



MSDS - Corn Mix

Issued April 28, 2005

Section 1. Product Information

Product/Trade Name: Ultra Yield Micronutrient Corn Mix 20Zn-9S-4Mn-1B-1Cu

Synonym: Corn Mix

Chemical Name: N/A - a complex mixture of essential plant micronutrients

Chemical Family: Metal

Material Uses: Agricultural, fertilizer ingredient

Distributed By Pestell Minerals & Ingredients, New Hamburg, ON Canada

24 Hour Emergency Telephone (Canutec): 613-996-6666

Section 2. Hazardous Ingredients

	CAS #	TLV-TWA mg/m ³	% by Wt
Zinc Sulfate	7733-02-0	N/A	20% Zn
Manganese Sulfate	7785-87-7	0.2 as Mn	4% Mn
Iron Sulfate	7720-78-7	1.0 as Soln. salts	3% Fe
Sodium Borate Decahydrate	1303-96-4	5	1% B
Copper Sulfate	7758-98-7	1.0 as Cu	1% as Cu

Toxicological Data on Ingredients

Manganese Sulfate (Oral/Rat): LD50 Acute: 2150 mg/kg

Zinc Sulfate (Oral/Rat): LD50 Acute: 1710 mg/kg

Boric Acid (Oral/Rat) LD50 Acute: 319 mg/kg

Copper Sulfate (Oral/Rat) Acute: 300 mg/kg

Hazards Identification

Potential Acute Health Effects: Will 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 3. Physical and Chemical Properties

Physical State and Appearance: Solid (granular solid)

Color: Dark grey Odor: Metallic (slight) Odor Threshold: N/A

Taste: Nauseous metallic

Volatility: N/A

Solubility: Soluble in cold/hot water, methanol

Dispersion Properties: Will slowly dissolve, releasing nutrients over a period of several months.

Water/Oil Distribution Coeff: N/A

pH (10% soln/water): 6.0 - 7.0

Boiling Point: Decomposes (68°C or 1256°F)

Melting Point: Decomposes (68°C or 1256°F)

Critical Temperature: N/A

Specific Gravity g/cc: 1.28 (Water = 1)

Bulk Density: 80lbs/ft³; 1280 kg/m³

Vapor Pressure/Density: N/A

Section 4. 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: Material will not burn. Undergoes thermal decomposition at elevated temperatures to release toxic gases. Fires involving this material may be extinguished by any means consistent with surrounding materials. As in any fire, wear MSHA/NIOSH approved 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 5. Stability and Reactivity Data

The product is stable

Instability Temperature: Not available

Conditions of Instability: No additional information

Incompatibility 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.

Section 6. Toxicological Information

Significant Routes of Exposure: Eye contact, inhalation, ingestion

Toxicity to Animals: See Section 2.

Other Effects on Humans: No additional information

Special Remarks on Chronic Effects on Humans: No additional remarks

Special Remarks on Other Effects on Humans: No additional remarks

Special Remarks on Toxicity to Animals: May be harmful to livestock and wildlife is ingested. Clean up all spilled material, especially where bulk fertilizer loading of equipment occurs to prevent animal

exposure. The product and its products of degradation are not harmful under normal conditions of use.

Section 7. 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, coveralls, 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:

Borax (Borates): ACGIH TLV-TWA 5mg/m³

Fed OSHA Permissible Exposure Limit: Table Z-1 8hr Time weighted avg: 15mg/m³ as total dust

MI OSHA Permissible Exposure Limit: 10mg/m³

Copper Oxide: ACGIH TLV-TWA 1mg/m³

MI and Fed OSHA Permissible Exposure Limit: 1mg/m³ as Cu

Copper Sulfate: ACGIH TLV-TWA 1mg/m³

MI and Fed OSHA Permissible Exposure Limit: 1mg/m³ as Cu

Iron Salts, Soluble: ACGIH TLV-TWA 1mg/m³

MI and Fed OSHA Permissible Exposure Limit: 1mg/m³

Manganese: ACGIH TLV-TWA: 0.2 mg/m³ as Mn

MI OSHA Permissible Exposure Limit: R325.51103 Table G-1-A, 8 hr Time Weighted Avg: 1 mg/m³

Zinc Oxide: ACGIH TLV-TWA: 10mg/m³

Fed OSHA Permissible Exposure Limit: Table Z-1 8hr Time Weighted Avg: 15mg/m³ as total dust

MI OSHA Permissible Exposure Limit: R325.51103 Table G-1-A, 8 hr Time Weighted Avg: 10 mg/m³ as total dust.

Zinc Sulfate: MI and Fed OSHA Permissible Exposure Limit: 15 mg/m³ (as Particulates Not

Otherwise Regulated)

Federal, State and Provincial exposure limits may vary. Consult local officials for acceptable exposure limits in your jurisdiction.

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 necessary. 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.

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.

Ecological Information

Exotoxicity: Low toxicity to 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 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 Products of Degradation: The products of degradation are less toxic than the product itself.

Special Remarks on 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 (US).

Will dissolve and disperse in water. Reclaiming material may not be viable.

Section 8. 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 reuse.

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: Irritation to the mouth, throat, stomach, digestive tract and bowels resulting in nausea, vomiting and diarrhea. Have affected person drink several glasses of water to assist in purging system. If the person is conscious, induce vomiting. Seek medical attention.

Extensive Ingestion: No additional information.

DOT/TDG Classification: Not controlled under TDG (Canada) or DOT (USA).

PIN and Shipping Name: Not applicable

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