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# **FibreZyme<sup>Ô</sup> LBR**

## **Product #922**

### ***Patent #5,811,381***

(Considerations in applications for Pulp and Paper Processing.)

#### **I. INTRODUCTION:**

**FibreZyme<sup>TM</sup> LBR** is an enzyme complex that selectively modifies cellulosic papermaking fibers under the proper processing conditions. **FibreZyme<sup>TM</sup> LBR** is a stable, liquid formulation operating between a broad range of pH 6.0 – 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 ± 1.0  
Density: 1.15 – 1.25 g/ml

#### **III. PRODUCT CAPABILITIES:**

When applied as directed in this bulletin, **FibreZyme<sup>TM</sup> LBR** can help to accomplish the following:

1. Enhance fiber strength.
2. Reduce refining energy requirements.
3. Increase refining capacity and throughput.
4. Increase inter-fiber bonding and paper strength properties.
5. Reduce paper machine steam usage and increase paper machine production rates.
6. Improve paper formation.
7. Enhance process water quality, thereby reducing the need for felt/wire washing chemicals, contaminant control agents, strength resins, and other wet end chemicals.
8. Reduce wastewater treatment demand and improve wastewater COD/BOD ratios.

#### **IV. PROCESSING CONDITIONS: GENERAL**

**FibreZyme<sup>TM</sup> LBR** will function from a pH of 6.0 – 8.0, making it a product very adaptable to most existing pulp and papermaking processes.

**FibreZyme<sup>Ô</sup> LBR** will function from 25°C – 60°C (77°F – 140°F). Higher operating temperature results in higher enzymatic activity allowing lower enzyme dosage for a particular application.

## **V. RECOMMENDATIONS FOR USAGE:**

1. **FibreZyme Ô LBR** is added at a dosage between 100 – 200 grams/ton (metric ton) of dry pulp. Dosage will depend on the furnish, process temperature, pH and retention times. The enzyme is applied before the paper machine refiner(s) at a point resulting in a pulp contact time of 30 minutes or longer. In mills using recycled fiber as a furnish, the feed point is often the hydra-pulper.
2. **FibreZyme Ô LBR** is formulated to be dosed automatically neat or diluted using a diaphragm pump.
3. Under normal operating conditions, the use of **FibreZyme LBR** will result in lower refiner loads, higher refiner throughput, and reduced paper machine steam consumption. It may also be necessary to re-calibrate refiner loads against final sheet properties, not pulp freeness, as refiner curves may become modified reflecting the affect of the product's beneficial activity.

## **VI. STORAGE CONDITIONS/ACTIVITY:**

Product shelf life of **FibreZyme Ô LBR** is a minimum of one year, if stored in a controlled environment at 25°C (77°F) or lower . Do not allow product to freeze.

## **VII. INACTIVATION:**

**FibreZyme Ô LBR** can be inactivated by raising the pH above 11.0 or temperature above 71°C (160°F) or a combination of the two. Oxidizers such as peroxide can be used to inactivate the enzyme. In the pulp and paper process, **FibreZyme Ô LBR** is inactivated in the dryers at the paper machine. No residual enzymatic activity will be found in the manufactured paper.

## **VIII. PACKAGING:**

**FibreZyme Ô LBR** is packaged in 60 kg and 240 kg polyethylene drums, and 1000 kg totes.

## **IX. TECHNICAL SERVICE:**

Information covering specific applications for this product is available from your Dyadic International (USA), 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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