

norweco[®]

PHOS-4-FADE[®]

PHOSPHORUS REMOVAL TABLETS

GENERAL SPECIFICATIONS

Phos-4-Fade phosphorus removal tablets shall be formulated to provide a slow and consistent release of aluminum sulfate for the removal of phosphorus from wastewater, stormwater and process water. A concentrated source of aluminum sulfate, Phos-4-Fade tablets shall reduce phosphorus levels, lower turbidity and minimize algae blooms while eliminating offensive odors. When used as an integral part of an overall nutrient reduction program, Phos-4-Fade tablets shall provide an improvement in effluent quality and long-term treatment efficiency. The tablets shall be 2⁵/₈" in diameter, 1" in thickness with an approximate weight of 140 grams. Proprietary beveled edges incorporated into the tablets shall stabilize the slow release of aluminum sulfate. Phos-4-Fade tablets shall contain a minimum of 93% aluminum sulfate as an active ingredient and 7% inert ingredients. Systems which utilize granular or liquid aluminum sulfate are inefficient and frequently provide excess chemical dosage into the treatment stream, resulting in excess sludge in the treatment tankage. Liquid and granular products shall not be considered for this application.

TABLET PROPERTIES AND USAGE

Phos-4-Fade tablets shall release aluminum sulfate in direct proportion to the velocity of the incoming flow. This shall allow designers and system operators to precisely regulate the aluminum sulfate dose for optimum convenience, minimum sludge generation and cost effective operation. Inert ingredients added into the Phos-4-Fade tablet formula shall maintain this controlled chemical dose at intermittent peak flow factors as high as four and shall provide reliable removal of phosphorus even when the significant run-off period is six hours. Phos-4-Fade tablets shall be the ideal product for controlling all types of algae growth resulting from excess fertilization and stormwater run-off over fertilized land. Unlike traditional treatment products which reduce algae with harmful chemicals, Phos-4-Fade tablets prevent the growth of algae by safely eliminating phosphorus from the food chain.

PRODUCT APPLICATION

Phos-4-Fade tablets shall release a coagulant that bonds with phosphorus in its natural form of phosphate. These combined particles shall settle to the bottom of the treatment system tankage or lagoon until disposed of properly. For maximum effectiveness, Phos-4-Fade tablets shall be incorporated into the treatment process in conjunction with clarification but prior to a chlorine contact tank or mixing chamber. While the cost effective performance of Phos-4-Fade tablets is optimized with Norweco's Bio-Dynamic tablet feeders in gravity flow applications, the tablets can provide exceptional treatment with field constructed feed systems or in conjunction with the various brands of pressure type feeders. If a Bio-Dynamic tablet feeder is installed for chlorination of effluent and one of the feed tubes is not charged with chlorine tablets, that tube closest to the outlet may be filled with Phos-4-Fade tablets and the chlorine contact tank used as a mixing chamber. Disinfection and phosphorus removal can occur simultaneously within the same tankage with minimal loss of effectiveness.

DESIGN DATA

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|---------------------------|--|----------------------------|------------------------------------|
| Tablet Size | 2 ⁵ / ₈ " diameter, 1" thick | Inert Ingredient Content | 7% |
| Approximate Tablet Weight | 5 oz. (140 grams) | U.S. DOT Hazard Class | 9 |
| Active Ingredient | Aluminum Sulfate – Al ₂ (SO ₄) ₃ | Appearance Characteristics | White Tablet with Slight Acid Odor |
| Active Ingredient Content | 93% | Special Design Features | Beveled Edges |

SPECIAL INSTRUCTIONS

Read the entire product container label, the Material Safety Data Sheet and the Phos-4-Fade Safety and Tablet Properties and Usage instructions before handling or use. Always wear rubber gloves and either safety goggles or a face shield when handling Phos-4-Fade tablets or working with a tablet feeder or chemical feed tube. Refer to tablet feeder manufacturer's instructions to determine the correct number of tubes to fill with Phos-4-Fade tablets. Store tablets only in their tightly sealed original container. Do not store in direct sunlight or areas where temperature may exceed 140° F. Phos-4-Fade tablets should be stored in a cool, dry, well-ventilated area for maximum shelf life. To prevent moisture contamination, exercise care when removing tablets from the container or filling feed tubes. Avoid contact with skin, eyes, mouth, respiratory system or clothing.

