

norweco[®]

BIO-MAX[®]

DECHLORINATION TABLETS

GENERAL SPECIFICATIONS

Bio-Max dechlorination tablets shall be formulated to serve as a source of concentrated sodium sulfite for the removal of chlorine in water, wastewater and process water. The slow and consistent release of concentrated sodium sulfite from Bio-Max tablets shall allow their use in a variety of applications such as meeting National Pollution Discharge Elimination System (NPDES) criteria and phase two storm water discharge requirements. The tablets shall be 2⁵/₈" diameter, 1" in thickness with an approximate weight of 140 grams. Proprietary beveled edges incorporated into the tablets will stabilize the slow release of sodium sulfite. Bio-Max dechlorination tablets shall contain a minimum of 92% sodium sulfite as an active ingredient and 8% patent pending inert ingredients. Ascorbic acid tablets or liquid sodium metabisulfite systems require the mixing of irritating chemicals into a pumpable slurry which exposes operators to potentially hazardous conditions and shall not be considered for this application.

TABLET PROPERTIES AND USAGE

Bio-Max dechlorination tablets shall release sodium sulfite in direct correlation to the velocity of the incoming flow. This shall allow design engineers and system operators to precisely regulate the sulfite dose, and in turn, the dechlorination process for maximum effectiveness and minimum operating cost. Patent pending inert ingredients added to Bio-Max tablets shall maintain this predictable chemical dose at intermittent peak flow factors as high as four and shall provide reliable elimination of chlorine even when the significant runoff period is six hours. Bio-Max tablets shall be an ideal product for municipal storm water treatment which requires treatment capacity for high or pressurized flow and then an extended time of no flow conditions. By incorporating commercial feeders such as Norweco's Bio-Dynamic tablet feeders, or constructing custom units, the consistent dosage of Bio-Max tablets will allow effective and controlled dechlorination for a wide variety of applications.

PRODUCT APPLICATION

Bio-Max dechlorination tablets shall be incorporated into the treatment process following the chlorine contact tank or final tankage. As Bio-Max tablets stop the disinfection process by eliminating chlorine, no bacterial sampling shall be performed on the effluent or water stream following the addition of Bio-Max tablets. The dechlorination system can be designed so the entire flow needing dechlorination contacts the Bio-Max tablets or in a bypass arrangement where a percentage of flow is directed at the tablets, is saturated with the sulfite, and then blended into the remainder of the flow. While the cost effective performance of Bio-Max tablets is optimized with Norweco's Bio-Dynamic tablet feeders in gravity flow applications, the tablets can provide exceptional dechlorination with field constructed feed systems or in conjunction with the various brands of pressure type feeders. Check your feeder's operating manual for further details.

DESIGN DATA

Tablet Size	2 ⁵ / ₈ " diameter, 1" thick	Inert Ingredient Content	8%
Approximate Tablet Weight	5 oz. (140 grams)	U.S. DOT Hazard Class	Non-hazardous
Active Ingredient	Sodium Sulfite – Na ₂ SO ₃	Appearance Characteristics	Blue-Green Tablet with Herbal Odor
Active Ingredient Content	92%	Special Design Features	Beveled Edges

PRODUCT DOSAGE

Under gravity flow conditions, the sulfite dose from Bio-Max tablets shall be 6.75 mg/L at 70° F. Significant variations in temperature or flow velocity may have an impact on tablet dose. Adjustment of dosing equipment will be required upon start-up. Chlorine residuals prior to dechlorination fluctuate based on upstream treatment processes and conditions. Monitoring of chlorine residual levels prior to dechlorination is recommended to insure consistent performance of the dechlorination system. Once steady performance of the upstream treatment process and dechlorination system is established only minor adjustments of the feeder shall be required. A single feed tube of Bio-Max dechlorination tablets shall remove up to 3.8 mg/L available chlorine, with no excess sodium sulfite. To estimate average tablet usage, multiply plant flow in liters (l) per day by 6.75 mg/L, then divide this product by 1,000 and again by 140. The final result will be the number of Bio-Max dechlorination tablets used per day of operation. Consult your tablet feeder's operational manual for further information.

