






Material Safety Data Sheet

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

Section I: Chemical Product and Company Identification

PRODUCT NAME/ TRADE NAME	AGC83296 The Andersons Golf Products A-TEP Hi Mag Trace Element Package		
SYNONYM	Not available.	MSDS NUMBER:	14198
CHEMICAL NAME	Not applicable, a formulated mixture of magnesium, iron, manganese, zinc and copper salts.	REVISION NUMBER	4.1
CHEMICAL FAMILY	An inorganic metal salt.	MSDS prepared by the Environment, Health and Safety Department on: February 28, 2000	
CHEMICAL FORMULA	Not applicable.	24 HR EMERGENCY TELEPHONE NUMBER: Transportation Emergency: 1 (800) 792-8311 Medical Emergency: 1 (888) 670-8123	
MATERIAL USES	Agricultural use: Fertilizer ingredient.		
MANUFACTURER	SUPPLIER		
Agrium U.S. Inc. Suite 1400, 4582 South Ulster St. Denver, Colorado, U.S.A. 80237	The Andersons Lawn Products PO Box 119 Maumee, Ohio 43537		
			

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	
Copper sulfate (cupric sulfate)	7758-98-7	1						1-5
Cuprous oxide	1317-39-1	1						1-5
Cupric oxide	1317-38-0	1						1-5
Ferrous sulfate	7782-63-0	1						5-10
Iron oxide	1309-37-1	10						5-10
Magnesium oxide	1309-48-4	10						10-30
Magnesium sulfate	7487-88-9	10						10-30
Manganese dioxide	1313-13-9	5						1-5
Manganese sulfate	7785-87-7	0.2						1-5
Zinc oxide	1314-13-2	10						1-5
Zinc sulfate	7730-02-0	10						1-5

TOXICOLOGICAL DATA ON INGREDIENTS

Magnesium oxide
 Acute inhalation TClO: 400 mg/m³ [Human].
Magnesium sulfate:
 Subcutaneous LD50: 1200 mg/kg [Rat].
Copper (I) oxide:
 ORAL (LD50): Acute: 470 mg/kg [Rat].
Copper (II) oxide:
 Intratracheal (LDLo): 278 mg/kg [Rat].
Copper sulfate:
 Acute oral LDLo: 50 mg/kg [Human].

Ferrous sulfate:
 ORAL (LDLo): Acute: 1389 mg/kg [Rat].
Iron oxide:
 Inhalation (TCLo): 0.5mg/m³ continuous, 61 days. [Rat].
Manganese oxide:
 Intratracheal (LDLo): 375 mg/kg [Rat].
Manganese sulfate:
 ORAL (LD50): Acute: 2330 mg/kg [Mouse].
Zinc oxide:
 ORAL (LD50): Acute: 7950 mg/kg [Mouse].
Zinc sulfate heptahydrate:
 ORAL (LD50): Acute: 2150 mg/kg [Rat].

Section III. Hazards Identification.

POTENTIAL ACUTE HEALTH EFFECTS

May cause irritation to the eyes, skin and respiratory tract on prolonged contact due to mechanical action and the drying effect of mineral salts. Ingestion may result in stomach irritation resulting in nausea, vomiting, diarrhea and may include fever, chills, muscle ache, nausea, vomiting, cough, weakness, metallic or sweet taste, abdominal pain, gastrointestinal bleeding, and shock. Liver or kidney damage may develop after several days in the event of massive overexposure.

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 and loss of balance 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 are 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

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 and replace moisture with a good quality hand cream. If irritation persists, obtain medical attention. Wash contaminated clothing before reusing.

EXTENSIVE SKIN CONTACT

No additional information.

MINOR INHALATION

Inhalation of large quantities of dust may cause lung irritation and coughing. Allow individuals to rest in a well ventilated area. Seek medical attention, if irritation persists or if not feeling well.

SEVERE INHALATION

Use respiratory protection to remove affected individuals from the area of exposure. If not breathing, give artificial respiration. If breathing is difficult, give oxygen, keep warm, and get immediate medical attention.

