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## **BrewZyme LP**

### **PRODUCT #459**

(For Consideration in Food, Brewing and Animal Feed Applications)

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

**BrewZyme LP** is a acid beta-1,3-1,4-gluconase/cellulase produced by the fermentation of non-GMO *Trichoderma longibrachiatum* (formerly *Trichoderma reesei*). This is a non-GMO, non-hazardous, food grade, and Kosher certified product. Products of this origin are used world-wide as processing aids in baking, starch-gluten separation, alcohol fermentation and animal feed. Its high level of beta-1,3-1,4-gluconase / cellulase allows it to break down non-starch polysaccharides (NSP) including arabinoxylans and beta-glucans in barley, wheat, rye, triticale and other certain cereals. It should be noted that without such enzyme process aids the use of complex small grains can result in problems such as reduced starch utilization.

#### **II. PHYSICAL PROPERTIES:**

Appearance: Medium to dark amber liquid (Color does not affect or reflect activity)

Odor: Slight fermentation odor

pH (1% soln):  $4.5 \pm 0.5$

Density: 1.15 – 1.25

Guaranteed Activity: Beta-Gluconase 15,000 to 18,500 Units/g

Side Activities (typical): Cellulase 55,000 to 65,000 Units/g

Additional Side Activities: xylanase, pectinase, mannanase, xylogluconase, laminarase,  $\beta$ -glucosidase,  $\beta$ -xylosidase,  $\alpha$ -L-arabinofuranosidase, amylase, protease

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

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

1. Decrease the viscosity of  $\beta$ -glucans, xylans, and arabinoxylans from barley, wheat, and other small complex grains.
2. Break down complex carbohydrates within plant cell walls to increase utilization of barley, wheat, and other small complex grains.
3. Improve extraction of high-value products such as  $\beta$ -glucans/sugars and starch.
4. Include higher rates of lower quality, lower cost grains to reduce total costs.

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

The use of an enzyme concentrate requires special handling and measuring considerations due to its low usage rate compared to the total quantity of substrate treated:

1. Dilution of the concentrate by an enzyme distributor or end user at a rate of 1:5 to 1:10 if needed.
2. Inclusion of the diluted or concentrated enzyme product into the brewing, food, or animal feed process.
3. The recommended dosage of the **BrewZyme LP** is between 20 and 200 grams/metric ton of treated substrate. Please contact your Dyadic representative for additional dosage recommendations.
4. In analytical tests the maximal enzyme activity is displayed at temperature of 40°C to 57°C and pH of 4.2 to 6.5.

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

**BrewZyme LP** has less than a 10% activity loss after 4 months when stored at 25°C (77°F) out of direct sunlight and in the original, closed container.

**BrewZyme LP** also has less than a 10% activity loss after 1 month when stored at 38°C (100°F).

#### **VI. INACTIVATION:**

**BrewZyme LP** can be inactivated by raising the pH above 8.0 or the temperature above 90°C or a combination of the two.

#### **VII. PACKAGING:**

**BrewZyme LP** is packaged in 25 kg or 1200 kg containers.

#### **VIII. TECHNICAL SERVICE:**

Information covering specific applications for this product is available from your Dyadic International sales/technical representative. We will work with your technical personnel to resolve problems and optimize your process.

#### **IX. SAFETY AND HANDLING:**

For detailed information please refer to the **BrewZyme LP** MSDS available upon request.

*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.*