| SECTION I | PRODUCT AND COMPANY INFORMATION |
|---|---|
| TRADE NAME: | Nexfos™ Mono/Dicalcium Phosphate |
| CHEMICAL NAME: | Mixture of monocalcium phosphate monohydrate, dicalcium phosphate dihydrate and monobasic sodium phosphate |
| CAS NUMBER(S): | 7758-23-8, 7789-77-7 and 7558-80-7 |
| CHEMICAL FAMILY: | Inorganic Salt |
| SYNONYMS: | MCP/DCP, Calcium Phosphate Monobasic, Monocalcium Phosphate, Monocalcium Diphosphate, Monodicalcium Phosphate, Dicalcium Phosphate, Defluorinated Phosphate |
| PRIMARY USE: | Feed Ingredient |
| COMPANY INFORMATION: | MOSAIC<br>13830 Circa Crossing Dr.<br>Lithia, Florida 33547<br>www.mosaicco.com<br>866-928-7901 or 306-523-2800, 8 AM to 5 PM Central Time US |
| EMERGENCY TELEPHONE: | Emergency Overview<br>**24 Hour Emergency Telephone Number:**<br>For Chemical Emergencies:<br>Spill, Leak, Fire or Accident<br>Call CHEMTREC<br>North America: 800-424-9300<br>Others:703-527-3887 (collect) |

| SECTION II | HAZARD IDENTIFICATION | |
|---|---|---|
| EMERGENCY OVERVIEW : | Health Hazards: | Monocalcium phosphate and dicalcium phosphate are generally recognized as safe (GRAS) when used in accordance with good manufacturing practice. Quartz is a cancer hazard. May cause severe burns to the eye. Causes skin irritation. Prolonged overexposure to quartz may cause irreversible lung damage. Avoid contact with eyes, skin and clothing. Wash thoroughly after handling. |
| | Physical Hazards: | Slippery when wet |
| | Physical Form: | Solid granules |
| | Appearance: | Light gray granules |
| | Odor: | Slight |

| NFPA HAZARD CLASS | |
|---|---|
| Health: | 1 |
| Flammability : | 0 |
| Instability: | 0 |
| Special Hazard: | None |

| HMIS HAZARD CLASS | |
|---|---|
| Health: | 1 |
| Flammability : | 0 |
| Physical Hazard: | 0 |
| PPE: | Section VIII |

| WHMIS HAZARD CLASS | |
|---|---|
| Symbol | |
| Classification | D2B |
| Sub Class (N/A) | |

Status: Revised MSDS #
Section(s) Revised: None
Revision Date: 10/07/2014

Issue Date: 6/9/2011

MSDS #: 103094

| | | |
|---|---|---|
| POTENTIAL HEALTH EFFECTS: | **Eye:** | Corrosive. Contact may cause severe irritation, eye burns and permanent eye damage. |
| | **Skin:** | Skin irritant. Contact may cause redness, itching, burning and skin damage. Studies by other exposure routes suggest a low degree of hazard by skin absorption. |
| | **Inhalation (Breathing):** | Repeated or prolonged exposure to high concentrations to dusts of a component, quartz, may result in chronic lung damage or disease. |
| | **Ingestion (Swallowing)** | Low degree of toxicity by ingestion. |
| | **Signs and Symptoms:** | Effects of overexposure may include irritation of the nose, throat, lungs and digestive tract, nausea, vomiting and diarrhea. Repeated overexposure to a component, quartz dusts, may result in irritation of the respiratory tract, pneumoconiosis (dust congested lungs), pneumonitis (lung inflammation, coughing, shortness of breath, chest tightness and breathing difficulties. |
| | **Cancer:** | Quartz, a component, is a known cancer hazard (see Sections 11 and 15). |
| | **Target Organs:** | Overexposure to a component, quartz, may cause injury to the lungs (see Section 11). |
| | **Developmental:** | No data available for this material. |
| | **Other Comments:** | 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. |
| | **Pre-Existing Medical Conditions:** | Skin and Respiratory (asthma-like) disorders. |

