

SECTION I	PRODUCT AND COMPANY INFORMATION							
TRADE NAME:	MicroEssentials S9							
CHEMICAL NAME:	Monoammonium Phosphate with Sulfur							
CAS NUMBER:	MAP: 7722 - 76 - 1 Sulfur: 7704 - 34 - 9							
CHEMICAL FAMILY:	Ammonium Phosphates - Inorganic Salt							
	Monoammonium Phosphate + Sulfur							
SYNONYMS:	Monobasic Ammonium Phosphate + Sulfur							
	Ammonium Dihydrogen Phosphate + Sulfur							
PRIMARY USE:	Crop nutrient							
COMPANY	MOSAIC 13830 Circa Crossing Dr. Lithia, Florida 33547							
INFORMATION:	· ·	www.mosaicco.com						
	866-928-7901 or 306-523-2800, 8 AM to 5 PM Central Time US							
EMERGENCY TELEPHONE:	CHEMTREC 1-800-424-9300							
SECTION II		ŀ	ΙA	ZARD IDEN	ITIFICAT	ION		
	Avoid contact with eyes, skin and clothing. V thoroughly after handling. Monoammonium phosphate is generally recognized as safe w used in accordance with good manufacturing practice.			nium safe when				
	Physical Hazai	Physical Hazards:			hen wet.			
	Physical Form:			Solid				
	Appearance: Gray, tan, brown or black granules							
EMERGENCY		Odor: Slight ammonia odor						
OVERVIEW:	Toxicity:			Non-toxic				
	NFPA HAZARD CLASS			HMIS HAZARD CLASS		WHMIS HAZARD CLASS		
	Health:	1		Health:	1	Cumbal	N/A	
	Flammability:	0		Flammability:	0	Symbol		
	Instability:	0		Physical Hazard:	0	Classification	Not WHMIS controlled	
	Special Hazard:	None		PPE:	Section VIII	Sub Class (N/A)		
	<b>Eye:</b> Contact may cause mild eye irritation including stinging, watering and redness.				including			
POTENTIAL HEALTH EFFECTS:	Skin:		Contact may cause mild irritation including redness and a burning sensation. No harmful effects from skin absorption have been reported.					
	Inhalation (Breathing):		Studies by other exposure routes suggest a low degree of hazard by inhalation.					
	Ingestion (Swallowing)		Low degree of toxicity by ingestion.					
	Signs and Symptoms:		Effects of overexposure may include irritation of					
			the nose, throat and digestive tract, nausea,					
			vomiting, diarrhea, coughing and shortness of					
	Congo			breath.	woilehie			
	Cancer: Target Organ			Data not a				
	ranget Organ	ıə.		Data 110t a	avaliable			



	Developmental:	Data not available			
	Other Comments:	Effects of overexposure to dusts can include			
		irritation of the eyes and respiratory tract,			
		pneumoconiosis (dust congested lungs)			
		pneumonitis (lung inflammation), coughing,			
		vomiting, diarrhea, abdominal pain and jaundice.			
	Pre-Existing Medical	Respiratory (asthma-like) disorders.			
	Conditions:				
POTENTIAL	MES9 is considered biodegradable and is taken up as a nutrient by vegetation.				
ENVIRONMENTAL	Large spills can harm or kill vegetation. May release ammonium ions in water				
EFFECTS:	systems that are toxic to fish. May release phosphates resulting in algae				
2112010.	growth, increased turbidity and depleted oxygen in water systems.				
SECTION III	COMPOSITION				
SECTION III	INFORM	IATION ON INGREDIENTS			
FORMULA:	(NH <sub>4</sub> )H <sub>2</sub> PO <sub>4</sub> + S · 5H <sub>2</sub> O				
	Phosphate as P2O5	45-48%			
	Nitrogen as N	9-11%			
COMPOSITION:	Water	0.5 - 2.5%			
	Total Sulfur as S	7-11%			
	Fluorides as F	2 - 4%			
SECTION IV	FIRST AID MEASURES				
		Move victim away from exposure and into fresh			
	Eyes:	air. Flush eyes with plenty of clean water for at			
		least 15 minutes. If symptoms persist, seek			
		medical attention.			