SLIGHT INGESTION

May cause digestive tract irritation, with accompanying nausea, vomiting and diarrhea. Have the individual drink several glasses of water or milk and induce vomiting. Never give anything by mouth to an unconscious person. Lower the head so that the vomit will not reenter the mouth and throat. If intestinal tract irritation persists, 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	Not applicable.
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 the occupational exposure limits 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 dust filtering facepiece or 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 to prevent skin and eye irritation.

EXPOSURE LIMITS

Magnesium oxide:
 ACGIH TLV-TWA 10 mg/m³
 OSHA Permissible Exposure Limit: 10 mg/m³

Magnesium sulfate:
 ACGIH TLV-TWA 10 mg/m³ (as PNOC)
 OSHA Permissible Exposure Limit: 15 mg/m³ (as PNOC)

Manganese:
 ACGIH TLV-TWA 0.2 mg/m³
 OSHA Permissible Exposure Limit: 5 mg/m³ ceiling

Copper oxide:
 ACGIH TLV-TWA 1 mg/m³
 OSHA Permissible Exposure Limit: 1 mg/m³

Copper sulfate:
 ACGIH TV-TWA 1 mg/m³
 OSHA: N/A

Zinc oxide:
 ACGIH TLV-TWA 10 mg/m³
 OSHA Permissible Exposure Limit: Table Z-1 8-hr Time Weighted Avg: 15 mg/m³ as total dust

Zinc sulfate:
 ACGIH TV-TWA 10 mg/m³ (as PNOC)
 OSHA Permissible Exposure Limit: 15 mg/m³ (as PNOC)

Particulates Not Otherwise Classified:
 ACGIH TLV-TWA 10mg/m³
 OSHA Permissible Exposure Limit: 15 mg/m³

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	Grey to brown.
pH (10% SOLN/WATER)	Not available.	ODOR	Odorless.
BOILING POINT	Decomposes.	ODOR THRESHOLD	Not available.
MELTING POINT	Not available.	TASTE	Not available.
CRITICAL TEMPERATURE	Not available.	VOLATILITY	Not available.
SPECIFIC GRAVITY g/cc	Not available.	SOLUBILITY	Soluble in hot or cold water.
BULK DENSITY kg/m³ ; lbs/ft³	Not available.	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.
INCOMPATIBILITY 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 system equipment.

Section XI. Toxicological Information

SIGNIFICANT ROUTES OF EXPOSURE	Ingestion. Inhalation.
TOXICITY TO ANIMALS	See effects on humans.
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.
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 not significantly different than 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

Not applicable (PIN and PG).

SPECIAL PROVISIONS FOR TRANSPORT

RQ Copper (cupric) sulfate= 10 lbs
RQ Ferrous sulfate= 1000 lbs
RQ Zinc sulfate= 1000 lbs

DOT (U.S.A) (Pictograms)



Section XV. Other Regulatory Information and Pictograms

OTHER REGULATIONS

No additional information.

OTHER CLASSIFICATIONS

HCS (U.S.A.)

HCS CLASS: Target organ effects.

DSCL (EEC)

Not available.

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

Hazards presented under acute emergency conditions only:

Health



**Fire Hazard
Reactivity**

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

- 29 CFR Part 1910
- 40 CFR Part 1-799
- 49 CFR Parts 1-199
- American Conference of Governmental Industrial Hygienists, TLVs™ and other Occupational Exposure Values, 1999.
- Corrosion Data Survey, Sixth Edition, 1985, National Association of Corrosion Engineers.
- Fire Protection Guide to Hazardous Materials, (NFPA49, 325M, 491M, and 704), National Fire Protection Association, 10th Ed, 1991.
- TOMES Plus®, Vol 43, Jan 2000, Micromedex Inc.

OTHER SPECIAL CONSIDERATIONS

No additional remark.

FOR FURTHER SAFETY, HEALTH, OR ENVIRONMENTAL INFORMATION ON THIS PRODUCT, CONTACT

AGRIUM
Environment, Health and Safety Department
Telephone (780) 998-6134 or Fax (780) 888-6143

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