



MATERIAL SAFETY DATA SHEET

BIOFOS®

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1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name:	BIOFOS®
Chemical Name:	Monocalcium Phosphate
Chemical Family:	Inorganic Salt
Synonyms/Brands:	MCP Calcium Phosphate Monobasic Monocalcium Phosphate Monodicalcium Phosphate
Chemical Formula:	$\text{Ca}(\text{H}_2\text{PO}_4)_2 \cdot \text{H}_2\text{O} + \text{CaHPO}_4 \cdot 2\text{H}_2\text{O}$
Primary Use:	Feed ingredient
Responsible Party:	Mosaic 8813 Highway 41 South Riverview, FL 33578-4865
Non-Emergency Technical Contact:	8:00am - 4:00pm Central Time USA, Mon - Fri: 800-237-2024 or 813-671-6321

EMERGENCY OVERVIEW

24 Hour Emergency Telephone Number:

For Chemical Emergencies:

Spill, Leak, Fire or Accident

Call CHEMTREC

North America: 800-424-9300

Others: 703-527-3887 (collect)

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.		
NFPA HAZARD CLASS		HMIS HAZARD CLASS	
Health:	2 (Moderate)	Health:	2 (Moderate)
Flammability:	0 (Least)	Flammability:	0 (Least)
Instability:	0 (Least)	Physical Hazard:	0 (Least)
Special Hazard:	None		

Issue Date: April 1, 2006

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2. COMPOSITION/INFORMATION ON INGREDIENTS

Component	% Weight	Exposure Guideline		
		Limits	Agency	Type
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. (various)	8 - 11	1 mg/m ³	ACGIH	TWA
Calcium and other sulfates** CAS No. (various)	3 - 5	15 mg/m ³	OSHA	TWA - Total Dust
		5 mg/m ³	OSHA	TWA - Respirable Dust
		10 mg/m ³	ACGIH	TWA

* Iron may be present at greater than 1%. Exposure limits refer to iron salts, soluble (as Fe).

** Exposure limits refer to calcium sulfate (7778-18-9)

NE= Not established, but the following particulate limits apply to all inert inorganic dusts.

Particulates Not Otherwise Classified (PNOC)	10 mg/m ³	ACGIH	TWA-Inhalable
	3 mg/m ³	ACGIH	TWA-Respirable
Particulates Not Otherwise Regulated (PNOR)	15 mg/m ³	OSHA	TWA-Total Dust
	5 mg/m ³	OSHA	TWA-Respirable

Note: State, local or other agencies or advisory groups may have established more stringent limits. Consult an industrial hygienist or similar professional, or your local agencies, for further information.

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3. HAZARDS IDENTIFICATION

POTENTIAL HEALTH EFFECTS	
Eye:	Contact may cause severe eye irritation, eye burns, and permanent eye damage.
Skin:	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.
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 have 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. 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>
Pre-Existing Medical Conditions:	None known.

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4. FIRST AID MEASURES

Eye:	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 Physicians:	None known

5. FIRE FIGHTING MEASURES

Flammable Properties:	BIOFOS® is non-flammable. Flash Point-Not applicable OSHA Flammability Class-Not applicable LEL/UEL-Not applicable Autoignition Temperature-Not applicable
Unusual Fire & Explosion Hazards:	No unusual fire or explosion hazards are expected.
Extinguishing Media:	Use extinguishing agent suitable for type of surrounding fire. Avoid excessive water to minimize runoff.
Fire Fighting Instructions:	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. 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.

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6. ACCIDENTAL RELEASE MEASURES

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, and local agencies as may be required (see Section 15).
- Minimize dust generation.
- Sweep up and package appropriately for disposal.

7. HANDLING AND STORAGE

Handling:	The use of appropriate respiratory protection is advised when concentrations exceed any established exposure limits (see Sections 2 and 8). Wash thoroughly after handling. Wash contaminated clothing or shoes. Use good personal hygiene practices.
Storage:	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 10). Protect container(s) against physical damage.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls:	If current ventilation practices are not adequate to maintain airborne concentrations below the established exposure limits (see Section 2), additional ventilation or exhaust systems may be required.
Personal Protective Equipment (PPE)	
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 2). 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.

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Skin:	The use of cloth or leather work gloves is advised to prevent skin contact, possible irritation and absorption (see glove manufacturer literature for information on permeability).
Eye/Face:	Approved eye protection to safeguard against potential eye contact, irritation, or injury is recommended.
Other PPE:	A source of clean water should be available in the work area for flushing eyes and skin. Impervious clothing should be worn as needed.

9. PHYSICAL AND CHEMICAL PROPERTIES

Note: Unless otherwise stated, values are determined at 20°C (68°F) and 760 mm Hg (1 atm).

Flash Point:	Not applicable
Flammable/ Explosive Limits (%):	LEL/UEL: Not applicable
Autoignition 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 ³ (897-945 kg/m ³)

10. STABILITY AND REACTIVITY

Chemical Stability:	Stable under normal conditions of storage and handling.
Conditions to Avoid:	None known.
Incompatible	None known.

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Materials:	
Corrosivity:	No data.
Hazardous Decomposition Products:	Combustion can yield oxides of sulfur when heated above 1000°F (538°C)
Hazardous Polymerization:	Will not occur.

11. TOXICOLOGICAL INFORMATION

Calcium Phosphate Monobasic	<p>Rat LD50 = 15.5 g/kg, 3.9 g/kg Mouse LD50 = 15.25 g/kg</p> <p>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.</p>
Calcium Phosphate Dibasic	<p>No LD50 or LC50 data located</p> <p>Calcium phosphate dibasic has been tested in four separate Ames Salmonella Typhimurium assays. Results were negative both with and without metabolic activation.</p>
Calcium Sulfate / Target Organ(s)	No LD50 or LC50 data located
Iron Compounds/ Target Organ(s):	<p>No LD50 or LC50 data available for iron compounds.</p> <p>Chronic exposure to high concentrations of iron have 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>No definitive information available for this product on skin irritation, carcinogenicity, mutagenicity, target organs or developmental toxicity.</p>	

12. ECOLOGICAL INFORMATION

Ecotoxicity:	<p>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</p>
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	downstream.
BOD and COD:	No data found.

13. 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.

14. TRANSPORT INFORMATION

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.
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15. REGULATORY INFORMATION

FDA:	<p>1. Substance added directly to human food affirmed as generally recognized as safe (GRAS). [21 CFR 182.1217].</p> <p>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].</p>
CERCLA:	Not listed
RCRA 261.33:	Not listed
SARA Title III: (Exemptions at 40 CFR, Part 370 may apply for agricultural use, or quantities of less than 10,000 pounds on-site)	<p>SARA 313: No</p> <p>SARA 311/312: Acute: Yes; Chronic: No; Fire: No; Pressure: No; Reactivity: No</p> <p>SARA 302/304: No</p>
TSCA:	All ingredients are listed in the TSCA Inventory
Proposition 65: (CA 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.
NTP, IARC, OSHA:	This material has not been identified as a carcinogen by NTP, IARC, or OSHA.
Canada DSL:	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).

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Canada NDSL:	No
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.

16. OTHER INFORMATION

The information in this document is believed to be correct as of the date issued. **HOWEVER, 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.** 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.

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