		Wash contaminated area thoroughly with mild			
	Skin:	soap and water. If chemical or solution soaks			
		through clothing, remove clothing and wash			
FIRST AID		contaminated skin. If irritation develops and			
PROCEDURES:		persists after washing, seek medical attention.			
		If respiratory symptoms develop, move victim			
	Inhaled:	away from source of exposure and into fresh air.			
		If symptoms persist, seek medical attention.			
		If person is conscience, immediately give water or			
	Ingestion:	milk. Do not induce vomiting. Seek medical			
	, and the second	attention. If person is unconscious, do not give			
	If paraon has been synassed to	anything by mouth.			
NOTE TO PHYSICIAN:	If person has been exposed to concentrated decomposition products, treat				
SECTION V		symptomatically and watch for delayed symptoms of pulmonary edema.  FIRE FIGHTING MEASURES			
SECTION V					
	Flash Point:	Not applicable			
FLAMMABLE	OSHA Flammability Class:	Not applicable			
PROPERTIES:	LEL/UEL:	LEL: Not explosible (at product concentration) / UEL: Not explosible (at product concentration)			
	Auto-Ignition Temperature:	Not explosible			
		able for type of surrounding fire. Avoid excessive			
EXTINGUISHING	water to minimize runoff.				
MEDIA:	Small fires: Water spray, foar	n, dry chemical or CO <sub>2</sub>			
	Large fires: Water spray, fog or foam				



PROTECTION OF FIREFIGHTERS:	Positive pressure, self-contained breathing apparatus is required for all fire fighting activities involving hazardous materials.		
SECTION VI	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 pack appropriately for disposal.		
RELEASE NOTES :	If spill could potentially enter any waterway, including intermittent dry creeks, contact the local authorities. If in the U.S., contact the US COAST GUARD NATIONAL RESPONSE CENTER toll free number 800-424-8802. In case of accident or road spill notify: CHEMTREC IN USA at 800-424-9300; CANUTEC in Canada at 613-996-6666 CHEMTREC in other countries at (International code) +1-703-527-3887.		
SECTION VII	HANDLING AND STORAGE		
HANDLING:	The use of appropriate respiratory protection is advised when concentrations exceed any established exposure limits (see Sections 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 Hot Work guidelines when working around this product.		
STORAGE:	Use and store this material in cool, 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 VIII	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.		
	Eye/Face:	Approved eye protection to safeguard against potential eye contact, irritation, or injury is recommended.	
PERSONAL PROTECTIVE EQUIPMENT (PPE):	Skin:	The use of cloth or leather work gloves is advised to prevent skin contact, possible irritation and absorption.	
	Respiratory:	Protection is not required where adequate ventilation conditions exist. Use a dust mask or other appropriate respiratory protection where engineering controls are not feasible or during operations that generate airborne concentrations exceeding the relevant standards.  A source of clean water should be available in	
	Other:	the work area for flushing eyes and skin.	



GENERAL HYGIENE CONSIDERATIONS:	Wash thoroughly after handling, use in adequate ventilation		
EXPOSURE GUIDELINES:	OSHA Permissible Exposure Limits (PEL):	Particulates Not Otherwise Specified: 5 mg/m³ TWA (respirable) 15 mg/m³ TWA (total)  Ammonia: 50 ppm (35 mg/m³) TWA	
	ACGIH Threshold Limit Value (TLV):	Ammonia: 25 ppm (18 mg/m³) TWA 35 ppm (27 mg/m³) STEL	
SECTION IX	PHYSICAL AND CHEM		
Note: Unless otherwise stated, v	alues in this section are determined at	20°C (68°F) and 760 mm Hg (1 atm).	
Flash Point:	Not applicable		
Flammability/ Explosive Limits (%):	LEL: Not explosible (at product concentration) / UEL: Not explosible (at product concentration)		
Auto-Ignition Temperature:	Not applicable		
Appearance:	Grey, tan, brown, or black granules		
Physical State:	Solid		
Odor:	Slight ammonia odor		
Molecular Weight of Pure Material:	MAP: 115.0 g/mol Sulfur: 32.0 g/mol		
pH:	4.2 – 5.5 in a 1% solution		
Vapor Pressure (mm Hg):	Not applicable		
Vapor Density (air=1):	Not applicable		
Boiling Point:	Not applicable		
Freezing/Melting Point:	Decomposes at ~375°F (190 °C) before melting		
Solubility in Water:	70% - 90 % 328 g/L at 20°C		
Specific Gravity:	Not applicable		
Volatility:	Not applicable		
Bulk Density:	58 - 66 lbs./ft <sup>3</sup> (Packed); 55 – 63 lbs./ft <sup>3</sup> (Loose)		
SECTION X	STABILITY AND REACTIVITY		
Chemical Stability:	Stable under normal conditions of storage and handling. Decomposes at 374°F (190°C).		
