SAFETY DATA SHEET

SECTION 1	PRODUCT AND COMPANY IDENTIFICATION
Trade Name:	MicroEssentials® SZ® / MESZ®
Chemical Name:	Monoammonium Phosphate with Ammonium Sulfate and Sulfur and Zinc
CAS Number:	7722-76-1
Chemical Family:	Ammonium Phosphates—Inorganic Salts
Synonyms:	Monoammonium Phosphate + Sulfur and Zinc Monobasic Ammonium Phosphate + Sulfur and Zinc Ammonium Dihydrogen Phosphate + Sulfur and Zinc MAP + S + Z Ammonium Dihydrogen Orthophosphate MESZ® MES®
Primary Use:	Crop nutrient
Company Information:	**The Mosaic Company** 101 East Kennedy Blvd, Ste 2500 Tampa, FL 33602 www.mosaicco.com (800) 918-8270 or (813) 775-4200 8 AM to 5 PM Eastern Time USA
Emergency Telephone:	**EMERGENCY OVERVIEW** **24 Hour Emergency Telephone Number:** **For Chemical Emergencies:** **Spill, Leak, Fire or Accident** **Call CHEMTREC** **North America: (800) 424-9300 (reference CCN201871)** **Others: (703) 527-3887 (collect)**

SECTION 2	HAZARD IDENTIFICATION	
GHS Classification:	Acute Toxicity Oral Category 5 Skin Irritant Category 2 Eye Irritant Category 2B STOT SE Category 3	Hazard Statement H303 Hazard Statement H315 Hazard Statement H320 Hazard Statement H335
	Signal Word: WARNING **Hazard Statement(s)** H303: May be harmful if swallowed H315: Causes skin irritation H320: Causes eye irritation H335: May cause respiratory irritation	
Label Elements:		
Prevention:	P264: Wash hands thoroughly after handling. P280: Wear protective gloves P261: Avoid breathing dust P271: Use only outdoors or in a well-ventilated area.	
Response:	P302+ P352	IF ON SKIN: Wash with plenty of water.
	P321	Specific Treatment, see supplemental first aid information.
	P332+ P313	If skin irritation occurs: Get medical advice/attention.
	P362+ P364	Take off contaminated clothing and wash it before reused.

	P305+P351+ P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
	P337+ P313	If eye irritation persists: Get medical advice/attention.
	P304+ P340	IF INHALED: Remove person to fresh air and keep comfortable for breathing.
	P312	Call a POISON CENTER.
Storage:	Not applicable	Not applicable
Disposal:	P501	Disposal of content/containers to be in accordance with local/regional/national regulations.

SECTION 3	COMPOSITION INFORMATION ON INGREDIENTS			
Formula:	Proprietary			
Composition:	Monobasic Ammonium Phosphate Ammonium Sulfate Sulfur Zinc Compounds (Proprietary)	CAS 7722-76-1 CAS 7783-20-2 CAS 7704-34-9 Proprietary	75-78% 12-15% 4-6% 1.2-2.0%	Acute Toxicity Oral Category 5 Skin Irritant Category 2 Eye Irritant Category 2B STOT SE 3 (Lungs, Inhalation)

SECTION 4	FIRST AID MEASURES	
First Aid Procedures:	Eyes:	Move victim away from exposure and into fresh air. Flush eyes with plenty of clean water for at least 15 minutes. If symptoms persist, seek medical attention.
	Skin:	Wash contaminated area thoroughly with mild soap and water. If chemical or solution soaks through clothing, remove clothing and wash contaminated skin. If irritation develops and persists after washing, seek medical attention.
	Inhaled:	If respiratory symptoms develop, move victim away from source of exposure and into fresh air. If symptoms persist, seek medical attention.
	Ingestion:	If large amounts are swallowed, seek emergency medical attention. If possible, do not leave victim unattended and observe closely for adequacy of breathing.
Note to Physician:	If person has been exposed to concentrated decomposition products, treat symptomatically and watch for delayed symptoms of pulmonary edema.	

