BIOCELERATOR

PRODUCT DATA SHEET

# Biocelerator MS

Micro-organism stimulant

## DESCRIPTION

Biocelerator MS is a unique compound consisting of inorganic nanoparticles that stimulate the activity of micro-organisms that consume organic matter in water. It is manufactured using a proprietary molecular process which provides increased microbiological activity where applied.

The chemical composition of Biocelerator MS is like potable water. Composed of water-based, organic nano- particles, Biocelerator MS provides an increased capacity of microbiological activity, facilitating naturally occurring cellular absorption or assimilation of required substances in an aqueous environment. When this increased reaction occurs in a waste water treatment facility, numerous benefits are attained.

Biocelerator MS has been used in a wide range of waste water treatment processes, including both anaerobic and aerobic systems, where increased performance yielded many positive results.

Some of these benefits included an increase in decomposition of biomass, leading to cost reductions in solids disposal. This biomass reduction has occurred in lagoons, where years of solids deposition has taken place.

A drastic reduction or even an elimination of odor from waste water treatment systems are frequently noted. This is usually symbolic of the increased performance of the system, leading to higher performance in water analyses.

Due to the increased microbiological activity, the conversion of biomass to biogas is notably increased, providing a superior performance in biodigesters.

## BENEFITS

- Increased microbiological activity where applied
- Increased removal of Biochemical Oxygen Demand (BOD) and Chemical Oxygen Demand (COD) – see explanation on Page 3
- Increased biomass decomposition in closed systems or lagoons
- Reduction or Elimination of odor
- Reduction in $H_2S$ generation
- Reduction in turbidity
- Increased biogas production for biodigesters

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## USES

Biocelerator is recommended for use in industrial or sanitary waste water treatment processes, that including though are not limited to the following:

- Activated sludge
- Anaerobic/Aerobic reactors
- Anaerobic/Aerobic filters
- Anaerobic/Aerobic lagoons
- Facultative lagoons
- Maturation lagoons
- Clarification
- Biodigesters

## COLOR

Clear

## PACKAGING

Biocelerator is supplied in five (5) liter plastic containers

## DOSAGE

Dosage depends on several factors, such as flow rate, hydraulic retention time (HRT), existing system performance and system type. Please consult with the supplier for a recommendation

## CHARACTERISTICS

| | |
|---|---|
| ➢ Appearance | Colorless liquid |
| ➢ Color | Clear |
| ➢ Odor | Odorless |
| ➢ pH | 7,5 – 8,5 |
| ➢ Conductivity | 100 – 120 µS/cm |
| ➢ Combustion point | Inexistent |
| ➢ Density | 1.000 kg/$m^3$ |
| ➢ Molecular mass | 18,01528 g/mol |
| ➢ Boiling temperature @ 1 atm | 96,2º C |
| ➢ Freezing temperature @ 1 atm | 0,4$^o$ C |

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## APPLICATION

Biocelerator is a ready to use product, that does not require dilution or mixing. The product should be applied where indicated by supplier.

## STORAGE

Biocelerator should be kept in a dry place without direct sunlight. No other products should be added or mixed with the product. The plastic containers are 100% recyclable.

# EXPLANATION OF BOD and COD

Biochemical Oxygen Demand (BOD) and Chemical Oxygen Demand (COD)

Natural organic detritus and organic waste from waste water treatment plants, failing septic systems, and agricultural and urban runoff, acts as a food source for water-borne bacteria. Bacteria decompose these organic materials using dissolved oxygen, thus reducing the DO present for fish.

Biochemical oxygen demand (BOD) is a measure of the amount of oxygen that bacteria will consume while decomposing organic matter under aerobic conditions. Biochemical oxygen demand is determined by incubating a sealed sample of water for five days and measuring the loss of oxygen from the beginning to the end of the test. Samples often must be diluted prior to incubation or the bacteria will deplete all the oxygen in the bottle before the test is complete.

The main focus of wastewater treatment plants is to reduce the BOD in the effluent discharged to natural waters. Wastewater treatment plants are designed to function as bacteria farms, where bacteria are fed oxygen and organic waste. The excess bacteria grown in the system are removed as sludge, and this “solid” waste is then disposed of on land.

Chemical oxygen demand (COD) does not differentiate between biologically available and inert organic matter, and it is a measure of the total quantity of oxygen required to oxidize all organic material into carbon dioxide and water. COD values are always greater than BOD values, but COD measurements can be made in a few hours while BOD measurements take five days.

If effluent with high BOD levels is discharged into a stream or river, it will accelerate bacterial growth in the river and consume the oxygen levels in the river. The oxygen may diminish to levels that are lethal for most fish and many aquatic insects. As the river re-aerates due to atmospheric mixing and as algal photosynthesis adds oxygen to the water, the oxygen levels will slowly increase downstream. The drop and rise in DO levels downstream from a source of BOD is called the DO sag curve.