

Refinery and Chemical Waste



BIO-SYSTEMS
INTERNATIONAL

Specifications

Form: Free-flowing granular powder
Color: Brown
Nutrient Content: Biological nutrients & stimulants
Plate Count: 5 billion per gram

Packaging

250 grams water soluble packages protected by a foil overwrap.
10 kilos per plastic pail.

Storage

DO NOT FREEZE! Store in a cool dry location. Do not inhale dusts, avoid excessive skin contact. SEE M.S.D.S.

Application Instructions

Treatment Plants

Flow Rate

Up to 1,000 gpd
Up to 5,000 gpd
Up to 20,000 gpd
Up to 50,000 gpd
Up to 250,000 gpd
Up to 500,000 gpd
Up to 1 mgd
Up to 5 mgd
Up to 12 mgd
Up to 100 mgd

Initial Dosage

½ lbs. per day for 3 days
½ lbs. per day for 3 days
5 lbs.*
8 lbs.*
15 lbs.*
25 lbs.*
50 lbs.*
50 lbs. per mgd*
50 lbs. per mgd*
30 lbs. per mgd*

Maintenance**

½ lb. per week
1lb. per week
1½ lb. per week
2 lb. per week
¼ lb. per day
½ lb. per day
1 lb. per day
1 lb. per mgd per day
¾ lb. per mgd per day
½ lb. per mgd per day

* Spread this initial dosage out over the course of 10 days.

** Add as regularly as possible. If it is required to miss one day, add that day's product with the next dosage.

Dosage rate will vary with flow rates, retention times and system variations. The rates above are for a typical, well maintained system.

Activated Sludge Systems

Activated Sludge Systems include various process flow sheets for example: Extended Aeration, Contact Stabilization, Step Aeration, Oxygen Activated Sludge. The application rate for all products is based on the average daily flow rate to the aeration basin, excluding the return sludge stream. For seasonal or widely fluctuating flows, contact your BIO-SYSTEMS technical representative.

Trickling Filter and Rotating Biological Contactors

The application rate for all products is based on the average daily flow rate to the filter or contactor, excluding any recirculating process stream. For seasonal or widely fluctuating flows, contact your BIO-SYSTEMS technical representative.

Lagoon Systems

- For aerated lagoon systems, the application rate based on the average flow to the lagoon.
- For facultive lagoon systems, the application rate is based on the lagoon surface area:

Day 1 through Day 5 20 lbs. per acre per day
Day 6+ 2 lbs. per acre per week

- For anaerobic lagoons, the application rate is based on the total volume of the anaerobic lagoon.

<100,000 gallons 1 lb. - 2x per week per 5,000 gal.
>100,000 gallons ½ lb. - 1x per day per 5,000 gal.

- For lagoons in cold climates, commence program when the water temperature is a least 50°F



Case History 1003

This refinery operates a multistage lagoon system for treating all waste waters. The system facing major costs for expansion to meet new ammonia standards. The use of BIO-SYSTEMS products increased treatment capacity without the added capacity improvements and effluent ammonia levels were within permit level on a consistent basis.



Case History 977

A 3mgd aging activated sludge system was used to treat wastewater from a midwest refinery. In order to maintain treatment efficiencies with overloaded conditions, a regular application of 3 lbs. per day of BIO-SYSTEMS was used. This product addition demonstrated reduced sludge production and enabled the plant to stay in compliance with effluent standards.



Petroleum Compounds, Phenol, Polynuclear Aromatics, Sulfides, Alcohols and Similar Solvents

Your local Distributor is:

The information presented in this Data Sheet is believed to be reliable. This information is provided as representative only and there are no warranties, expressed or implied, regarding its performance. Since neither distributor nor manufacturer has any control over handling, storage, use and application conditions, neither distributor nor manufacturer shall be responsible for loss, damage or expense arising out of or in any way connected with the handling, storage, or use of the product described.

0000008



1-800-232-BUGS
2 8 4 7
www.BIOBUGS.com

Refinery and Chemical Waste



Description

BioBug HC contains a specially formulated range of adapted high performance microorganisms. BioBug HC was developed for use in the biological wastewater treatment of refinery and petrochemical wastes. The product also contains a complete micronutrient blend for microbial growth in all conditions. This is particularly important for industrial waste waters.

In addition to the bacteria element of BioBug HC, a number of free enzymes are present within the product. The presence of a complex of cellulases, hemicellulases, amylases and lipases provide the capacity to degrade extra cellular polymers (which cause foaming) and suppress the growth of the filamentous organisms by affecting the structure of the filaments.

Effect

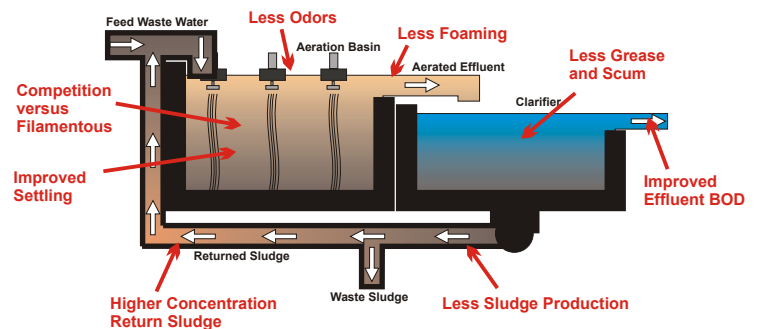
BioBug HC, with its aerobic and facultative anaerobic microorganisms establishes and maintains a biomass which by providing greater resistance to the effects of organic inhibitors present in refinery wastewaters, is able to perform more effectively than the naturally occurring biomass. BioBug HC ensures that the natural mechanism for the selection of the biomass population is presented with a range of selected microorganisms. These aerobic and facultative anaerobic bacteria have been taken from their natural environment and then adapted to give optimum performance.

Benefits of BioBug HC:

- Enhance BOD and COD removal, while improving sludge settlement.
- Removes oil deposits and prevent scum formation in holding tanks, sewers, drains and aeration basins.
- Accelerates breakdown of unpleasant odors associated with handling oily wastes.
- Increases the efficiency of overloaded systems.
- Reseeds after plant upset.

Bacterial Formulation **Plus** **Bio-Enhancer** **Plus** **Micronutrient**

- Enhance organic removal efficiency of biological systems, providing lower effluent BOD, COD, and TSS.
- Enhance solids settling where it has been disturbed by loading fluctuations.



- Accelerate the start-up of new systems and aids recovery after upsets.
- Improve cold weather operation.
- Resistant to sulfides
- Aids nitrification by lowering toxicity
- Improves effluent quality
- Reduce sludge production.
- Lower operating costs by reducing chemical consumption.
- Competes against filaments.



1-800-232-BUGS
2 8 4 7
www.BIOBUGS.com