc sulfate inhalation overexposures may result in lung irritation and inflamation, as well as 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. Wash contaminated skin with soap and water. Cover dry or irritated skin with a good quality skin lotion. If irritation persists, seek medical attention.
EXTENSIVE SKIN CONTACT	No additional information.
MINOR INHALATION	Inhalation of dust may produce irritation, burning, sneezing and coughing. Loosen tight clothing. Allow 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 toxic and combustible gases: ammonia, nitrogen oxides and sulfur oxides.
FIRE HAZARD IN THE PRESENCE OF VARIOUS SUBSTANCES	Not applicable.
EXPLOSION HAZARD IN THE PRESENCE OF VARIOUS SUBSTANCES	Not considered to be an explosive risk.
FIRE FIGHTING MEDIA AND INSTRUCTIONS	Material will not burn. Undergoes thermal decomposition at elevated temperatures to release toxic and combustible gases. Use extinguishing media suitable for surrounding materials.

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SPECIAL REMARKS ON FIRE HAZARDS	Non combustible. Toxic gases will form at elevated temperatures (>190 °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 will promote algae growth which may degrade water quality and taste. Notify downstream water users. Sulfate in potable drinking water should be maintained below 250 mg/L (U.S.) or 500 mg/L (Canada). 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 approved dust respirator (with N-95 or P-100 filters) may 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 additional information.
EXPOSURE LIMITS	Copper oxides (cupric or cuprous): ACGIH TLV-TWA: 1 mg/m^3 MI and Fed OSHA Permissible Exposure Limit: 1 mg/m^3 as Cu Copper sulfate: ACGIH TLV-TWA: 1 mg/m^3 as Cu MI and Fed OSHA Permissible Exposure Limit: 1 mg/m^3 as Cu Iron salts, soluble: ACGIH TLV-TWA: 1 mg/m^3 as Fe Iron oxide: ACGIH TLV-TWA: 5 mg/m^3 as respirable dust MI and Fed OSHA Permissible Exposure Limit: 10 mg/m^3 as fume Manganese and Inorganic compounds: ACGIH TLV-TWA: 0.2 mg/m^3 as Mn OSHA PEL: 5 mg/m^3 (ceiling), as Mn

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Molybdenum, soluble compounds:
ACGIH TLV-TWA: 0.5 mg/m^3 as Mn respirable dust
MI and Fed OSHA Permissible Exposure Limit: 5 mg/m^3 as Mn

Zinc oxide:
ACGIH TLV-TWA 2 mg/m^3 as respirable dust
Fed OSHA Permissible Exposure Limit: Table Z-1 8-hr Time Weighted Avg: 15 mg/m^3 as total dust, 5 mg/m^3 as respirable dust, and 5 mg/m^3 as fume.
MI OSHA Permissible Exposure Limit: 8-hr Time Weighted Avg: 10 mg/m^3 as total dust, 5 mg/m^3 as respirable dust, and 5 mg/m^3 as fume.

Zinc sulfate:
MI and Fed OSHA Permissible Exposure Limit: 15 mg/m^3 (as Particulates Not Otherwise Regulated)
Federal OSHA Permissible Exposure Limit: Table Z-1 8-hr Time Weighted Avg: 15 mg/m^3 as total dust

ACGIH TLV-TWA for Particulates (Insoluble) Not Otherwise Specified: 10 mg/m^3
MI OSHA PPEL: 10 mg/m^3 as total dust
OSHA PEL for Particulates Not Otherwise Regulated: 15 mg/m^3

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	Solid.		
MOLECULAR WEIGHT	Not applicable.	**COLOR**	Grey.
pH (10% SOLN/WATER)	Not available	**ODOR**	Odorless.
BOILING POINT	Decomposes.	**ODOR THRESHOLD**	Not available.
MELTING POINT	Not available	**TASTE**	Acrid. Nauseous metallic.
CRITICAL TEMPERATURE	Not available.	**VOLATILITY**	Not applicable.
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**	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.
INCOMPATABILITY WITH VARIOUS SUBSTANCES	Slightly reactive oxidizing agents. Very slightly reactive with metals, alkalis, moisture.
CORROSIVITY	Mineral salts. Corrosive to aluminum, zinc, and copper. Slightly corrosive to mild steel and 304 stainless steel. Non-corrosive to 316 stainless steel.
SPECIAL REMARKS ON REACTIVITY	Avoid contact with moisture. Hydrolysis will slowly produce acids corrosive to metals.
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.

