



SECTION 1		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, Calcium bis(dihydrogen phosphate)					
PRIMARY USE:	Animal Feed ingredient.					
COMPANY INFORMATION:	<p align="center">The Mosaic Company Atria Corporate Center 3033 Campus Drive, Suite E490 Plymouth, MN 55441USA www.mosaicco.com For non-emergency questions, phone hours are 8 AM to 5 PM Central Time US 800.918.8270 (toll free) 763.577.2700 (phone)</p>					
EMERGENCY TELEPHONE:	<p align="center">EMERGENCY OVERVIEW 24 Hour Emergency Telephone Number: <u>For Chemical Emergencies:</u> Spill, Leak, Fire or Accident Call CHEMTREC North America: (800) 424-9300 (reference CCN201871) Others: (703) 527-3887 (collect)</p>					
SECTION 2		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 and when used as intended.			
	Physical Hazards:		Slippery when wet.			
	Physical Form:		Solid granules.			
	Appearance:		Light gray granules.			
	Odor:		Slight.			
	Toxicity:		None expected under normal use.			
	NFPA HAZARD CLASS		HMIS HAZARD CLASS		WHMIS HAZARD CLASS	
	Health:	2	Health:	2	Symbol	N/A
	Flammability:	0	Flammability:	0	Classification	Not WHMIS controlled
	Instability:	0	Physical Hazard:	0		
	Special Hazard:	None	PPE:	Section 8		



POTENTIAL HEALTH EFFECTS:	Eye:	Continuous contact may cause severe eye irritation, eye burns, and permanent eye damage.
	Skin:	Contact may cause mild irritation including redness and a burning sensation. Studies by other exposure routes suggest a low degree of hazard by skin absorption.
	Inhalation (Breathing):	No information available. 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, and diarrhea.
	Cancer:	No data available.
	Target Organs:	No data available.
	Developmental:	No data available.
	Other Comments:	<p>This material contains iron compound(s). Chronic exposure to high concentrations of iron has been associated with hemosiderosis, hemochromatosis and in severe 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 studied extensively due to their use as food additives. The JECFA (Joint FAO/WHO expert committee on food additives) determined that the acceptable dietary intake for humans would be 0 to 70 mg/kg. These doses and route of exposure are not considered relevant to occupational settings.</p>
	Pre-Existing Medical Conditions:	None known.
POTENTIAL ENVIRONMENTAL EFFECTS:	May release phosphates which will result in algae growth, increased turbidity, and depleted oxygen (This comment directed primarily to fresh and coastal water systems).	
SECTION 3	COMPOSITION INFORMATION ON INGREDIENTS	
FORMULA:	$\text{Ca}(\text{H}_2\text{PO}_4)_2 \cdot \text{H}_2\text{O} + \text{CaHPO}_4 \cdot 2\text{H}_2\text{O}$	
COMPOSITION:	Monocalcium Phosphate (MCP) CAS No. 7758-23-8	53-60% (80.5% of P derived from MCP)
	Dicalcium Phosphate (DCP) CAS No. 7757-93-9	11-19% (<19.5% of P derived from DCP)



	Calcium Carbonate and other Carbonates CAS No. (NA)	6-8%
	Iron, Aluminum, Magnesium, Sodium, and Potassium Compounds CAS No. (NA)	8-13%
	Calcium Sulfate and other Sulfates CAS No. (NA)	2-3%
SECTION 4	FIRST AID MEASURES	
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.
	Inhaled:	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:	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.	
SECTION 5	FIRE FIGHTING MEASURES	
FLAMMABLE PROPERTIES:	Flash Point:	Not applicable – BIOFOS® is non-flammable
	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.	



PROTECTION OF FIREFIGHTERS:	<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 8) 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>	
SECTION 6	ACCIDENTAL RELEASE MEASURES	
RESPONSE TECHNIQUES:	<ul style="list-style-type: none"> 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 8). Prevent spilled material from entering sewers, storm drains, other unauthorized treatment drainage systems, and natural waterways. Notify appropriate federal, state/provincial, and local agencies as may be required (see Section 15). Minimize dust generation. Sweep up and package appropriately for disposal. 	
RELEASE NOTES :	<p>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 land transportation-related spill notify: CHEMTREC IN North America at 800-424-9300 and from other countries at (International code) +0-703-527-3887 (collect).</p>	
SECTION 7	HANDLING AND STORAGE	
HANDLING:	<p>The use of appropriate respiratory protection is advised when concentrations exceed any established exposure limits (see Section 8). Wash thoroughly after handling. Wash contaminated clothing or shoes. Use good personal hygiene practices.</p>	
STORAGE:	<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. Protect container(s) against physical damage.</p>	
SECTION 8	EXPOSURE CONTROLS / PERSONAL PROTECTION	
ENGINEERING CONTROLS:	<p>If current ventilation practices are not adequate to maintain airborne concentrations below the established exposure limits (see Exposure Guidelines, below), additional ventilation or exhaust systems may be required.</p>	
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 (see glove manufacturing literature for information on permeability).



