



Distizym® P7

Neutral bacterial proteinase for protein degradation in distilling mashes from farinaceous raw materials

Product Description

Distizym® P7 is a special enzyme for protein degradation in distilling mashes from farinaceous raw materials. The enzyme is produced from a specially selected strain of *Bacillus subtilis*. The main activity of the enzyme is based on a proteinase (EC. 3.4.2x.xx n.a.¹). In addition to this Distizym® P7 contains non-standardized amounts of valuable bacterial α -amylase and β -glucanase.

Distizym® P7 is tested by specialized laboratories for purity and quality.

Aim of Treatment

Improvement of yeast nutrition by additional release of assimilable nitrogen compounds. Prevention of protein deposits in mash vessel, fermentation tank and distilling apparatus.

Product and Effect

As endo enzyme Distizym® P7 hydrolyses peptide bonds under release of soluble peptides and amino acids.

Dosage

The following standard dosages are recommended:

75 mL Distizym® P7/tonne raw material.

In case of a deviation from standard conditions a higher or lower dosage might be required.

Application

Traditional digestion of starch without pressure

Distizym® P7 is dosed into the mash tank before, during or after doughing or milling in the raw material – in the latter case before or at the start of the heating phase. Before adding the enzyme it is diluted with cold water in the ratio of 1:1. Distizym® P7 shows a good proteolytic effect already at a temperature as of 30 °C and a strong proteolytic effect as of 50 °C. Dependent on the heating rate, a more or less long proteolysis rest is kept at a mash temperature of 55-65 °C before reaching the final temperature. The addition of calcium (in form of $\text{Ca}(\text{OH})_2$, CaCl_2 , etc.) in amounts of 20-40 ppm related to pure calcium, at first activates the enzyme and, in addition to this, effects a stabilisation at temperatures as of 50 °C. However, the addition of calcium in sufficient amounts is mostly already made when applying the liquefying, dextrinizing amylases. The same applies to a pH-correction of the distilling mash in cases when the mash pH-value is below 5.0.

Traditional High Pressure Cooking Methods (Henze-cooker, low-temperature methods, etc.):

After blowing out, Distizym® P7 is added - diluted with cold water – into the hot mash, as soon as the temperature has dropped to 65 °C. A short proteolysis rest is recommended in a temperature range between 55 °C and 65 °C. In this case an additional calcium addition is equally unnecessary since calcium must be added anyway when the bacterial amylases are applied. The same applies to a pH-correction of the distilling mash.

Special pressure/thermo processes (High Pressure Cooking Process according to Michurin etc.):

Distizym® P7 can also be applied in High Pressure Cooking Processes. This is the case for example in the High Pressure Cooking Process (at 5-6 bar respectively 150-160 °C), when, after pressure release in the steam separator, the mash is continuously cooled down to temperatures below 65 °C and is transferred into the saccharification vat. A promoting addition of calcium (in form of $\text{Ca}(\text{OH})_2$, CaCl_2 , etc.) is usually carried through with the application of liquefying amylases. In case of other high pressure cooking methods with a continuous cooling of the mash, as for instance, the Jet-Cooker method, Distizym® P7 is applied in a similar way: it is added during the liquefaction of starch by amylases at temperatures as of 65 °C. An additional calcium fortification is again not necessary because calcium is added when bacterial amylases are applied.

Storage

Optimum storage conditions at 0-10 °C. Higher storage temperatures result in a shorter shelf life. Temperatures above 25 °C must be avoided. Reseal opened packagings tightly and use up as soon as possible.

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General Characteristics

Enzyme characteristics: the activity range of the enzyme is between pH 5.0 and 10.0, the optimum is at pH 7.0 in the presence of calcium. The temperature range is between 25 °C and 70 °C, the optimum is at 55 °C.

The diagrammes 1 and 2 show the influence of temperature and pH-value on the enzyme activity of Distizym® P7.

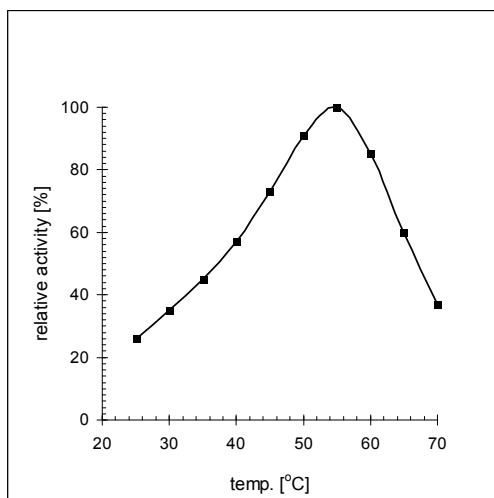


Fig 1: Influence of temperature on activity
(2 % casein solution; pH 7.0).

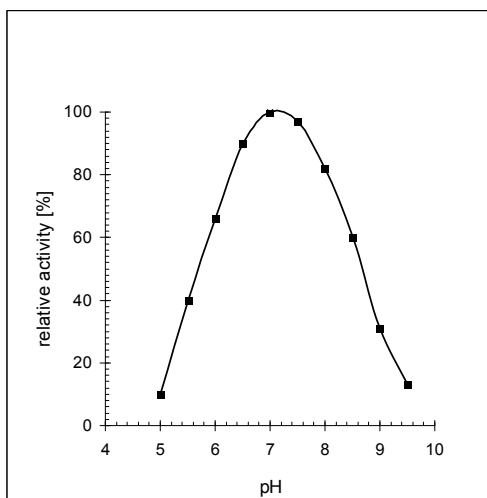


Fig 2: Influence of pH-value on activity
(2 % casein solution; 55 °C).