



SECTION I	PRODUCT AND COMPANY INFORMATION																					
TRADE NAME:	BIOFOS®																					
CHEMICAL NAME:	Monocalcium Phosphate																					
CAS NUMBER:	CAS No. 7758-23-8																					
CHEMICAL FAMILY:	Inorganic Salt																					
SYNONYMS:	MCP, Calcium Phosphate Monobasic, Monocalcium Phosphate, Monocalcium Diphosphate, Monodicalcium Phosphate																					
PRIMARY USE:	Feed ingredient																					
COMPANY INFORMATION:	MOSAIC 8813 U.S. Highway 41 South Riverview, Florida 33569 www.mosaicco.com 863-844-5099, 8 AM to 5 PM Eastern Time US.																					
EMERGENCY TELEPHONE:	<p style="text-align: center;"> <b>Emergency Overview</b>  <b>24 Hour Emergency Telephone Number:</b>            For Chemical Emergencies:            Spill, Leak, Fire or Accident            Call CHEMTREC            North America: 800-424-9300            Others: 703-527-3887 (collect)         </p>																					
SECTION II	HAZARD IDENTIFICATION																					
EMERGENCY OVERVIEW :	Health Hazards:	Severe irritant. Avoid contact with eyes, skin and clothing. Wash thoroughly after handling. Monocalcium phosphate and dicalcium phosphate are generally recognized as safe (GRAS) when used in accordance with good manufacturing practice.																				
	Physical Hazards:	Slippery when wet.																				
	Physical Form:	Solid granules.																				
	Appearance:	Light gray granules.																				
	Odor:	Slight.																				
	<table border="1" data-bbox="545 1325 935 1545"> <thead> <tr> <th colspan="2">NFPA HAZARD CLASS</th> </tr> </thead> <tbody> <tr> <td>Health:</td> <td>2</td> </tr> <tr> <td>Flammability:</td> <td>0</td> </tr> <tr> <td>Instability:</td> <td>0</td> </tr> <tr> <td>Special Hazard:</td> <td>None</td> </tr> </tbody> </table>	NFPA HAZARD CLASS		Health:	2	Flammability:	0	Instability:	0	Special Hazard:	None	<table border="1" data-bbox="967 1325 1333 1545"> <thead> <tr> <th colspan="2">HMIS HAZARD CLASS</th> </tr> </thead> <tbody> <tr> <td>Health:</td> <td>2</td> </tr> <tr> <td>Flammability:</td> <td>0</td> </tr> <tr> <td>Physical Hazard:</td> <td>0</td> </tr> <tr> <td>PPE:</td> <td>Section 8</td> </tr> </tbody> </table>	HMIS HAZARD CLASS		Health:	2	Flammability:	0	Physical Hazard:	0	PPE:	Section 8
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POTENTIAL HEALTH EFFECTS:	<b>Eye:</b>	Contact may cause severe eye irritation, eye burns, and permanent eye damage.																				
	<b>Skin:</b>	Contact may cause mild irritation including redness and a burning sensation. No information available. Studies by other exposure routes suggest a low degree of hazard by skin absorption.																				



	<b>Inhalation (Breathing):</b>	No information available. Studies by other exposure routes suggest a low degree of hazard by inhalation.		
	<b>Ingestion (Swallowing)</b>	Low degree of toxicity by ingestion.		
	<b>Signs and Symptoms:</b>	Effects of overexposure may include irritation of the nose, throat and digestive tract, nausea, vomiting, and diarrhea.		
	<b>Cancer:</b>	No data available.		
	<b>Target Organs:</b>	No data available.		
	<b>Developmental:</b>	No data available.		
	<b>Other Comments:</b>	<p>This material contains iron compound(s). Chronic exposure to high concentrations of iron have been associated with hemosiderosis, hemochromatosis and in sever cases, liver cirrhosis. Typical occupational exposures to iron compounds are not expected to cause these effects. Chronic inhalation can produce "mottling" of the lungs (siderosis). This is considered a benign pneumoconiosis and does not normally lead to fibrosis or cause significant physiologic impairment.</p> <p>Inorganic phosphates have been studies extensively due to their use as food additives. High oral doses (1% in the diet) have produced toxic effects on the bones, kidneys and parathyroid glands. These doses and route of exposure are not considered relevant to occupational settings.</p>		
	<b>Pre-Existing Medical Conditions:</b>	None known.		
<b>SECTION III</b>	<b>COMPOSITION INFORMATION ON INGREDIENTS</b>			
<b>FORMULA:</b>	$\text{Ca}(\text{H}_2\text{PO}_4)_2 \cdot \text{H}_2\text{O} + \text{CaHPO}_4 \cdot 2\text{H}_2\text{O}$			
<b>Component</b>	<b>% Weight</b>	<b>Limits</b>	<b>Exposure Guidelines Agency</b>	<b>Type</b>
Monocalcium Phosphate CAS No. 7758-23-8	56 – 60	NE	OSHA / ACGIH	All
Dicalcium Phosphate CAS No. 7757-93-9	28 – 29	NE	OSHA / ACGIH	All
Iron, Aluminum, Magnesium, Sodium, and Potassium Phosphates* CAS No. (NA)	8 – 11	1 mg/m <sup>3</sup>	ACGIH	TWA
Calcium and other sulfates CAS No. (NA)	3 – 5	15 mg/m <sup>3</sup> 5 mg/m <sup>3</sup> 10 mg/m <sup>3</sup>	OSHA TWA – Total Dust OSHA TWA – Respirable Dust ACGIH TWA	