	Respiratory:	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.
	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.
GENERAL HYGIENE CONSIDERATIONS:	Wash thoroughly after handling Wash contaminated clothing Use adequate ventilation Use good personal hygiene practice	
EXPOSURE GUIDELINES:	OSHA Permissible Exposure Limits (PEL):	Particulates Not Otherwise Regulated-PNOR: 5 mg/m ³ TWA (respirable) Calcium Sulfate/other Sulfates: 15 mg/m ³ TWA (total dust)
	ACGIH Threshold Limit Value (TLV):	Particulates Not Otherwise Specified – PNOS: 10 mg/m ³ TWA (total dust) Iron, Aluminum, Magnesium, Sodium and Potassium Phosphates: 1 mg/m ³ TWA
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).		
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	
pH:	3.6 (in a 1% solution)	
Vapor Pressure (mm Hg):	Not applicable	
Vapor Density (air=1):	Not applicable	
Boiling Point:	Not applicable	
Freezing/Melting Point:	Not applicable	
Solubility in Water:	Moderately soluble; Cold water 1.8 g/100 cc @ 30 ° C; decomposes in hot water.	
Specific Gravity:	2.22 @ 18 ° C/4 ° C	
Volatility:	Not applicable	
Bulk Density:	Loose 57 – 59 lbs/ft ³ (913– 945 kg/m ³)	



SECTION 10	STABILITY AND REACTIVITY
Chemical Stability:	Stable under normal conditions of storage and handling; decomposes at approx. 200° C.
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 11	TOXICOLOGICAL INFORMATION
Acute Oral Toxicity	See Section 15 under Food and Drug Administration (FDA) notes
Acute Inhalation Toxicity	No definitive information available for this product
Acute Dermal Toxicity	No definitive information available for this product
Mutagenesis	No definitive information available for this product
Target Organ	No definitive information available for this product
Developmental Toxicity	No definitive information available for this product
Carcinogenicity	At the time of the IARC Working Group on the Evaluation of Carcinogenic Risks to Humans, 2006, no data were available to assess the carcinogenic potential of this agent.
SECTION 12	ECOLOGICAL INFORMATION
ECOTOXICOLOGY:	May release phosphates which will result in algae growth, increased turbidity, and depleted oxygen (primarily fresh and coastal water systems). At extremely high concentrations, this may be hazardous to fish or other marine organisms. Release to watercourses may cause effects downstream.
SECTION 13	DISPOSAL CONSIDERATIONS
	This material, if discarded as produced, is not a RCRA “listed” or “characteristic” hazardous waste (U.S. EPA). Contamination may change the characterization and subject it to hazardous waste regulations. Properly characterize all waste materials to plan for proper disposal. Consult federal provincial/state and local regulations regarding the proper disposal of this material.
SECTION 14	TRANSPORTATION INFORMATION
Regulatory Status	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	Not applicable
Hazard Class	Not applicable
Packing Group	Not applicable
Identification Number	Not applicable
Guide Number	Not applicable
MARPOL Annex II	Not applicable
MARPOL Annex V	<p>Based on the United Nations Globally Harmonized System for Classification and Labeling of Chemicals (UN GHS) this product is not harmful to the marine environment (non-HME) based on not exceeding the parameters or criteria below¹:</p> <ul style="list-style-type: none"> • Acute Aquatic Toxicity Category 1; and/or • Chronic Aquatic Toxicity Category 1 or 2; and/or • Carcinogenicity² Category 1A or 1B combined with not being rapidly degradable and having high bioaccumulation; and/or • Mutagenicity² Category 1A or 1B combined with not being rapidly degradable and having high bioaccumulation; and/or • Reproductive Toxicity² Category 1A or 1B combined with not being rapidly degradable and having high bioaccumulation; and/or • Specific Target Organ Toxicity Repeated Exposure² Category 1 combined with not being rapidly degradable and having high bioaccumulation; and/or • Solid bulk cargoes containing or consisting of synthetic polymers, rubber, plastics, or plastic feedstock pellets (this includes materials that are shredded, milled, chopped or macerated or similar materials). <p>Notes:</p> <p>1) The criteria are based on UN GHS, fourth revised edition (2011). For specific products (e.g. metals and inorganic metal compounds) guidance available in UN GHS, annexes 9 and 10 are essential for proper interpretation of the criteria and classification and should be followed.</p> <p>2) Products that are classified for Carcinogenicity, Mutagenicity, reproductive toxicity or Specific Target Organ Toxicity Repeated Exposure for oral and dermal hazards or without specification of the exposure route in the hazard statement.</p>
SECTION 15	REGULATORY INFORMATION
FDA:	<p>Phosphate compounds are Generally Recognized As Safe (GRAS) by the U.S. Food and Drug Administration (21 CFR 582.1141; Bhat and Ramaswamy 1993) which allows them to be used as food and color additives. Monobasic calcium phosphate used as a sequestrant in animal drugs, feeds, and related products is generally recognized as safe when used in accordance with good manufacturing or feeding practice. [21 CFR 582.6215 (4/1/90)]. Calcium phosphate (mono-, di-, and tribasic) used 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 (4/1/90)]</p>
CERCLA:	Product is not listed with an RQ (reportable quantity)



RCRA 261.33:	Discarded commercial chemical products, off-specification species, container residues, and spill residues thereof are not listed as hazardous waste
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: Not Listed
	SARA – 302/304: Not Listed
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 or are exempt from listing.
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
CA Proposition 65: (Health & Safety Code Section 25249.5)	Warning: This product contains a chemical(s) known to the State of California to cause: cancer; and/or birth defects or other reproductive harm.
SECTION 16	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 generally in accordance with ANSI Z400.1-2010.
Revision Date:	07/08/2013
Sections Revised:	1,2,3,6,7,8,15 and 16
MSDS Number:	MOS100068.02
References:	MARPOL Annex V; TOXNET, Merck Index, CRC Handbook 72 nd Edition