



# Beerzym® Saphir

Thermotolerant, pH-tolerant fungal special enzyme for the degradation of beta-glucans and proteins in beer with year-related quality fluctuations

## Product description

Beerzym® Saphir is a special enzyme used in beer production for the degradation of beta-glucans and proteins. These can lead to problems such as higher turbidity in the beer or poor filter life due to blocking of the filter. Another field of application is the regeneration of filter cartridges and crossflow membranes. Here the enzyme is used to release proteins that cause the filter cartridges or membranes to "block".

Beerzym® Saphir is an endoenzyme that hydrolyses 1.4-glycosidic bonds in cellulose, lichenins and other -glucans, as well as in pentosans, which are found especially in unmalted and malted cereals. Proteins are converted into peptides and amino acids by hydrolysis. The enzyme is effective in a wide temperature range of 5 - 70 °C and at pH values of pH 2.0 - 6.0.

When applying Beerzym® Saphir the food regulations of the individual countries currently in force have to be adhered to. The use of Beerzym® Saphir is not permitted according to § 9 Abs. 6 of the preliminary beer law (BierG) and thus within the scope of the German purity law.

## Dosage

The following standard dosages are recommended:

Beerzym® Saphir is diluted with cold water, yet the pH-value should not exceed pH 5.5. It is also possible to add Beerzym® Saphir as first component into the fermentation tank or continuously into the cooled wort flow to the fermentation tank. Alternatively, the required enzyme dosage is added into the yeast propagation tank during yeast pre-propagation, respectively during pumping over from fermentation into storage tank.

80 - 120 mL Beerzym® Saphir/ton wheat, barley or malt (with losses in quality)

110 - 150 mL Beerzym® Saphir/ton rye / dinkel (spelt wheat) /oat

5 - 35 mL Beerzym® Saphir/hL green beer or beer in ageing

For filter cartridge or Crossflow-Membrane regeneration:

0.3 - 0.5 % Beerzym® Saphir in the final liquid cycle (always calculate with 100 % activity when calculating the enzyme quantity)

In case of a deviation from standard conditions a higher or lower dosage might be required. The recommended use of the product refers to a malt or cereal-based mash and should only be used for this purpose.



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Enzyme characteristics: the Beerzym® Saphir activity range of the  $\beta$ -glucanase/pentosanase is between pH 2.5 - 7.0, the optimum is at pH 5.0, the activity range of the acidic proteinase is between pH 1.5 - 6.5, with the optimum at pH 3.0. The temperature range of the enzyme is between 25 - 75 °C (77 - 167 °F) regarding the  $\beta$ -glucanase/pentosanase, the temperature optimum is at 55 °C (131 °F), regarding the acidic proteinase it ranges from 20 - 75 °C (68 - 167 °F), with the optimum at 60 °C (140 °F).

The diagrams 1 and 2 show the influence of temperature and pH value on the  $\beta$ -glucanase/pentosanase activity of Beerzym® Saphir.

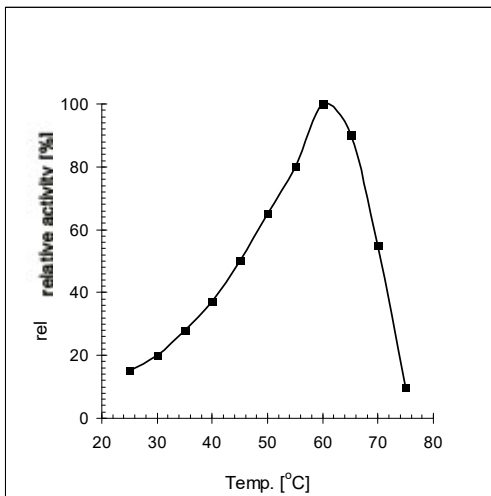


Fig. 1: influence of temperature on the  $\beta$ -glucanase activity (barley glucan/xylan, pH 5.0).

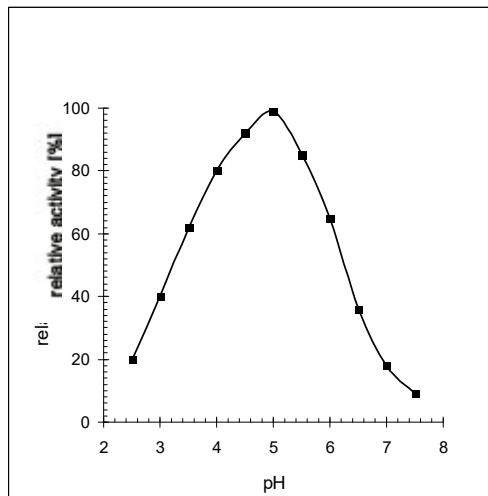


Fig. 2: influence of the pH-value on the  $\beta$ -glucanase activity (barley glucan/xylan, 55 °C).

The diagrams 3 and 4 show the influence of temperature and pH-value on the acidic proteinase activity of Beerzym® Saphir.

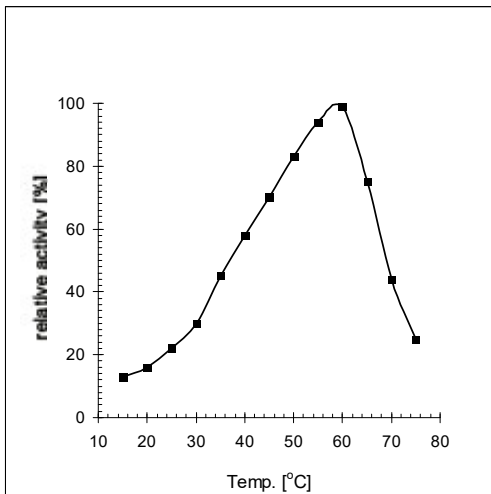


Fig. 3: influence of the temperature on the acidic proteinase activity (0.5 % casein solution, pH 3.0).

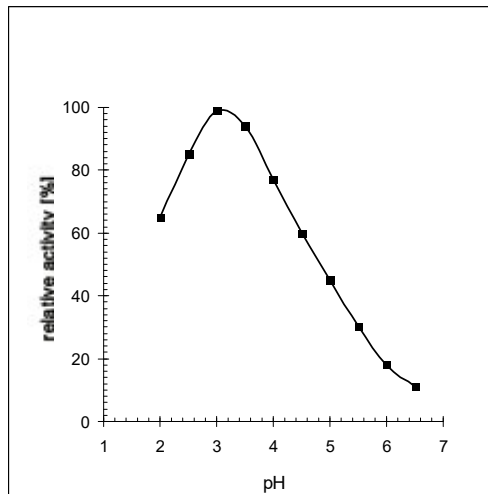


Fig. 4: influence of the pH-value on the acidic proteinase activity (0.5 % casein solution, 60 °C).

## Storage

Optimal storage is at 0 - 10 °C/32 - 50 °F. Higher storage temperatures lead to reduced shelf life. Avoid temperatures above 25 °C (77 °F). Reseal opened packagings tightly and use up soon.

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