PRODUCT STORAGE

Bio-Max dechlorination tablets are a strong reducing agent. Tablets should be stored in a cool, dry, well-ventilated area, away from heat or flame. Avoid storage in areas subject to direct sunlight or temperatures in excess of 140° F. Stock should be rotated on a first-in, first-out basis. Bio-Max dechlorination tablets must be stored in their original container with the lid tightly closed. Do not allow moisture to enter the pail during storage or while removing tablets for use. Moisture contamination may affect tablet integrity and performance. Do not reuse the empty container.

SAFETY INSTRUCTIONS

Before handling Bio-Max tablets, carefully read the container label and the Product Storage, Tablet Handling, Caution and First Aid sections of these instructions. Do not add Bio-Max tablets to a feed tube containing any other product, particularly oil and petroleum products or swimming pool chlorine. 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 Bio-Max tablets or the cleaning of chemical feed equipment. Always wear rubber gloves and either safety goggles or a face shield when handling Bio-Max tablets or working with any tablet feeder or feed tube. Avoid contact with skin, eyes, mouth, respiratory system or clothing. Keep this product only in its tightly closed original container. Store only in a cool, dry, well-ventilated area.

TABLET HANDLING

Use only clean, dry utensils. Do not add Bio-Max dechlorination tablets to any device containing remnants of any other product – contact with oxidizers, such as Bio-Sanitizer disinfecting tablets or any other tablets used for chlorination can cause fire and the release of toxic gas. Read the entire Bio-Max tablet container label and these instructions carefully before handling this product. Use only in well-ventilated areas. Bio-Max tablets are not rated a hazardous substance by the U.S. DOT or USEPA, but necessary care should be taken in the use and handling of the tablets. Collected material can be dissolved in water, exercising caution as the solution can get hot. Dispose of dissolved material in any appropriate industrial waste collection system. Consult local, state and federal regulatory agencies before disposing of any material.

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 Bio-Max 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 Bio-Max dechlorination tablets into the tube, one tablet at a time.
5. Ensure 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

Do not mix Bio-Max dechlorination tablets with acids or oxidizing agents such as Bio-Sanitizer disinfecting tablets or other tablets used for chlorination – 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. Wear rubber gloves and either safety goggles or a face shield when handling this product. Product will form Sodium Sulfide at 600° C. At 900° C Sulfur Dioxide is formed. Inert ingredients could support combustion. Use self-contained breathing apparatus for fire fighting.

FIRST AID INSTRUCTIONS

If contact with skin occurs, wash with water for 15 minutes. If irritation persists, seek medical attention.
If eye contact occurs, flush with water for at least 15 minutes. Get immediate medical treatment.
If swallowed, promptly drink large quantities of water or milk. Induce vomiting. Avoid alcohol. Call physician immediately.
If inhaled, move victim to fresh air. If difficulty in breathing persists, get immediate medical attention.
In case of fire, immediately evacuate the area and notify the fire department.

GENERAL CHEMICAL & PHYSICAL PROPERTIES

BIO-MAX® DECHLORINATION TABLETS

EMERGENCY TELEPHONE: (800) 424-9300

CHEMTREC #16012

DATE PREPARED: JANUARY 2020

NOTE: THIS PRODUCT IS NOT RATED A HAZARDOUS MATERIAL BY THE U.S. DEPARTMENT OF TRANSPORTATION OR THE U.S. ENVIRONMENTAL PROTECTION AGENCY. THE FOLLOWING DATA IS FOR INFORMATIONAL PURPOSES ONLY.