Iron may be present at greater than 1%. Exposure limits refer to iron salts, soluble (as Fe)		NE = Not Established, but the following, particulate limits apply to all inorganic dusts
Exposure limits refer to calcium sulfate (7778-18-9)		10 mg/m <sup>3</sup> ACGIH      TWA – Inhalable 3 mg/m <sup>3</sup> ACGIH      TWA – Respirable
Particulates Not Otherwise Classified (PNOC)		15 mg/m <sup>3</sup> OSHA      TWA – Total Dust 5 mg/m <sup>3</sup> OSHA      TWA - Respirable
Particulates Not Otherwise Regulated (PNOR)	Note: State, local or other agencies or advisory groups may have established more stringent limits. Consult an industrial hygienist or similar professional, or local agencies, for information	
<b>SECTION IV</b>	<b>FIRST AID MEASURES</b>	
FIRST AID PROCEDURES:	Eyes:	Immediately move victim away from exposure and into fresh air. If irritation or redness develops, flush eyes with clean water and seek immediate medical attention. For direct contact, immediately hold eyelids apart and flush the affected eye(s) with clean water for at least 30 minutes. Seek immediate medical attention.
	Skin:	Remove contaminated shoes and clothing and cleanse affected area(s) thoroughly by washing with mild soap and water. If irritation or redness develops and persists, seek medical attention
	Inhalation (Breathing):	If respiratory symptoms develop, move victim away from source of exposure and into fresh air. If symptoms persist, seek medical attention. If victim is not breathing, clear airway and immediately begin artificial respiration. If breathing difficulties develop, oxygen should be administered by qualified personnel. Seek immediate medical attention.
	Ingestion (Swallowing):	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:	None known.	
<b>SECTION V</b>	<b>FIRE FIGHTING MEASURES</b>	
FLAMMABLE PROPERTIES:	Flash Point:	Not applicable – <b>BIOFOS<sup>®</sup> is non-flammable</b>
	OSHA Flammability Class:	Not applicable
	LEL/UEL:	LEL: / UEL: Not applicable
	Auto-Ignition Temperature:	Not applicable
EXTINGUISHING MEDIA:	Use extinguishing agent suitable for type of surrounding fire. Avoid excessive water to minimize runoff.	



<p>PROTECTION OF FIREFIGHTERS:</p>	<p>Positive pressure, self-contained breathing apparatus is required for all fire fighting activities involving hazardous materials. Full structural fire fighting (bunker) gear is the minimum acceptable attire. The need for proximity, entry, flashover and/or special chemical protective clothing (see section VIII) needs to be determined for each incident by a competent fire fighting safety professional.</p> <p>Water used for fire suppression and cooling may become contaminated. Discharge to sewer system(s) or the environment may be restricted, requiring containment and proper disposal of water.</p>	
<p><b>SECTION VI</b></p>	<p><b>ACCIDENTAL RELEASE MEASURES</b></p>	
<p>RESPONSE TECHNIQUES:</p>	<p>BIOFOS® is a feed ingredient that is similar to crop nutrients and plant foods; however, large spills can harm or kill vegetation.          Stay upwind and away from spill (dust hazard)          Wear appropriate protective equipment, including respiratory protection, as conditions warrant (see section VIII)          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 XV).          Minimize dust generation.          Sweep up and package appropriately for disposal.</p>	
<p><b>SECTION VII</b></p>	<p><b>HANDLING AND STORAGE</b></p>	
<p>HANDLING:</p>	<p>The use of appropriate respiratory protection is advised when concentrations exceed any established exposure limits (see sections III and VIII). Wash thoroughly after handling. Wash contaminated clothing or shoes. Use good personal hygiene practices.</p>	
<p>STORAGE:</p>	<p>Keep container(s) tightly closed. Use and store this material in cool, dry, well ventilated areas. Store only in approved containers. Keep away from any incompatible material (see Section X). Protect container(s) against physical damage.</p>	
<p><b>SECTION VIII</b></p>	<p><b>EXPOSURE CONTROLS / PERSONAL PROTECTION</b></p>	
<p>ENGINEERING CONTROLS:</p>	<p>If current ventilation practices are not adequate to maintain airborne concentrations below the established exposure limits (see section II), additional ventilation or exhaust systems may be required.</p>	
<p>PERSONAL PROTECTIVE EQUIPMENT (PPE):</p>	<p>Eye/Face:</p>	<p>Approved eye protection to safeguard against potential eye contact, irritation, or injury is recommended.</p>
	<p>Skin:</p>	<p>The use of cloth or leather work gloves is advised to prevent skin contact, possible irritation and absorption (see glove manufacturing literature for information on permeability).</p>