SECTION 5	FIRE FIGHTING MEASURES
Extinguishing Media:	Use extinguishing agent suitable for type of surrounding fire. Avoid excessive water to minimize runoff. Prevent firefighter water from entering the environment. Small fires: Water spray, foam, dry chemical or CO_2 Large fires: Water spray, fog or foam
Protection of Firefighters:	Positive pressure, self-contained breathing apparatus is required for all firefighting activities involving hazardous materials.

SECTION 6	ACCIDENTAL RELEASE MEASURES

Response Techniques:	Stay upwind and away from spill (dust hazard). Wear appropriate protective equipment, including respiratory protection, as conditions warrant (see Section 8). Prevent spilled material from entering sewers, storm drains, other unauthorized treatment drainage systems, and natural waterways. Notify appropriate federal, state, and local agencies as may be required (see Section 15). Minimize dust generation. Sweep up and package appropriately for disposal.

SECTION 7	HANDLING AND STORAGE
Handling:	The use of appropriate respiratory protection is advised when concentrations exceed any established exposure limits (see Section 8). Avoid contact with eyes, skin, and clothing. Wash thoroughly after handling. Wash contaminated clothing or shoes. Use good personal hygiene practices. Avoid systems that would tend to segregate dust or any components of this product. Avoid accumulation of fugitive dust, as high concentrations of sulfur dust may present an explosion hazard. Follow standard safe-work practices, including hot-work procedures when working around this product.
Storage:	Use and store this material in dry, well-ventilated areas. Store only in approved containers. Keep container(s) tightly closed. Keep away from any incompatible material (see Section 10). Protect container(s) against physical damage. Material may absorb moisture from the air.

SECTION 8	EXPOSURE CONTROLS / PERSONAL PROTECTION	
Engineering Controls:	Use process enclosure, general dilution ventilation or local exhaust systems where necessary to maintain airborne dust concentration below the OSHA standards or in accordance with applicable regulations.	
Personal Protective Equipment (PPE):	Eye/Face:	Approved eye protection to safeguard against potential eye contact, irritation, or injury is recommended.
	Skin:	The use of cloth or leather work gloves is advised to prevent skin contact, possible irritation and absorption.
	Respiratory:	A NIOSH approved air purifying respirator with a type 95 (R or P) particulate filter may be used under conditions where airborne concentrations are expected to exceed exposure limits. Protection provided by air purifying respirators is limited (see manufacturer's respirator selection guide). Use a positive pressure air supplied respirator if there is potential for uncontrolled release, exposure levels are not known or any other circumstances where air purifying respirators may not provide adequate protection. A respiratory protection program that meets OSHA's 29 CFR 1910.134 and ANSI Z88.2 requirements must be followed if workplace conditions warrant a respirator.
	Other:	A source of clean water should be available in the work area for flushing eyes and skin.
General Hygiene Considerations:	Wash thoroughly after handling Use adequate ventilation	

Exposure Guidelines:	OSHA Permissible Exposure Limits (PEL):	Particulates Not Otherwise Regulated: 5 mg/m^3 TWA (respirable); 15 mg/m^3 TWA (total) Ammonia: 50 ppm (35 mg/m3) TWA Sulfur: No Occupational Limits Zinc: 5 mg/m^3 (respirable dust); 15 mg/m^3 (total dust)
	ACGIH Threshold Limit Value (TLV):	Particulates Not Otherwise Specified: 3 mg/m^3 TWA (respirable); 10 mg/m^3 TWA (inhalable) Ammonia: 25 ppm (18 mg/m^3) TWA; 35 ppm (27 mg/m^3) STEL Sulfur: No Occupational Limits Zinc Oxide: 2 mg/m^3 (respirable); 10 mg/m^3 (respirable)