I. PRODUCT IDENTIFICATION

TRADE NAME	Bio-Max®
CHEMICAL	Sodium Sulfite
CHEMICAL ABSTRACT SYSTEM NO.	CAS #7757-83-7
CHEMICAL DESCRIPTION	Reducer
FORMULA	Na ₂ SO ₃
U.S. DOT SHIPPING NAME	Non-Hazardous Tablets, Item NM503401
U.S. DOT HAZARD CLASS	Non-Hazardous

II. INGREDIENTS

HAZARDOUS INGREDIENTS	None
NON-HAZARDOUS INGREDIENTS	Sodium Sulfite 92%
	Inert Ingredients 8% (Includes sustained release agents)

III. PHYSICAL DATA

BOILING POINT AT 760 mm Hg	Decomposes at 900° C
FREEZING/MELTING POINT	Not Applicable
SOLUBILITY IN H ₂ O; % BY WEIGHT	25% at 80° C
SPECIFIC GRAVITY OF TABLET	2.63 (H ₂ O = 1)
APPROXIMATE TABLET DENSITY	125 lbs./ft ³
pH OF SOLUTION	Alkaline
VOLUME % VOLATILE	Not Applicable
APPEARANCE AND ODOR	Blue-Green Tablet with Mild Odor

IV. FIRE AND EXPLOSION DATA

FLASH POINT	Not Applicable
FLAMMABLE LIMITS IN AIR	Not Applicable
EXTINGUISHING MEDIA	Use extinguishing media appropriate for burning material. Compatible with water fog, spray foam or CO ₂ .
SPECIAL FIRE FIGHTING PROCEDURES	NIOSH/MSHA-Approved, positive pressure, self-contained breathing apparatus with full face piece.
UNUSUAL FIRE & EXPLOSION HAZARD	At 600° C, Sodium Sulfide is formed. At 900° C, Sulfur Dioxide is formed. Inert ingredients could support combustion by burning, yielding carbon dioxide and water. Use self-contained breathing apparatus for fire fighting.

V. HEALTH HAZARD DATA

ACUTE TOXICITY DATA (ANIMAL)

LC 50 INHALATION	See effects of overexposure.
LD 50 ORAL	2825 MG/KG (Rabbit)
LD 50 DERMAL	See effects of overexposure.
LC 50 AQUATIC	Very high concentrations will chemically deplete dissolved oxygen necessary for aquatic life.

CHRONIC TOXICITY

Sodium Sulfite may cause allergic reactions in sensitive individuals. Contact with strong acids or high temperatures may generate Sulfur Dioxide, which is toxic, corrosive, and hazardous.

VI. EFFECTS OF OVEREXPOSURE

<u>PERMISSIBLE</u>	No permissible exposure limits have been established by OSHA.
<u>ACUTE</u>	
INHALATION	Inhalation of product dust or solution may cause respiratory tract irritation.
EYE	Dust or solution may burn eyes on contact.
SKIN	Product dust or solution may result in skin irritation upon prolonged contact.
INGESTION	Ingestion may irritate gastrointestinal tract. Toxic if taken in large doses.

VII. EMERGENCY AND FIRST AID PROCEDURES

<u>INHALATION</u>	Remove to fresh air. If not breathing, resuscitate and administer oxygen if readily available. Seek medical attention immediately.
<u>EYE CONTACT</u>	Immediately flush with large amounts of water for fifteen (15) minutes, rinsing eye thoroughly. Get medical attention.
<u>SKIN CONTACT</u>	Wash with plenty of soap and water for fifteen (15) minutes. Remove contaminated clothing. If skin irritation occurs, get medical attention. Wash clothing before reuse.
<u>INGESTION</u>	If conscious, drink large quantities of water or milk and induce vomiting. Call a physician immediately. Avoid alcohol. If unconscious, or in convulsions, seek medical attention immediately. Do not give anything by mouth to an unconscious person.

VIII. STEPS FOR MATERIAL SPILL

Spills exceeding 100 pounds should be reported to the local authorities.

1. Contain all spilled material, wearing appropriate protective equipment.
2. Place spilled material in clean, dry containers for disposal. Do not flush to surface water.

WASTE DISPOSAL METHOD

Not rated a hazardous substance by USEPA. Collected material can be dissolved in water, exercising caution. Dissolved material may be discharged into an appropriate industrial waste collection system but consult local, state and federal regulating agencies before disposing of any material.

IX. SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION	If dusty conditions are encountered, use NIOSH/MSHA respirator with acid gas cartridge and dust pre-filter.
VENTILATION	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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