PRODUCT STORAGE

Phos-4-Fade phosphorus removal tablets should be stored in a cool, dry, well-ventilated area away from heat or flames. Stock should be rotated on a first-in, first-out basis. Store Phos-4-Fade tablets in their original container with the lid tightly closed. Store tablets away from combustible materials such as paper, petroleum products, chemical rags or cardboard. In case of contamination, do not reseal container. Do not allow moisture to enter the pail during storage or while removing tablets for use. If possible, isolate container in open air or well-ventilated area. Flood tablets and container with large volumes of water to dissolve all materials, then discard container. Do not reuse the empty container.

SAFETY INSTRUCTIONS

Before handling Phos-4-Fade tablets, carefully read the product container label and the Product Storage, Tablet Handling, Caution and First Aid sections of these instructions. Do not add Phos-4-Fade tablets to a feed tube containing the remnants of any other product, particularly wastewater disinfecting tablets, swimming pool chlorine or petroleum products. Such action may cause a violent reaction leading to fire or explosion. Do not contaminate food or feed during the use, storage or disposal of Phos-4-Fade tablets or the cleaning of chemical feed equipment. Always wear rubber gloves and either safety goggles or a face shield when handling tablets or working with any tablet chlorinator or chemical feed tube. Avoid contact with skin, eyes, mouth, respiratory system or clothing. Keep his product only in its tightly closed original container. Store only in a cool, dry, well-ventilated area. Avoid moisture contamination.

TABLET HANDLING

Read the entire Phos-4-Fade tablet container label and these instructions carefully before handling this product. Use only in well-ventilated areas. Mix only with water. Use only clean, dry utensils made of metal or plastic. Do not add Phos-4-Fade phosphorus removal tablets to any dispensing device containing remnants of any other product. Such use may cause a reaction leading to fire or explosion. Do not sell the tablets in a package other than the original container and in the quantity shown on the label.

FEED TUBE LOADING INSTRUCTIONS

1. Remove feed tube from dispenser housing.
2. Remove protective cap from feed tube; place cap in a clean, dry area.
3. Remove any tablet residue by gently tapping feed tube on concrete or stone surface. If tablets other than Phos-4-Fade have been used, rinse tube and cap with fresh water until clean and allow to dry before proceeding.
4. Hold tube, slotted end up, at a 45° angle and slide Phos-4-Fade tablets into the tube, one tablet at a time.
5. Insure that all tablets lie flat, on top of one another, in the feed tube.
6. Use your gloved hand to retain tablets inside the open end of the inverted tube while filling.
7. Carefully return tube to upright position.
8. Replace the cap securely.
9. Place tube back into housing, slotted end down.
10. Be sure feed tube is fully engaged and rests evenly on the floor of the housing.
11. If the tablet feeder incorporates multiple feed tubes, consult the manufacturer's instructions to determine the correct number of tubes to be filled and their placement.



CAUTION

Phos-4-Fade tablets contain aluminum sulfate, which is listed by OSHA as an environmentally hazardous substance. Contact with chlorine products or reducing agents is extremely dangerous - fire or explosion could result. Keep out of the reach of children. Avoid contact with skin, eyes, mouth, respiratory system or clothing. Failure to do so may cause irritation on contact. Always wear rubber gloves and either safety goggles or a face shield when handling this product. Avoid breathing tablet dust. It is irritating to the eyes, nose and throat. Wash contaminated clothes before reuse.

FIRST AID INSTRUCTIONS

If contact with skin occurs, remove clothing and wash with water for 15-20 minutes. If irritation occurs, seek medical attention. If eye contact occurs, hold eye open and flush with water for at least 15 minutes. Get immediate medical treatment. If swallowed, promptly drink large quantities of water. DO NOT induce vomiting. Avoid alcohol. Call physician immediately. If inhaled, move victim to fresh air and get immediate medical attention. In case of fire, immediately evacuate the area and notify the fire department.

GENERAL CHEMICAL AND PHYSICAL PROPERTIES PHOS-4-FADE® PHOSPHORUS REMOVAL TABLETS

EMERGENCY TELEPHONE: (800) 424-9300

CHEMTREC #16012

DATE PREPARED: JANUARY 2018

I. PRODUCT IDENTIFICATION

| | | | |
|-------------------------------|---|-----------------------|--------------------------------|
| TRADE NAME | Phos-4-Fade | IDENTIFICATION NUMBER | UN 3077 |
| CHEMICAL NAME | Aluminum Sulfate | PACKING GROUP | III |
| CHEMICAL ABSTRACT SERVICE NO. | CAS #10043-01-3 | REPORTABLE QUANTITY | 5,000 lbs. |
| CHEMICAL FAMILY | Sulfuric Acid, Aluminum Salt (3:2) | HMIS/NFPA RATING | 1/0/0 |
| FORMULA | Al ₂ (SO ₄) ₃ | I.M.O. DESCRIPTION | Aluminum Sulfate, Dry, Class 9 |
| U.S. DOT SHIPPING NAME | Environmentally Hazardous Substances, Solid, N.O.S. (contains aluminum sulfate) | | UN 3077, Packing Group III |
| U.S. DOT HAZARD CLASS | 9 | | |