	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 (see Section III). 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. Impervious clothing should be worn as needed
<b>SECTION IX</b>	<b>PHYSICAL AND CHEMICAL PROPERTIES</b>	
Note: Unless otherwise stated, values in this section are determined at 20°C (68°F) and 760 mm Hg (1 atm)		
Flash Point:	Not applicable	
Flammability/ Explosive Limits (%):	LEL / UEL: Not applicable	
Auto-Ignition Temperature:	Not applicable	
Appearance:	Light gray granules	
Physical State:	Solid granules	
Odor:	Slight	
Molecular Weight of Pure Material:	Not applicable	
pH:	3.6	
Vapor Pressure (mm Hg):	Not applicable	
Vapor Density(air=1):	Not applicable	
Boiling Point:	Not applicable	
Freezing/Melting Point:	Not applicable	
Solubility in Water:	Not applicable	
Specific Gravity:	2.2	
Volatility:	Not applicable	
Bulk Density:	Loose 56 – 59 lbs/ft <sup>3</sup> (897 – 945 kg/m <sup>3</sup> )	
<b>SECTION X</b>	<b>STABILITY AND REACTIVITY</b>	
Chemical Stability:	Stable under normal conditions of storage and handling	
Conditions to Avoid:	None known.	
Incompatible Materials:	None known.	
Hazardous Decomposition Products:	Combustion can yield oxides of sulfur when heated above 1000°F (538°C)	
Corrosiveness:	No data.	
Hazardous Polymerization:	Will not occur.	



SECTION XI	TOXICOLOGICAL INFORMATION
Calcium Phosphate Monobasic	Rat LD50 = 17.5 g/kg Mouse LD50 = 15.25 g/kg  Inorganic phosphates have been studied extensively due to their use as food additives. High oral doses (1% in the diet) have produced toxic effects on the bones, kidneys and parathyroid glands. These doses and the route of exposure are not considered relevant to occupational exposure.
Calcium Phosphate Dibasic	No LD50 or LC50 data located.  Calcium phosphate dibasic has been tested in four separate Ames Salmonella Typhimurium assays. Results were negative both with and without metabolic activation.
Calcium Sulfate / Target Organ(s)	No LD50 or LC50 data located
Iron Compounds / Target Organ(s)	No LD50 or LC50 data available for iron compounds.  Chronic exposure to high concentrations of iron have been associated with hemosiderosis, hemochromatosis and in sever cases, liver cirrhosis. Typical occupational exposures to iron compounds are not expected to cause these effects. Chronic inhalation can produce "mottling" of the lungs (siderosis). This is considered a benign pneumoconiosis and does not normally lead to fibrosis or cause significant physiologic impairment.
	No definitive information available for this product on skin irritation, carcinogenicity, mutagenicity, target organs or developmental toxicity.
SECTION XII	ECOLOGICAL INFORMATION
ECOTOXICOLOGY:  BOD and COD	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.  No data found
SECTION XIII	DISPOSAL CONSIDERATIONS
	This material, if discarded as produced, is not an RCRA "listed" or "characteristic" hazardous waste. Contamination may subject it to hazardous waste regulations. Properly characterize all waste materials. Consult state and local regulations regarding the proper disposal of this material.
SECTION XIV	TRANSPORTATION INFO
Hazard Class or Division:	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.
SECTION XV	REGULATORY INFORMATION
CERCLA:	Not listed.
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.)	SARA – 311/312: Acute: Yes; Chronic: No; Fire: No; Pressure: No; Reactivity: No
	SARA – 313: No
	SARA – 302/304: No
NTP, IARC, OSHA:	This material has not been identified as a carcinogen by NTP, IARC, or OSHA.
Canada DSL and NDSL:	This product is registered in Canada under the Feeds Act and is thus exempt from the New Substances Notification Requirements in the Canadian Environmental Protection Act (CEPA) per subsection 26(3).
TSCA:	All ingredients are 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.
FDA:	1. Substance added directly to human food affirmed as generally recognized as safe (GRAS). [21 CFR 182.1217].
	2. Calcium phosphate (mono-, di- and tribasic) use as a general purpose food additive in animal drugs, feeds, and related products is generally recognized as safe when used in accordance with good manufacturing or feeding practice [21 CFR 582.1217].
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.
<b>SECTION XVI</b>	<b>OTHER INFORMATION</b>
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. <b>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.</b> 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