



OPTIMASH® PHYTASE

Phytase for Dry Grind Ethanol Production

DESCRIPTION

OPTIMASH® PHYTASE is a concentrated phytase solution characterized by its ability to efficiently hydrolyze phytate under ethanol fermentation conditions.

TYPICAL CHARACTERISTICS

Activity: 42,000 FTU/g (target)

Appearance: Brown Liquid

pH: 4.0 - 5.5

Specific gravity: 1.17 - 1.20 g/ml

The activity of OPTIMASH® PHYTASE enzyme is expressed in phytase units (FTU). One phytase unit (FTU) is defined as the amount of enzyme needed for the release of 1 μmol of inorganic orthophosphate from the substrate in one minute under the given reaction conditions of pH 5.5 and 37°C.

A detailed assay method is available upon request.

PERFORMANCE BENEFITS

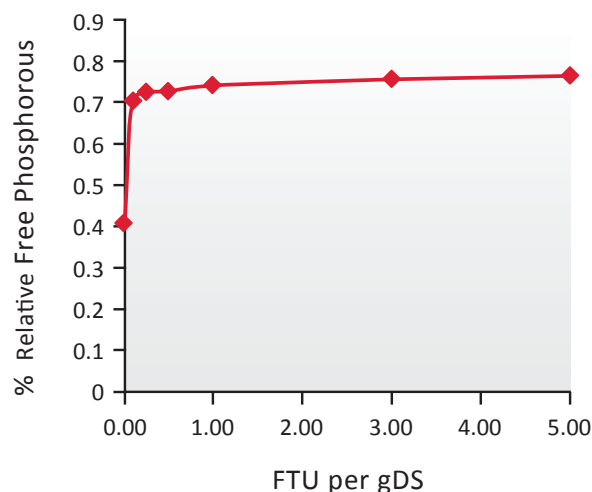
OPTIMASH® PHYTASE enzyme provides the following benefits to ethanol producers:

- Generates inositol*, an important yeast nutrient
- Maximizes the level of free phosphate in residuals (DDGS)
- Improves the heat transfer characteristics of plant heat exchangers

**Determining the effects of inositol supplementation and the opil mutation on ethanol tolerance of *Saccharomyces cerevisiae*," Erin L. Krause, Manuel J. Villa-García, Susan A. Henry, Larry P. Walker. Industrial Biotechnology. October 2007, 3(3): 260-268. doi:10.1089/ind.2007.3.260.

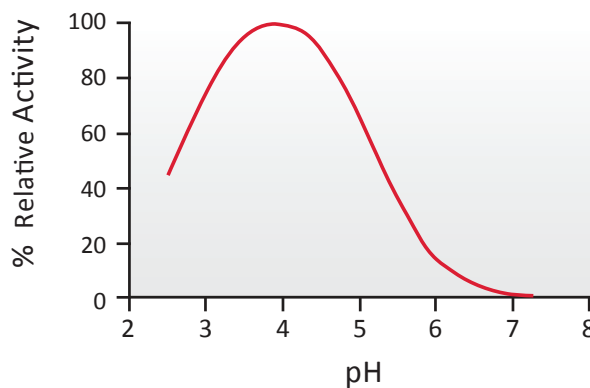
EFFECT OF OPTIMASH® PHYTASE DOSE ON FREE PHOSPHOROUS AT DROP

Fermentation conditions: 48 hours, 32°C, 4.8 initial pH

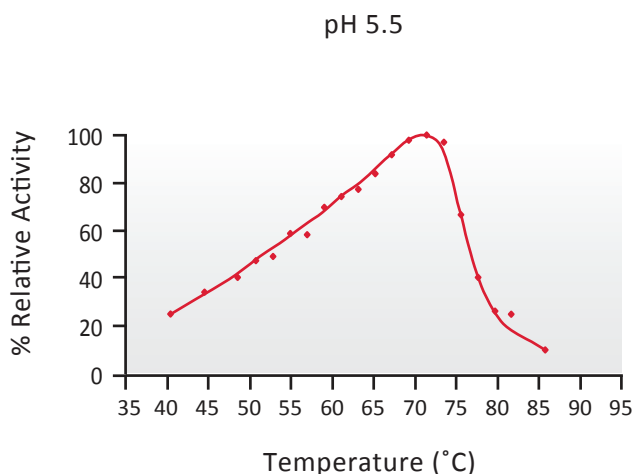


EFFECT OF PH ON OPTIMASH® PHYTASE ACTIVITY

Temp 37°C



EFFECT OF TEMPERATURE ON OPTIMASH® PHYTASE ACTIVITY



RECOMMENDED OPERATIONAL CONDITIONS	
Optimum pH range	3.5 - 5.0
Dry Substance	26 - 38%
Temperature	The enzyme is effective up to 70°C, but works well at fermentation temperatures of 28 - 35°C

OPTIMASH® PHYTASE enzyme functions effectively during typical simultaneous saccharification and fermentation (SSF) conditions: pH 3.5 to 5.0 and temperatures as low as 28°C. The product should be added in a single dose as early as possible to the propagation tank or the fermentor.

DOSAGE GUIDELINES

The optimum dosage levels of OPTIMASH® PHYTASE will vary with different substrates and operating conditions such as pH, temperature, and reaction time. An OPTIMASH™ PHYTASE dosage rate of 0.0024 kg per metric ton DS grain is recommended as a starting point for the optimizing of enzyme dosage.

REGULATORY STATUS

OPTIMASH® PHYTASE complies with the current recommended purity specifications for food-grade enzymes given by the Joint FAO/WHO Expert Committee on Food Additives (JECFA) and the Food Chemical Codex (FCC).

PACKAGING

OPTIMASH® PHYTASE is available in various package sizes. Please consult your DuPont representative for detailed information.

STORAGE

OPTIMASH® PHYTASE will meet the declared activity upon arrival at your plant. OPTIMASH® PHYTASE can be safely stored in sealed containers under cool conditions.

SAFETY & ENZYME HANDLING

Inhalation of enzyme dust and mists should be avoided. In case of contact with the skin or eyes, promptly rinse with water for at least 15 minutes.

For detailed handling information, please refer to the appropriate Material Safety Data Sheet, the Enzyme Technical Association (ETA) handbook *Working Safely With Enzymes*, and the Association of Manufacturers and Formulators of Enzyme Products (AMFEP) handbook *Guide to the Safe Handling of Microbial Enzyme Preparations*. All are available upon request from DuPont.

TECHNICAL SERVICE

DuPont is committed to working with customers to enhance processes and achieve their goals. More detailed information about the application of this product is available upon request. If you have any questions, please call us and let us know how we can be of assistance.

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