II. INGREDIENTS

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|------------------|-----|---|----|
| ALUMINUM SULFATE | 93% | INERT INGREDIENTS (Includes Sustained Release Agents) | 7% |
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III. PHYSICAL DATA

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| BOILING POINT | Not Applicable | SOLUBILITY IN H ₂ O: % BY WEIGHT | 50% at 0° C |
| SPECIFIC GRAVITY OF TABLET | 1.61 (H ₂ O = 1) | APPROXIMATE BULK DENSITY | 61 lbs./ft ³ |
| pH OF SOLUTION | 3.5 | HEAT OF SOLUTION | Slightly Exothermic |
| APPEARANCE AND ODOR | White, Slight Acid Odor | VOLUME % VOLATILE | 0 |

IV. FIRE AND EXPLOSION DATA

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| FLASH POINT | Not Flammable |
| EXTINGUISHING MEDIA | Water Spray, Foam, Carbon Dioxide or Dry Chemical |
| SPECIAL FIRE FIGHTING PROCEDURES | Wear self-contained breathing apparatus and full protective equipment. Use water spray to cool containers. |
| UNUSUAL FIRE & EXPLOSION HAZARD | Sulfur dioxides may be formed at temperatures above 760° |

V. HEALTH HAZARD DATA

| ACUTE TOXICITY DATA (ANIMAL) | | CLASSIFICATION | |
|-------------------------------|---|----------------|------------|
| LC 50 INHALATION | (Carassius) 100 mg/l (96 hours) | INHALATION | Irritating |
| LD 50 ORAL | No Information Available | SKIN | Irritating |
| LD 50 DERMAL | No Information Available | EYE | Irritating |
| LC 50 AQUATIC | No Information Available | INGESTION | Irritating |
| CAUSES BURNS TO EYES AND SKIN | | AQUATIC | Not Toxic |
| CHRONIC TOXICITY | May cause damage to reproductive system, mucous membranes, skin, eyes and urinary system. | | |

VI. EFFECTS OF OVEREXPOSURE

PERMISSIBLE 2 mg/m³, 10 hr TWA

| | |
|------------|---|
| ACUTE | |
| INHALATION | Inhalation of this material is irritating to the nose, mouth, throat and lungs. It may also cause burns to the respiratory tract with the production of lung edema which can result in shortness of breath, wheezing, choking, chest pain and impairment of lung function. Inhalation of high concentrations can result in permanent lung damage. Chronic (repeated) inhalation exposure may cause impairment of lung function and permanent lung damage. |
| EYE/SKIN | Irritation with rash and burning feeling. |
| INGESTION | Irritation and/or burns can occur to the entire gastrointestinal tract, including the stomach and intestines, characterized by nausea, vomiting, diarrhea, abdominal pain, bleeding, and/or tissue ulceration. |
| CHRONIC | There are no known or reported effects from chronic exposure. |

VII. EMERGENCY AND FIRST AID PROCEDURES

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| INHALATION | Remove to fresh air. Give artificial respiration, preferably mouth-to-mouth. If breathing is difficult, give oxygen. Seek medical attention immediately. |
| EYE CONTACT | Immediately flush with large amounts of water for fifteen (15) minutes, rinsing eye thoroughly. Get medical attention. |
| SKIN CONTACT | Wash with plenty of soap and water for fifteen (15) minutes. Remove contaminated clothing and wash before reuse. If skin irritation occurs, get medical attention. |
| INGESTION | If conscious, drink a large quantity of water. Do NOT induce vomiting. Take immediately to hospital. If unconscious, or in convulsions, seek medical attention immediately. Do not give anything by mouth to an unconscious person. |

VIII. REACTIVITY DATA

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| STABILITY | Stable. |
| CONDITIONS TO AVOID | Avoid temperatures above 760° C, as this will yield toxic and corrosive gases. |
| INCOMPATIBILITY | Alkalis and water reactive materials. |
| HAZARDOUS DECOMPOSITION PRODUCTS | At elevated temperatures, sulfur dioxides may be formed. These are toxic and corrosive. The loss of these gases leaves a caustic residue. |

IX. SPILL AND LEAK PROCEDURE

USE EXTREME CAUTION IN HANDLING SPILLED MATERIAL. IF FIRE OR DECOMPOSITION OCCURS IN AREA OF SPILL, IMMEDIATELY DOUSE WITH PLENTY OF WATER. OTHERWISE, SWEEP UP ALL VISIBLE MATERIAL USING A CLEAN, DRY SHOVEL AND BROOM AND DISSOLVE MATERIAL IN WATER. CARE MUST BE TAKEN WHEN USING OR DISPOSING OF CHEMICAL MATERIALS TO PREVENT ENVIRONMENTAL CONTAMINATION. IT IS YOUR DUTY TO DISPOSE OF THE CHEMICAL MATERIALS AND/OR THEIR CONTAINERS IN ACCORDANCE WITH THE CLEAN AIR ACT, THE CLEAN WATER ACT AND RCRA REGULATIONS.