SECTION 9	PHYSICAL AND CHEMICAL PROPERTIES		
Note: Unless otherwise stated, values in this section are determined at 20°C (68°F) and 760 mm Hg (1 atm).			
Appearance:	Gray, tan, or brown granules	Vapor Pressure (mm Hg):	Not applicable
Odor:	Rotten egg-like or Slight ammonia odor	Vapor Density (air=1):	Not applicable
Odor Threshold:	No data available	Specific Gravity or Relative Density:	Not applicable
Physical state:	Solid	Bulk Density:	Loose 55 - 64 lbs/ft^3 (895 - 1025 kg/m^3)
pH:	4.2 – 5.5 in a 1 w/v %	Solubility in Water:	75% - 85% 300 g/L at 20°C
Melting Point/ Freezing Point:	Partial at 235°F (113°C)	Partition coefficient:	No data available
Boiling Point:	Not applicable	Auto-Ignition Temperature:	Not applicable
Flash Point:	Not applicable	Decomposition Temperature:	374°F (190°C)
Evaporation Rate:	No data available	Viscosity:	No data available
Flammability:	Not applicable	Volatility:	Not applicable
Upper/Lower Flammability or explosive limits	Not applicable		

SECTION 10	STABILITY AND REACTIVITY
Chemical Stability:	Stable under normal conditions of storage and handling. Decomposes at 374°F (190°C).
Conditions to Avoid:	Extreme temperatures, accumulation of dust.
Incompatible Materials:	Avoid contact with alkaline materials
Hazardous Decomposition Products:	If heated to the point of decomposition, oxides of phosphorus, nitrogen and/or sulfur (e.g., SO2) may be released, as well as ammonia vapor.
Corrosiveness:	May be corrosive to iron and mild steels, aluminum, zinc and copper
Hazardous Polymerization:	Will not occur

SECTION 11	TOXICOLOGICAL INFORMATION		
Substance:	Monoammonium Phosphate		
Acute Oral Toxicity:	LD_{50} (rat, oral) > 2000 mg/kg		
Acute Inhalation Toxicity:	No data available		
Acute Dermal Toxicity:	LD_{50} (rat, dermal) > 5000 mg/kg		
Substance:	Ammonium Sulfate		
Acute Oral Toxicity:	LD_{50} (rat, oral) > 2000 to 4250 mg/kg LD_{50} (mouse, oral) > 640 to 4250 mg/kg		
Acute Inhalation Toxicity:	No data available		
Acute Dermal Toxicity:	LD_{50} (rat, mouse, dermal) > 2000 mg/kg		
Substance:	Sulfur		
Acute Oral Toxicity:	LD_{50} (rat, oral) > 5000 mg/kg		
Acute Inhalation Toxicity:	No data available		
Acute Dermal Toxicity:	LD_{50} (rat, dermal) > 2000 mg/kg		
Substance:	Zinc Compounds		
Acute Oral Toxicity:	LD_{50} (mouse/rat, oral) 186 - 623 mg/kg		
Acute Inhalation Toxicity:	No data available		
Acute Dermal Toxicity:	No data available		
Mutagenesis:	No data available	Target Organ	STOT SE Cat 3; may cause respiratory irritation.
Developmental Toxicity:	No data available	Carcinogenicity	The ingredients of this product are not classified as carcinogenic by NTP (National Toxicology Program), IARC, or OSHA