Conditions to Avoid:	Extreme temperatures.		
Incompatible Materials:	Avoid contact with alkaline m	etals.	
Hazardous Decomposition Products:	If heated to the point of decomposition, oxides of phosphorus, oxides of nitrogen and/or SO <sub>2</sub> may be released.		
Corrosiveness:	May be corrosive to iron and mild steels, aluminum, zinc and copper.		
Hazardous Polymerization:	Will not occur.		
SECTION XI	TOXICOLOGICAL INFORMATION		



Acute Oral Toxicity	Data not available	
Acute Inhalation Toxicity	Data not available	
Acute Dermal Toxicity	Data not available	
Mutagenesis	Data not available	
Target Organ	Data not available	
Developmental Toxicity	Data not available	
Carcinogenicity	The ingredient(s) of this product is (are) not classified as carcinogenic by NTP (National Toxicology Program), IARC, or OSHA	
SECTION XII	ECOLOGICAL INFORMATION	
ECOTOXICOLOGY:	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 extremely high concentrations, this may be hazardous to fish or other marine organisms. Release to watercourses may cause effects downstream.	
SECTION XIII	DISPOSAL CONSIDERATIONS	
	Properly characterize all waste materials. Consult state and local regulations regarding the proper disposal of this material.	
SECTION XIV	TRANSPORTATION INFO	
Regulatory Status	Not regulated	
Regulatory Status Proper Shipping Name	Not regulated  Chemical N.O.S. (non-regulated)	
Proper Shipping Name	Chemical N.O.S. (non-regulated)  Not listed in the hazardous materials shipping regulations (49 CFR, Table 172.101) by the U.S. Department of Transportation, or in the Transport of	
Proper Shipping Name Hazard Class	Chemical N.O.S. (non-regulated)  Not listed in the hazardous materials shipping regulations (49 CFR, Table 172.101) by the U.S. Department of Transportation, or in the Transport of Dangerous Goods (TDG) Regulations Canada.	
Proper Shipping Name Hazard Class Packing Group	Chemical N.O.S. (non-regulated)  Not listed in the hazardous materials shipping regulations (49 CFR, Table 172.101) by the U.S. Department of Transportation, or in the Transport of Dangerous Goods (TDG) Regulations Canada.  Not applicable	
Proper Shipping Name Hazard Class Packing Group Identification Number	Chemical N.O.S. (non-regulated)  Not listed in the hazardous materials shipping regulations (49 CFR, Table 172.101) by the U.S. Department of Transportation, or in the Transport of Dangerous Goods (TDG) Regulations Canada.  Not applicable  Not applicable	
Proper Shipping Name  Hazard Class  Packing Group  Identification Number  Guide Number	Chemical N.O.S. (non-regulated)  Not listed in the hazardous materials shipping regulations (49 CFR, Table 172.101) by the U.S. Department of Transportation, or in the Transport of Dangerous Goods (TDG) Regulations Canada.  Not applicable  Not applicable  Not applicable	
Proper Shipping Name Hazard Class Packing Group Identification Number Guide Number HTS Number	Chemical N.O.S. (non-regulated)  Not listed in the hazardous materials shipping regulations (49 CFR, Table 172.101) by the U.S. Department of Transportation, or in the Transport of Dangerous Goods (TDG) Regulations Canada.  Not applicable  Not applicable  Not applicable  3105.40.50	
Proper Shipping Name Hazard Class Packing Group Identification Number Guide Number HTS Number SECTION XV CERCLA:	Chemical N.O.S. (non-regulated)  Not listed in the hazardous materials shipping regulations (49 CFR, Table 172.101) by the U.S. Department of Transportation, or in the Transport of Dangerous Goods (TDG) Regulations Canada.  Not applicable  Not applicable  Not applicable  REGULATORY INFORMATION  Not listed	