X. SPECIAL PROTECTION INFORMATION

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| RESPIRATORY PROTECTION | If conditions are dusty, use NIOSH respirator with approved cartridge. |
| VENTILATION | Not required unless dusty conditions are encountered. Store and use in a well-ventilated area. |
| EYE PROTECTION | Chemical safety goggles. |
| GLOVES | Natural or synthetic rubber. |
| OTHER PROTECTIVE EQUIPMENT | Boots, aprons or chemical suits as required to prevent skin contact. |

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ADDITIONAL CHEMICAL PRODUCTS FROM NORWECO

BIO-DYNAMIC® TABLET FEEDERS

Bio-Dynamic tablet feeders are a technological advancement in self-contained tablet dosing systems for water or wastewater treatment. A low cost, low maintenance and effective method of chemical treatment, Bio-Dynamic feeders have no mechanical components and require no electricity. The safety, accuracy and reliability of Bio-Dynamic feeders outperform gas, liquid and ultraviolet systems. With fifteen different models, Bio-Dynamic feeders accommodate a wide range of flows and plant conditions. Installation flexibility including direct burial, inline and contact chamber mounting provides many options for locating the feeder. Complete 24" riser assemblies are available for Series 2000 and 4000 tablet feeders, while the LF Series uses 4" PVC pipe and Norweco's remote removal system to allow service from grade. No model of Bio-Dynamic feeder will ever require confined space entry equipment under OSHA regulations. Molded inlet and outlet hubs allow the Bio-Dynamic feeder to be directly connected to treatment system piping without the need for a separate drop box. The tiered flow deck of the Bio-Dynamic feeder accommodates variable, intermittent and surge hydraulic flows into the system. The flow deck directs liquid to the feed tubes during low flows and disperses liquid velocity throughout the feeder during peak flows, resulting in consistent chemical application. In many models, chemical dosage is further controlled by interchangeable weir plates or an optional sluice that can be completely adjusted from a 1" to 3" outlet width. The sluice can be adjusted during tablet feeder operation using only a standard socket wrench



with extension. All models are backed by a ten year limited warranty. Standard components include one-piece feed tubes with twist lock caps, molded inlet and outlet hubs, molded mounting feet and Norweco's tiered flow deck.

BIO-SANITIZER® DISINFECTING TABLETS

Bio-Sanitizer disinfecting tablets are uniquely formulated to provide efficient and reliable disinfection of water or wastewater treatment system flows. Bio-Sanitizer tablets provide treatment plant operators a consistent means to meet disinfection standards without exceeding new and stringent limits for total residual chlorine. Produced from a proprietary grade of calcium hypochlorite and containing a minimum of 70% available chlorine, Bio-Sanitizer tablets are registered by the U.S. Environmental Protection Agency and the Ministry of the Environment. With a unique beveled edge, Bio-Sanitizer tablets dissolve slowly and evenly, providing effective, economical bacteria killing power. Bio-Sanitizer disinfecting tablets are packaged in easy to open, resealable 10 lb., 25 lb., 45 lb. and 100 lb. Department of Transportation approved containers.

BIO-GEM® ORGANIC DIGESTER

A blend of bacteria, enzymes and natural growth accelerators, Bio-Gem organic digester effectively digests grease, fats and oils in wastewater treatment systems, lift stations, septic tanks, sand filters, drain lines and commercial grease traps. When used as directed, Bio-Gem liquid will quickly and effectively convert common grease, fats and oils into carbon dioxide and water. This organic digestion process is much more effective and reliable than compounds that merely emulsify the grease, fats and oils, sending the problem to downstream treatment processes. Regular use of Bio-Gem liquid will reduce odors, stabilize effluent quality, reduce system maintenance and minimize tank pump-out frequency. Packaged in one or five gallon containers and 55 gallon drums, Bio-Gem organic digester is environmentally safe and works in aerobic or anaerobic conditions.

norweco®

*Engineering the future of water
and wastewater treatment*

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