

## Product Description

Beerzym CHILL is a special liquid enzyme to increase the degree of protein modification (Kolbach index) in brewing mashes and for chillproofing of finished beer, active in the temperature range between 4 °C (39.2 °F) and 70 °C (158 °F). The enzyme is produced from the latex of *Carica papaya* (papaya melons). The main activities of the enzyme are papain and chymopapain (peptidyl-peptidhydrolases: EC 3.4.22.2). Beerzym CHILL is tested by specialized laboratories for purity and quality.

## Aim of Treatment

In the mash, improvement of extract yield and degree of protein modification (Kolbach index), which leads to a better foam stability/head retention. Additionally the chillproofing is improved by application of the enzyme to the mash. When applied in finished beer, Beerzym CHILL results in an improved chill stability of the beer.

## Product and Effect

As an endoenzyme Beerzym CHILL hydrolyzes proteins, peptides, amides and esters, in particular, when alkaline amino acids or leucine or glycine are included in the bonds. Preferably high-molecular, easily coagulable proteins are cleaved into medium-molecular proteins, peptides and amino acids.

## Dosage

Beerzym CHILL is necessary in beer brewing when problems in the quality of the beer are to be expected, due to seasonal conditions affecting the malt used, or when part of the malt is replaced by adjunct (e.g. barley, rice, corn). The dosage of the enzyme depends on the quality of the raw material, the temperature and the reaction time.

Guide value: 20 - 80 ml/ton malt

2 - 4 ml/100 l in beer in ageing

1 - 3 ml/100 l in finished beer

## Application

Dilute Beerzym CHILL with cold water. The enzyme dilution is added directly after milling and mashing in of the malt and/or the adjunct into the mash tun or the mash copper. The enzyme is, in the pH-value of the mash, practically active throughout the entire mashing duration. Only in the subsequent wort boiling Beerzym CHILL is completely inactivated. In case of an application in the finished beer the dosage is added before the final filtration respectively pasteurisation. It is true that enzyme activity slows down at the typical temperatures of ageing and finished beer, however, the lowered activity due to temperature is taken into consideration by including the contact time into the calculation of the dosage so that a good chill stability is also assured at lower ageing temperatures. Due to its high isoelectric point the enzyme protein as such does not flocculate in the pH-range of the beer and therefore does not lead to turbidity. The enzyme remains active even after pasteurisation. Only after approx. 4 weeks of storage of the beer there is, as a result of the denaturation of the enzyme protein, no longer any proteolytic activity detectable.

## Storage

Beerzym CHILL keeps its declared activity up to 36 months if stored optimally (0-10 °C/32-50 °F). Higher storage temperatures result in a shorter shelf life. Temperatures above 25 °C (77 °F) are to be avoided. Reseal opened packagings tightly and use up as soon as possible.

- please turn over -

**Phytogetic  
proteinase to  
improve the  
Kolbach index in  
brewing mashes  
and the  
chillproofing of  
finished beer**

## General Characteristics

Enzyme characteristics: the activity range of the enzyme is between pH 3.5 and 10.5, the optimum is at pH 7.5 in the presence of substrate and reductants. The temperature range of the enzyme is between 4 °C (39.2 °F) and 85 °C (185 °F), the optimum is at 60-70 °C (140-158 °F) in the presence of substrate and reductants.

The diagrammes 1 and 2 show the influence of temperature and pH-value on the enzyme activity of Beerzym CHILL.

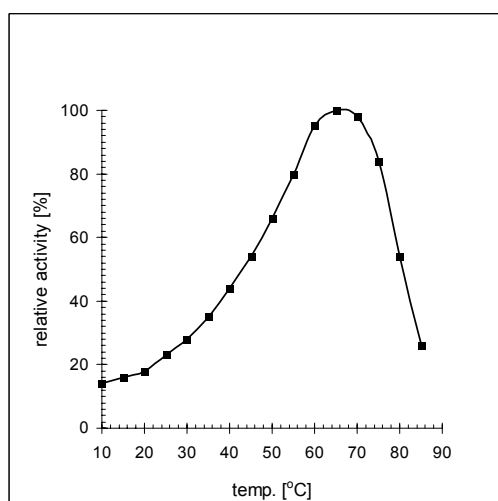


Fig 1: Influence of temperature on activity  
(2% casein solution; pH 6.0).

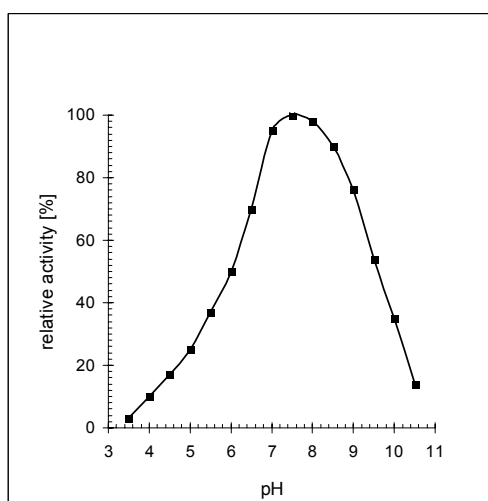


Fig 2: Influence of pH-value on activity  
(2% casein solution; 40 °C (104 °F)).

## Please note:

When applying Beerzym CHILL the food regulations of the individual countries currently in force have to be adhered to.