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FIBREZYME™ BL 10,000

Product #921

Patent #5,811,381

(Considerations in applications for Pulp and Paper Processing)

I. INTRODUCTION:

FIBREZYME™ BL 10,000 is a liquid xylanase (carbohydrase enzyme) preparation that will selectively modify Kraft brown stock fibers to reduce the bleach consumption under normal bleaching conditions. **FIBREZYME™ BL 10,000** is a stable form of xylanase operating between a broad range of pH (6 – 9) and temperature (30°C – 75°C, 86°F – 167°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 and with the support of your Dyadic International (USA), Inc. sales/technical representative, **FIBREZYME™ BL 10,000** can be utilized to accomplish the following:

1. Reduce 1st D or D/C bleach stage chemical usages by 15 to 30% while maintaining brightness targets
2. Increase final pulp brightness by 1 to 3 points at equivalent chemical usages
3. Reduce caustic usage in the E stage
4. Cook to a higher kappa number while maintaining final brightness targets, thereby increasing digester yield
5. Decrease vessel and ray cells
6. Increase final pulp viscosity due to reduced chemical usage.

IV. PROCESSING CONDITIONS: GENERAL

FIBREZYME™ BL 10,000 will function from a pH of 6 – 9, making it a product very adaptable to most oxygen delignified and non-oxygen delignified Kraft softwood and hardwood pulps, including but not limited to pine, fir, hemlock, eucalyptus, and mixed hardwoods.

FIBREZYME™ BL 10,000 will function from 30°C – 75°C (86°F – 167°F). Please note that higher operating temperatures within this range results in higher enzymatic activity, requiring lower enzyme dosage for a particular application.

FIBREZYME™ BL 10,000 needs an incubation time of 0.5 to 5 hours with the brown stock fiber prior to bleaching. Please note that a longer retention times generally result in a lower optimum enzyme dosage for a particular application.

V. RECOMMENDATIONS FOR USAGE:

1. **FIBREZYME™ BL 10,000** is added at a dosage of 250 – 375 grams/ton (metric ton) of dry pulp. Dosage will depend on furnish type, process temperature, pH and retention times. The enzyme normally is dosed after prior to the brown stock storage tower located before the bleach plant.
2. **FIBREZYME™ BL 10,000** is formulated to be automatically dosed neat or diluted using a diaphragm pump.
3. Under normal operating conditions, the use of **FIBREZYME™ BL 10,000** will reduce bleach plant chemical usages (ClO₂, Cl₂, NaOH, H₂O₂, & O₂), improve pulp refining, decrease vessel elements, and/or reduce paper machine steam consumption.
4. Optimal enzyme performance can be maintained with controlled process pH of 7 – 8.5 and temperature between 50°C – 65°C (122°F and 149°F).

VI. STORAGE CONDITIONS/ACTIVITY:

Product shelf life of **FIBREZYME™ BL 10,000** is a minimum of one year if stored in a controlled environment at 25°C (77°F) or lower. Do not let freeze.

VII. INACTIVATION:

FIBREZYME™ BL 10,000 can be inactivated by raising the pH above 11. Oxidizers such as hypochlorite, chlorine dioxide, and peroxide can also effectively inactivate the enzyme. Therefore, normal bleaching operations will inactivate the enzyme.

VIII. PACKAGING:

FIBREZYME™ BL 10,000 is packaged in 60 kg and 240 kg polyethylene drums and 1200 kg tote bins.

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!

Nothing disclosed is to be construed as a recommendation to use our products in violation of any patents. The information presented is believed to be accurate. However, said information and products are offered without warranty or guarantee, except as to the composition and purity stated herein since the ultimate conditions of use and variability of the materials treated is beyond our control. We recommend that the prospective user determine the suitability of our materials and suggestions before adopting them on a commercial scale. The goods described herein are sold as is and with all faults. The seller specifically disclaims all warranties in connection with the sale of the goods, both express and implied, including, without limitation, the warranties of merchantability and fitness for any particular purpose, as those terms are defined in the uniform commercial code of Florida. The seller shall not be liable for any incidental or consequential damages whatsoever.