| SECTION III | COMPOSITION<br>INFORMATION ON INGREDIENTS | | | |
|---|---|---|---|---|
| FORMULA: | $Ca(H_2PO_4)_2H_2O + CaHPO_4\text{-}2H_2O$ | | | |
| **Component** | **% Weight** | **Exposure Guidelines**<br>**Limits** | **Agency** | **Type** |
| Monocalcium Phosphate<br>CAS No. 7758-23-8 | 40 – 60 | NE | OSHA / ACGIH | All |
| Dicalcium Phosphate<br>CAS No. 7757-93-9 | 25 – 60 | NE | OSHA / ACGIH | All |
| Iron, Aluminum, Magnesium, and Potassium Phosphates<br>CAS No. (NA) | 9 – 11 | NE = Not Established | | |
| Sodium Phosphate Monobasic | 4-6 | NE = Not Established | | |
| Iron may be present at greater than 1%. Exposure limits refer to iron salts, soluble (as Fe) | >2 | 1 mg/m3 | ACGIH | TWA |
| Calcium Sulfate, other sulfates<br>CAS No. (NA) | 3 – 5 | 15 $mg/m^3$<br>5 $mg/m^3$ Dust<br>10 $mg/m^3$ | OSHA<br>OSHA<br>ACGIH | TWA – Total Dust<br>TWA – Respirable<br>TWA – Total Dust |
| Crystalline Silica - Quartz<br>(CAS No. 14808-60-7) | 2 - 4 | 30 $mg/m^3$ / % $SiO_2$ +2<br>10 $mg/m^3$ Dust / % $SiO_2$ +2<br>0.025 $mg/m^3$ | OSHA<br>OSHA<br>ACGIH | TWA – Total Dust<br>TWA – Respirable<br>TWA – Respirable Dust |
| **SECTION IV** | **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. | | |
| | 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 ingested, seek emergency medical attention. If possible, do not leave victim unattended and closely observe breathing. |
| NOTE TO PHYSICIAN: | None known | |
| **SECTION V** | **FIRE FIGHTING MEASURS** | |
| FLAMMABLE PROPERTIES: | Flash Point: | Not applicable – **Nexfos 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: | 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.<br><br>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. | |
| **SECTION VI** | **ACCIDENTAL RELEASE MEASURES** | |
| RESPONSE TECHNIQUES: | • Nexfos is a feed ingredient that is similar to crop nutrients and plant foods; however, large spills can harm or kill vegetation.<br>• Stay upwind and away from spill (dust hazard)<br>• Wear appropriate protective equipment, including respiratory protection, as conditions warrant (see section VIII)<br>• Prevent spilled material from entering sewers, storm drains, other unauthorized treatment drainage systems, and natural waterways.<br>• Notify appropriate federal, state, and local agencies as may be required (see Section XV).<br>• Minimize dust generation.<br>• Sweep up and package 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 III and VIII). 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 X). Protect container(s) against physical damage. | |
| **SECTION VIII** | **EXPOSURE CONTROLS / PERSONAL PROTECTION** | |
| ENGINEERING CONTROLS: | If current ventilation practices are not adequate to maintain airborne concentrations below the established exposure limits (see section III), additional ventilation or exhaust systems may be required, otherwise PPE is required. | |
| 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: | 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 |
| **SECTION IX** | **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 | |
| Molecular Weight of Pure Material: | Not applicable | |
| pH: | 4.0 – 5.0 (this is a solid, so what solution provided this value?) | |
| 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 54 – 62 lbs/ft$^3$ (865 – 990 kg/m$^3$)<br>Packed 58 – 67 lbs/ ft$^3$ (930 – 1070 kg/m$^3$) |
| **SECTION X** | **STABILITY AND REACTIVITY** |
| 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 on corrosiveness to metals. |
| Hazardous Polymerization: | Will not occur. |
| **SECTION XI** | **TOXICOLOGICAL INFORMATION** |
| Calcium Phosphate Monobasic | Oral Rat LD50 = 17.5 g/kg; Oral Mouse LD50 = 15.25 g/kg<br>Monocalcium phosphate and dicalcium phosphate are generally recognized as safe (GRAS) when used in accordance with good manufacturing practice. 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. |
| Sodium Phosphate Monobasic | LD 50 Oral (rat) = 8290 mg/kg<br>Inhalation - No Data<br>Dermal – No Data |
| Calcium Sulfate | No LD50 or LC50 data located |
| Iron Compounds | No LD50 or LC50 data available for iron compounds.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. |

| | |
|---|---|
| Silica-Crystalline (quartz) | Oral Rat LD50 = 3160 mg/kg<br><br>Some studies show excess numbers of cases of scleroderma, connective tissue disorders, lupus, rheumatoid arthritis, chronic kidney diseases and end-stage kidney disease in workers exposed to respirable crystalline silica. Carcinogenicity: NTP: Respirable crystalline silica has been listed by The National Toxicology Program as an anticipated carcinogen. IARC: The International Agency for Research on Cancer Monographs on the Evaluation of Carcinogenic Risk of Chemicals to Humans concludes that there is sufficient evidence of the carcinogenicity of inhaled crystalline silica to humans. |
| **SECTION XII** | **ECOLOGICAL INFORMATION** |
| ECOTOXICOLOGY:<br><br>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.<br><br>No data found‘ |
| **SECTION XIII** | **DISPOSAL CONSIDERATIONS** |
| | This material, if discarded as produced, is not an RCRA “listed” hazardous waste. However, it should be fully characterized by the generator prior to disposal (40 CFR 261). Contamination of this material may subject it to hazardous waste regulations. . 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:<br>(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: yes; 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. |
| FDA: | 1. Substance added directly to human food affirmed as generally recognized as safe (GRAS). [21 CFR 182.1217].<br><br>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. |
| **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 |