SECTION 12	ECOLOGICAL INFORMATION

Ecotoxicology:	Ammonium sulphate (CAS 7783-20-2) **Aquatic** Algae EC_{50} Chlorella vulgaris 2700 mg/l, 18 days Crustacea EC_{50} Water flea (Daphnia magna) > 100 mg/l, 96 hours Fish LC_{50} Salmo gairdneri 173 mg/l, 96 hours Sulfur (CAS 7704-34-9) **Aquatic** Fish LC_{50} Western mosquitofish (Gambusia affinis) > 10000 mg/l, 96 hours Crustacea LC_{50} Water flea (Daphnia magna) 0.098 mg/l, 48 Hours Zinc Compounds **Aquatic** (very toxic to aquatic organisms) Ceriodaphnia dubia EC_{50} 0.413 mg/l, 48 hours Selenastrum capricornutum LC_{50} 0.136 mg/l, 72 hours May release ammonium ions that are toxic to fish. Un-ionized ammonia concentrations above 0.02 mg/l are considered toxic in fresh water. May release phosphates which will result in algae growth, increased turbidity, and depleted oxygen. At high concentrations, this may be hazardous to fish or other marine organisms. Release to watercourses may cause effects downstream. Fish 96 hour LC_{50}, OECD Guidelines 203 (rainbow trout): > 86 mg/l.

SECTION 13	DISPOSAL CONSIDERATIONS
	Recover or recycle if possible. Properly characterize all waste materials. Consult federal, state/provincial and local regulations regarding the proper disposal of this material. Prevent material from entering sewers, storm drains, other unauthorized treatment drainage systems, and natural waterways.

SECTION 14	TRANSPORT INFO
Regulatory Status:	Not regulated
Identification Number:	HTS 3105.59.0000
Hazard Class:	Not applicable
Proper Shipping Name	Not applicable
Packing Group	Not applicable
DOT Emergency Response Guide Number:	Not applicable
Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code:	Not applicable
MARPOL Annex V:	Non-HME
IMO/IMDG:	Not applicable

SECTION 15	REGULATORY INFORMATION
CERCLA:	Listed (Zinc compounds) 1000 lbs RQ; 454 kg RQ

RCRA 261.33:	Not listed				
SARA Title III: (Exemptions at 40 CFR, Part 370 may apply for agricultural use, or for quantities of less than 10,000 pounds on-site.)	Section 302/304: Listed (Zinc compounds)		RQ: 1000 lbs (Zinc compounds)		TPQ: No
	Section 311/312:				
	Acute: Yes	Chronic: No	Fire: No	Pressure: No	Reactivity: No
	Section 313: Listed (Zinc compounds)				
NTP, IARC, OSHA:	This material has not been identified as a carcinogen by NTP, IARC, or OSHA.				
Canada DSL and NDSL:	DSL: Yes NDSL: Not listed				
TSCA:	Listed on the TSCA Inventory				
CA Proposition 65: (Health & Safety Code Section 25249.5)	⚠ WARNING: Cancer and Reproductive Harm – www.P65Warnings.ca.gov				
WHMIS:	**WHMIS 2015** This SDS has been prepared according to the hazard criteria of the Hazardous Products Regulations (HPR) and the SDS contains all of the information required by the HPR.				

SECTION 16	OTHER INFORMATION
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Preparation:	The preparation of this SDS was in accordance with ANSI Z400.1-2010.
Revision Date:	March 24, 2020
Sections Revised:	1
SDS Number:	MOS 100038
References:	Globally Harmonized System of Classification and Labelling of Chemicals (GHS) – 4th Edition 2011 OSHA Hazard Communication Standard, 2012 MARPOL Annex V; The Fertilizer Institute (TFI), 2003; TOXNET

Other Hazard Classifications:

NFPA HAZARD CLASS	
Health:	**2**
Flammability:	**0**
Instability:	**0**
Special Hazard:	None

HMIS HAZARD CLASS	
Health:	**2**
Flammability:	**0**
Physical Hazard:	**0**
PPE:	Section 8

WHMIS 2015 (HPR) HAZARD CLASS	
Signal Word	Warning
Symbol	
Classification	Acute Toxicity Oral Category 5 Skin Irritant Category 2 Eye Irritant Category 2B STOT SE Category 3
Hazard Statements	H303: May be harmful if swallowed H315: Causes skin irritation H320: Causes eye irritation H335: May cause respiratory irritation