

BIOLOGIK

NATURALLY SUSTAINABLE

ADVANCED BIOLOGICAL POWDER FORMULATION



BIOLOGIK BIO – EFFLUENT STARTER

An application-specific bacterial product for effluent plant start up, upset recovery and promotion of biological floc formation; will also augment BOD/COD and solids reduction

BIOLOGIK BIO – EFFLUENT STARTER

Overview

BIOLOGIK Effluent Starter is an application specific blend of bacterial and fungal cultures selected to degrade a wide range of organic materials, especially cellulose and other plant derived materials. The fungi in the product will also stimulate the formation of biological flocs, quickly establishing biomass with the optimum separation characteristics within the plant.

This will improve:

- Industrial and municipal biological effluent plants during start-up and upset recovery
- BOD/COD and suspended solids reduction
- Biological treatment of starchy and cellulose containing wastes such as those from the food processing and pulp & paper industries.

Applications

- For start-up and upset recovery in:
 - Municipal and industrial biological waste water plants.
 - Small packaged sewage plants.
- For augmentation of system treating effluents containing a lot of cellulosic material:
 - Fruit and vegetable processing
 - Pulp and paper mills
- For improvement of BOD/COD and suspended solids removal in poorly operating biological effluent plants.

Advantages of Biologik Bio-Effluent Starter

Optimised, application-specific, proprietary bacterial consortium.

Bacillus species 100% in spore form providing long product shelf life

Addition of specially selected fungal strains to encourage biological floc formation and the aid of cellulose degrading.

Manufactured in accordance with recognized international standards, ISO 9001 and ISO 14001



Product Testing

floc formation;

- Recent research on the microbial make-up of the flocs in waste water treatment plants has shown that bacteria use fungal filaments (mycelium or hyphae) as a substratum to grow on to form the more familiar bacteria dominated floc.
- Microscopic analysis of mature flocs shows a dense core containing the remnants of fungal hyphae.
- Fungi appear to have a structure-enhancing role of in the formation of aerobic sludge flocs, and to maintain that role even to the point where the sludge is very mature: the fungi are never completely overgrown or eliminated from the flocs.
- The dead remnants of organisms called 'ciliates' are found to form the backbone of flocs in other wastewater sludges. Ciliates are single or multicellular higher life forms more complex in structure than bacteria or fungi, in that they are motile (able to actively move) and have a primitive digestive system.
- Ciliates are impossible to store in either liquid or dry products and therefore are not an option for an effluent treatment additive.
- Fungal spores are much more stable than ciliates, can be preserved in a dry powder formulation and offer an alternative method of rapidly achieving the correct sludge characteristics when added to an effluent treatment plant either at start-up or during upset recovery.

cellulose degradation:

- The fungi in Effluent Starter are also much more powerful cellulose degrading organisms than bacteria, meaning as well as providing structure to flocs, they also increase the ability of a biomass to reduce paper, or cellulose fibres in vegetable processing or pulp and paper effluents, for example.
- Cellulose is a linear polymer found in plants composed only of D-glucose molecules all linked the same way called -1,4 glycosidic bonds.
- Also within the plant structural fibre are hemicelluloses, a more complex polymer consisting of many different sugars including D-xylose, D-mannose, L-arabinose, D-galacturonic and D-glucuronic acids linked together by two different bond types.
- Micro-organisms capable of degrading cellulose produce a series of enzymes with different activities. The enzymes generally known as 'cellulases' includes various enzymes that release two glucose cellobiose molecules. The cellobiose molecules are broken down by another very specific enzyme.
- So, to fully degrade cellulose, a micro-organism must produce a range of different enzymes. The most active cellulolytic microbes are fungi including Trichoderma which is present in Effluent Starter.
- Multiple enzymes are also required to mineralize hemicelluloses: the breakdown of the most common hemicellulose, xylan, requires four different enzymes. The most powerful xylan degrading microbes are Trichoderma and Aspergillus, as found in Effluent Starter.
- Bio-augmentation of the microflora with active cellulose and hemicellulose degrading fungi will increase the extent, and reduce the time for cellulose biodegradation to occur.



Technical specifications for BIO-EFFLUENT STARTER

targeted compounds	general COD/BOD; predominantly plant derived materials: vegetable fibre, cellulose, hemi-cellulose, B-glucans, xylans, amyloses and starches also protein and volatile fatty acids	
bacterial count	1.0E+10 cfu/g <i>Bacillus</i> spores 1.0E+06 cfu/g fungal count	
formula properties	tan, free flowing powder with earthy odour mixed inorganic/organic carrier	
performance properties	effective pH range: 4.0-11.0	temperature range: 5-50°C
packaging	available in 20kg pack size as standard also available in 10kg pack size	

DURBAN HEAD OFFICE

24 Imbonini Factories
1 Hawk Road
Imbonini Park
Shakashead
Kwa-Zulu Natal
South Africa
Tell: +27 (0) 32 947 3024
Fax: 0865455802
info@biologik.co.za

JHB BRANCH

Brian Hoggarth
Tell: +27 82 372 2528
Fax: 0865455802
info@biologik.co.za

Johan Breedt
Tell: +27 82 851 1551
johan@biologik.co.za