Proper Shipping Name Hazard Class  Packing Group Identification Number Guide Number HTS Number  SECTION XV  CERCLA: RCRA 261.33:	Chemical N.O.S. (non-regulated)  Not listed in the hazardous materials shipping regulations (49 CFR, Table 172.101) by the U.S. Department of Transportation, or in the Transport of Dangerous Goods (TDG) Regulations Canada.  Not applicable  Not applicable  Not applicable  REGULATORY INFORMATION  Not listed  Not listed	
Proper Shipping Name  Hazard Class  Packing Group  Identification Number  Guide Number  HTS Number  SECTION XV  CERCLA: RCRA 261.33: SARA TITLE III: (Exemptions at 40 CFR, Part	Chemical N.O.S. (non-regulated)  Not listed in the hazardous materials shipping regulations (49 CFR, Table 172.101) by the U.S. Department of Transportation, or in the Transport of Dangerous Goods (TDG) Regulations Canada.  Not applicable  Not applicable  Not applicable  REGULATORY INFORMATION  Not listed  Not listed  SARA – 311/312: Not listed	
Proper Shipping Name  Hazard Class  Packing Group  Identification Number  Guide Number  HTS Number  SECTION XV  CERCLA: RCRA 261.33: SARA TITLE III: (Exemptions at 40 CFR, Part 370 may apply for agricultural use, or for quantities of less	Chemical N.O.S. (non-regulated)  Not listed in the hazardous materials shipping regulations (49 CFR, Table 172.101) by the U.S. Department of Transportation, or in the Transport of Dangerous Goods (TDG) Regulations Canada.  Not applicable  Not applicable  Not applicable  REGULATORY INFORMATION  Not listed  Not listed	
Proper Shipping Name  Hazard Class  Packing Group  Identification Number  Guide Number  HTS Number  SECTION XV  CERCLA: RCRA 261.33: SARA TITLE III: (Exemptions at 40 CFR, Part 370 may apply for agricultural	Chemical N.O.S. (non-regulated)  Not listed in the hazardous materials shipping regulations (49 CFR, Table 172.101) by the U.S. Department of Transportation, or in the Transport of Dangerous Goods (TDG) Regulations Canada.  Not applicable  Not applicable  Not applicable  SEGULATORY INFORMATION  Not listed  Not listed  SARA – 311/312: Not listed  SARA – 313: Not listed	



Canada DSL and NDSL:	SL and NDSL: DSL: Yes NDSL: Not listed	
TSCA:	All components listed in the TSCA Inventory	
CA Proposition 65: (Health & Safety Code Section 25249.5)	Warning: This product contains substances that are known to the State of California to cause cancer and/or reproductive harm.	
WHMIS:	This MSDS has been prepared according to the hazard criteria of the Controlled Product Regulations (CPR) and the MSDS contains all of the information required by the CPR.	
CBSA:	This product does not contain any bovine, ruminant or other animal by-products.	
SECTION XVI	OTHER INFORMATION	
Disclaimer:	The information in this document is believed to be correct as of the date issued. Nothing herein contained shall be deemed to be a representation or warranty with respect to the product described herein. NO WARRANTY OF MERCHANTABILITY, FITNESS FOR ANY PARTICULAR PURPOSE, OR ANY OTHER WARRANTY IS EXPRESSED OR IS TO BE IMPLIED REGARDING THE ACCURACY OR COMPLETENESS OF THIS INFORMATION, THE RESULTS TO BE OBTAINED FROM THE USE OF THIS INFORMATION OR THE PRODUCT, THE SAFETY OF THIS PRODUCT, OR THE HAZARDS RELATED TO ITS USE, AND ALL SUCH REPRESENTATIONS AND WARRANTIES ARE HEREBY EXPRESSLY DISCLAIMED BY MOSAIC. This information and product are furnished on the condition that the person receiving them shall make their own determination as to suitability of the product for their particular purpose and on the condition that they assume the risk of their use thereof. The conditions and use of this product are beyond the control of Mosaic, and Mosaic disclaims any liability for loss or damage incurred in connection with the use or misuse of this substance.	
Preparation:	The preparation of this MSDS was in accordance with ANSI Z400.1-2004.	
References:		
Note to (if applicable):	Not applicable	