DISCOVER AND DELIVER

MagiZyme® Papain 6000L

Chill proofing proteolytic enzyme

MagiZyme® Papain 6000L is a food grade proteolytic enzyme preparation isolated from the latex of the *Carica papaya* fruit

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This enzyme preparation has no added sodium metabisulphite. The enzyme has broad substrate specificity and is capable of hydrolysing small peptides as well as proteins. Hydrolysis can proceed to the amino acid stage but not necessarily to completion. The broad substrate specificity of **MagiZyme® Papain 6000L** enables the enzyme to easily and efficiently hydrolyse most soluble proteins.

Including chill-haze formed by positively charged polypeptides combined with polyphenols responsible for haze formation.
MagiZyme® Papain 6000L does not increase the volume of solids and therefore does not create filtration problems and beer losses. **MagiZyme® Papain 6000L** can be used in conjunction with **MagiZyme® PGA** as a foam stabilizer or foam enhancer to counteract possible reduction in foam head.

This enzyme is permitted for general use as a processing aid under **FSANZ Standard 1.3.3 E.C. 3.4.22.2.**

Typical Characteristics

Activity:	≥ 6000 USP U/mg
Appearance:	Liquid (Light tan to brown)
Grade:	Food grade
pH:	4.8 – 6.2
Description:	Proteolytic enzyme

Effect of pH

The pH optimum of MagiZyme® Papain 6000L varies with the nature and concentration of the substrate. In general, the pH range for MagiZyme® Papain 6000L is pH 5.0 to 7.0. The optimum is pH 5.0 – 5.7 for most beers and demonstrates optimum stability over the range of pH 5.0 to 9.0 at 60°C to 70°C. In solution, values below pH 3.5 and above pH 10.0 rapidly inactivate the enzyme.

Optimum pH range:	pH 5.0 to 7.0
Effective pH range:	pH 3.5 to 9.0
pH Stability:	pH 3.5 to 10.0

Effect of Temperature

MagiZyme® Papain 6000L has a temperature optimum range 65 °C to 80 °C. The enzyme is extremely temperature stable in comparison to other proteases. Effective activity is demonstrated over the temperature range of 5 °C to 85 °C. Temperatures above 90 °C rapidly inactivate the enzyme.

Inhibitors

MagiZyme® Papain 6000L is a sulfhydryl enzyme. Catalytic activity depends on the presence of sulfhydryl group at the active site. Oxidising agents, alkylating agents and heavy metals inhibit the enzyme by binding to the thiol group or forming a disulfide bond within the enzyme molecule. MagiZyme® Papain 6000L is rapidly inactivated by iodine, chlorine, iodoacetic acid, cupric oxide, hydrogen peroxide, potassium permangranate and other oxidising agents. Several metal ions

including copper, mercury, lead, zinc and iron, demonstrate inhibitory effects on the protease. The inhibitory effect can be totally reversed by the addition of both cysteine and EDTA.

In Application:
MagiZyme® Papain 6000L exhibits broad substrate specificity and hydrolyses a wide range of peptide bonds. The protease is applicable for the moderate or extensive hydrolysis of proteins and polypeptides and where protein solubilisation and modification are desirable. (gelatine, casein, gluten, collagen, elastin, globulins, muscle fibre, etc.).

Enzyme requirements for achieving best performance rely on key factors such as the physical and chemical properties of the protein substrate, including the substrate concentration, the accessibility of the enzyme to the binding site of the substrate, the desired degree of hydrolysis required and the catalytic

environment such as pH, temperature, and time. To identify best starting point for dose rates, consideration of your processing conditions is paramount to achieving best results.
We recommend laboratory scale tests are undertaken to establish best dose rates that will deliver optimum performance.

Initially evaluate **MagiZyme® Papain 6000L** at 0.05 to 1.0% (w/w). Normally added during the latter part of conditioning period, just before filtration. Total inactivation is during pasteurization.
In general, the rate of substrate hydrolysis is proportional to enzyme concentration and a higher enzyme dose will be required when process temperatures are lower, or when the reaction time is decreased.

Packaging
MagiZyme® Papain 6000L is available in 25 pails, custom pack sizes also available.

Storage and Stability
MagiZyme® Papain 6000L must be stored in unopened and sealed original containers, stored refrigerated at 1°C to

7°C dry and sheltered conditions, away from direct sunlight.

Safety and 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 Material Safety Data Sheet.

Technical Services
Zymus welcomes the opportunity to work with customers offering technical services with the use of our products in application development and optimisation.

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