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Section XI. Toxicological Information

SIGNIFICANT ROUTES OF EXPOSURE	Ingestion. Inhalation.
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.
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. Aquatic/Marine Toxicity: Avoid spills or release to watercourses. U.S. D.O.T.: This material is listed as a Severe Marine Pollutant. 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. Toxic to fish and other water organisms.
BOD and COD	Not available.
PRODUCTS OF DEGRADATION	Sulfur oxides (SO_2, SO_3 ...) Inorganic mineral salts and oxides.
TOXICITY OF THE PRODUCTS OF DEGRADATION	The product itself and its products of degradation are not harmful under normal conditions of use. Avoid spills or releases to watercourses.
SPECIAL REMARKS ON THE PRODUCTS OF DEGRADATION	Product will promote algae growth which may degrade water quality and taste. 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.) when shipped in non-bulk packaging by air, rail, or land vehicle. If shipped by marine vessel, whether in bulk or non-bulk, the following classification applies: Class 9
PIN and Shipping Name	Not applicable, unless shipped by vessel. If shipped by marine transport: UN3077 Environmentally hazardous substances, solid, n.o.s.
SPECIAL PROVISIONS FOR TRANSPORT	Not applicable unless shipped under Class 9 by vessel. If shipped by marine transport, the following provisions specified under 172.102 apply: 8, 146, IB3, T4, TP1, TP29

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DOT (U.S.A) (Pictograms)

Section XV. Other Regulatory Information and Pictograms

OTHER REGULATIONS

CALIFORNIA PROPOSITION 65: This product contains no chemicals known to the State of California to cause cancer, birth defects, or other reproductive harm.
This material contains the following chemicals subject to the reporting requirements of SARA 313 and 40 CFR 372:

Copper compounds, chemical category code N100, 1.5% as Cu.
Manganese compounds, N450, 1.5% as Mn
Zinc compounds, N982, 1% as Zn

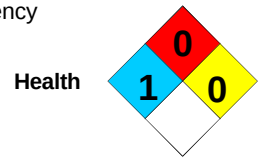
Refer to EPA TRI guidance documents and the specific product analysis for your product to determine your reporting requirements under this regulation.
CANADIAN ENVIRONMENTAL PROTECTION ACT (CEPA): This product or its components are on the Domestic Substances List (DSL), and are acceptable for use in Canada under the provisions of CEPA.
TSCA (Toxic Substance Control Act): This product or its components are listed on the TSCA 8(b)Inventory of Existing Chemical Substances.
OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200).
EPA Federal Drinking Water Standards: Primary MCL 1.3mg/L (Action Level) as Copper; Secondary 5mg/L as zinc, 250mg/L as sulfate, 1.0 mg/L as copper
CERCLA Reportable Quantities:
10 lb or 4.54 kg. The rule for determining when notification is required is stated in 40 CFR 302.4 (section IV. D.3.b). [40 CFR 302.4]
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: Irritating substance.
DSCL (EEC)	22- Harmful if ingested.

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

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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, 2007. -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 -Expert Publishing, LLC (ExPub on-line version): Denver, Colorado, USA. Available at: http://www.expub.com/index.aspx. The EXPUB System includes a collection of over seventy National and International Databases from but not limited the ATSDR; California and U.S.EPA; CDC: U.S. Department of Transportation; U.S. Coast Guard; European Chemicals Bureau; National Library of Medicine; National Institute for Occupational Safety and Health; Georgetown University Medical Center and Reproductive Toxicology Center; United Nations Environmental Progrm; World Health Oranization; and U.S. OSHA. -The Fertilizer Institute Product Testing Program Results, March 2003 -Michigan Office of Regulatory Reform R325.51108
OTHER SPECIAL CONSIDERATIONS	New product MSDS.
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**

NOTICE TO READER

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