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FIBREZYME LWT

Product #930

(Considerations in applications for Wastewater Treatment)

I. INTRODUCTION:

FIBREZYME LWT is a liquid complex of cellulase, hemicellulase and pectinase enzymes that will hydrolyze waste material containing cellulose, hemicellulose (fiber) and pectins to soluble lower molecular weight polymers under the proper processing conditions. **FIBREZYME LWT** is a stable form of hydrolytic enzymes operating between a broad range of pH (4.0 – 8.0) and temperature (25 °C – 60°C (77°F – 140°F)).

II. PHYSICAL PROPERTIES:

Appearance: Medium to dark amber liquid (Note that color does not affect or reflect activity.)

Odor: Slight fermentation odor

pH (as is): 4.5 ± 0.5

Density: 1.15 – 1.25 g/ml

III. PRODUCT CAPABILITIES:

When run as directed in this bulletin, **FIBREZYME LWT** can be utilized to accomplish the following:

1. Transforms particulate COD to soluble COD in wastewater produced from grain/fruit/cellulose industrial processes.
2. Increases the BOD/COD ratio by increasing waste biodegradability. Soluble lower molecular weight polymers in cellulosic/hemicellulosic wastes are more easily biodegradable than non-soluble material.
3. Increases Total BOD and COD removal in biological wastewater treatment systems. As cellulosic/hemicellulosic waste material is solubilized, it is more efficiently digested by aerobic and/or anaerobic bacteria in biological reactors.

Aerobic bacteria lack cellulase/hemicellulase enzymes and are unable to degrade cellulosic fibrous material. **FIBREZYME LWT** provides the necessary enzymes to hydrolyze long polymers to readily degradable materials in aerobic environments.

When dealing with cellulosic fibrous materials, the rate limiting step in anaerobic reactors is the hydrolysis of the fibre. **FIBREZYME LWT** speeds-up hydrolysis of the waste material improving the overall treatment efficiency and the gas (methane) production phase.

IV. PROCESSING CONDITIONS: GENERAL

FIBREZYME LWT will function from a pH of 4.0 – 8.0, which makes the product very adaptable to a wide range of pHs.

FIBREZYME LWT will function from 25 °C – 60°C (77°F – 140°F). Higher operating temperature results in higher enzymatic activity providing lower enzyme dosage for a particular application.

V. RECOMMENDATIONS FOR USAGE:

1. **FIBREZYME LWT** is added at a dose between 50 – 100 milliliters/ton of COD. The enzyme is dosed at the inlet channel (Parshall flume) normally installed at wastewater treatment systems. The turbulent flow at the Parshall flume will provide the necessary energy to mix the liquid enzyme with the wastewater.
2. As there is an inverse relationship between reaction time and enzyme dosage to obtain a maximum hydrolytic effect, retention times in tanks where enzymatic treatment is performed should be maintained at the highest possible volume. The enzyme is considered to act along all process units in the wastewater treatment plant (equalizing tank, primary settler, biological reactor, secondary settler).
3. Optimal enzyme performance can be maintained with controlled process pH between 6.0 and 7.5.

VI. STORAGE CONDITIONS/ACTIVITY:

FIBREZYME LWT retains more than 90% activity after four months when stored at 25°C (77°F) out of direct sunlight and in the original, closed container. **FIBREZYME LWT** also retains more than 90% activity after 1 month when stored at 38°C (100°F). Do not let freeze.

VII. INACTIVATION:

FIBREZYME LWT can be inactivated by raising the pH above 11.0 or temperature above 71°C (160°F) or a combination of the two.

VIII. PACKAGING:

FIBREZYME LWT is packaged in 240 kg polyethylene drums.

IX. TECHNICAL SERVICE:

Information covering specific applications for this product is available from your Dyadic International, Inc. sales/technical representative. We will work with you to enhance processes and solve problems, in addition to assisting you in achieving the end result desired. Call your sales/technical representative for any questions, comments, or help that you need!

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