

# **EPIZYM<sup>®</sup>-100**

## **Microbial Ecosystem for Municipal and Industrial Wastewater Treatment**

### **PRODUCT DESCRIPTION**

EPIZYM-100 is a highly concentrated microbial ecosystem containing specialized natural microorganisms selected for maximum efficiency in the biodegradation of industrial and municipal wastewater.

With its unique blend of aerobic and facultative anaerobic microorganisms, EPIZYM-100 secretes significantly greater concentrations of highly effective enzymes than most natural strains. The formulation promotes the biodegradation of various toxicants, increases digestion rates and improves terminal flocculation in wastewater treatment systems, thereby increasing the overall efficiency of aerobic wastewater treatment systems.

EPIZYM-100 enzymatically alters the physical structure of suspended organic solids, causing them to separate more efficiently. The reduced sludge volume resulting from the more thorough digestion of waste is due to the more complete liquefaction and gasification of organic materials in the wastewater and the destruction of water-binding molecules.

### **FAT DEGRADATION**

When discharged into wastewater treatment plants, oil and grease found in personal care products, kitchen scraps, food processing and industrial wastes can overload wastewater treatment plants such that the normal microflora are unable to biodegrade these wastes. Insoluble fat, oil and grease may constitute as much as 25% - 50% of the organic matter in sewage and result in insoluble fatty acids accumulating in the activated sludge.

Solid grease that accumulates in the clarifier may be transferred downstream to anaerobic digesters and bypass aerobic liquefaction and biodegradation. The anaerobic digesters receiving this waste can easily become overloaded with thick layers of compacted floating grease. The result is digester malfunction, contaminated effluent and costly system maintenance and repairs.

EPIZYM-100 contains natural microorganisms capable of secreting high concentrations of lipase enzymes which solubilize fat, oil and grease. The regular addition of EPIZYM-100 to activated sludge systems significantly reduces the amount of emulsified oil and grease and helps eliminate digester "cakes" or matting in downstream anaerobic digesters.

### **DETERGENT DEGRADATION**

Due to their ability to reduce surface tension and interfacial tension, synthetic detergents such as nonylphenol ethoxylates, *n*-alcohol ethoxylates and sodium *n*-dodecyl benzene sulfonate can significantly reduce the efficiency of wastewater treatment systems by affecting oxygen transfer rates and increasing final flocculation and effluent B.O.D. Operating capacities of affected activated sludge plants can be reduced by as much as 30% - 40%.

EPIZYM-100 contains specially adapted microorganisms which effectively promote the biodegradation of wastewater with high detergent concentrations at reduced residence times.

### **CELLULOSE DEGRADATION**

Cellulose from waste paper, cotton and cigarettes is one of the most difficult substrates to liquefy and decompose in municipal and industrial waste treatment systems. Cellulose is biodegraded by certain bacteria and fungi which secrete cellulase enzymes that convert the fibrous structure of cellulose into a soluble fluid state. Municipal waste treatment plants receiving excess paper, cotton, fruit and vegetable pulps, cereal fibers and other cellulosic materials benefit from the rapid hydrolyzing capabilities of EPIZYM-100. Although limited quantities of cellulose digesting enzymes are produced by the normal microflora of wastewater treatment systems, inoculation of sewage with EPIZYM-100 generates active cellulase-secreting microorganisms which are able to efficiently hydrolyze and biodegrade various forms of cellulose waste.

## **APPLICATION SUGGESTIONS: INITIAL TREATMENT AND PREVENTATIVE MAINTENANCE**

### **ACTIVATED SLUDGE SYSTEMS AND TRICKLING FILTERS**

#### Initial Treatment

- 1) Add 3 kg EPIZYM-100 per day per 1,000 m<sup>3</sup>/day of wastewater (25 pounds/MGD\*) for the first 5 days.
- 2) Reduce dosage to 0.6 kg per day per 1,000 m<sup>3</sup>/day of wastewater (5 lbs./MGD) for the next 10 days.

\* MGD = million gallon (US) per day wastewater flow rate

#### Maintenance Treatment

- 3) Thereafter, add 0.5 kg per 4,000 m<sup>3</sup>/day of wastewater (1 lb./MGD) bi-weekly or weekly.

### **OXIDATION LAGOONS**

Initial Treatment:: For each 2,000 m<sup>3</sup> of lagoon capacity, add 12 kg (50 lb. MGD) EPIZYM-100 as a slurry in water daily for 5 days to the sewer feeding the lagoon.

Maintenance Treatment: Thereafter, add 0.5 kg per 2,000 m<sup>3</sup> (2 lb./MGD) of lagoon capacity weekly.

### **HYDRATION OF EPIZYM-100**

- For long-term stability, EPIZYM-100 is supplied as a dry powder.
- To activate the microorganisms, simply mix EPIZYM-100 with warm water before use.
- To rehydrate, mix 1.2 kg EPIZYM-100 per 10 litre (1 lb./US gal.) of warm (38° - 45° C), not hot water.
- Allow the mixture to stand for 30 minutes with occasional stirring before use.

### **PARAMETERS FOR USE**

1. pH: optimum 7, minimum 4.5, maximum 9.0.
2. Dissolved oxygen: optimum > 3 ppm, minimum 2 ppm.
3. Carbon/nitrogen ratio: optimum 10:1, maximum 20:1.
4. Temperature: optimum 30°C (86°F), minimum 19°C (66°F), maximum 40°C (104°F).
5. Free of toxic metals such as hexavalent chromium. Reasonable dilution of organic and inorganic cyanide wastes and normally toxic compounds.

## **PACKAGING**

EPIZYM-100 is supplied in 40 kilogram (88 pound), net weight polyethylene lined fiber drums.

## **PRODUCT STORAGE**

Biological products are unlike inert chemical products. They require special treatment during storage and handling,

- \* Do not store continuously at temperatures above 40°C (104°F).
- \* Store out of direct sunlight in a well ventilated area.
- \* Keep products dry until ready to hydrate.
- \* Do not mix with any materials not recommended by Epicore, especially biocides and harsh chemicals.

## **SAFETY**

EPIZYM-100 utilizes natural microorganisms which are harmless to humans, plants and animals. All Epicore biological products are non-toxic. They contain no toxic or hazardous chemicals, acids, caustics or solvents. They are not corrosive to metal, ceramic and plastic. Users are advised to consult the Material Safety Data Sheet for further information and guidance.

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**IMPORTANT NOTICE TO PURCHASER:**

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