



# Protease AT-5L

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## **Product information:**

### **Description**

Protease AT – 5L hydrolyses insoluble protein stains into soluble peptides and amino acids which can then be removed easily from fabrics and from medical instruments. It is useful in the removal of common stains such as blood, grass, milk, gravy, etc.

Protease AT – 5L is a highly efficient, fully biodegradable enzyme derived from a selected strain of *Bacillus licheniformis*. The protease works in conjunction with surfactant, builders, and other cleaning chemicals to enhance the removal of most proteolytic stains from all types of surfaces, such as fabrics and medical instruments, under a wide variety of conditions.

### **Typical characteristics**

Activity 500,000 DU/g (minimum)

Appearance: Light brown liquid

Specific gravity 1.0 – 1.1

### **Enzyme properties**

Protease AT – 5L is active over a broad range of pH values from 7.0 – 11.0, as shown in figure 1. Enzyme activities are optimal at pH 9.5 where activity is 100%. The product is diluted into different buffers and then assayed at 60 deg. C (140 deg. F). The exact performance optimum will depend on wash conditions, like temperature, time, soil nature and concentration.

Enzyme activities at temperatures from 25 deg. C – 60 deg. C at a pH of 9.5 are shown in figure 2.

### **Usage in detergent formulations**

The recommended dosage of Protease AT – 5L is typically 0.5% - 1.5% w/w of the liquid detergent formula. Determination of the exact amount of enzyme required for laundry applications should be based upon wash conditions, detergent formula, amount of detergent used/wash and the level of cleaning performance desired.

Protease AT – 5L shows excellent performance characteristics in a wide variety of detergent formulations and is compatible with other enzymes such as amylases, cellulases lipases and mannanases.

Stability in detergent formulations – the composition of a liquid detergent determines the stability of Protease AT – 5L. Protease AT – 5L offers storage stability characteristics identical to or better than conventional proteases. Several factors can influence the stability of this protease enzyme, and the following general rules should be followed to ensure good stability in a detergent formulation:

High ratio of non-ionic to anionic surfactants is preferable

Water content below 40% is advisable

Certain ions such as Ca<sup>++</sup> positively influence the stability of the enzyme

Figure 1

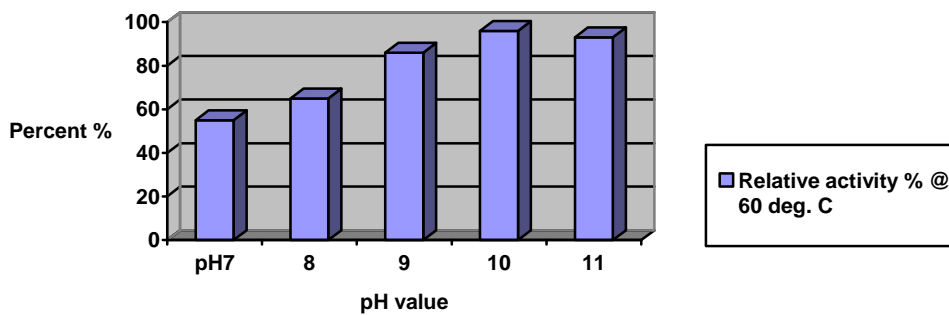
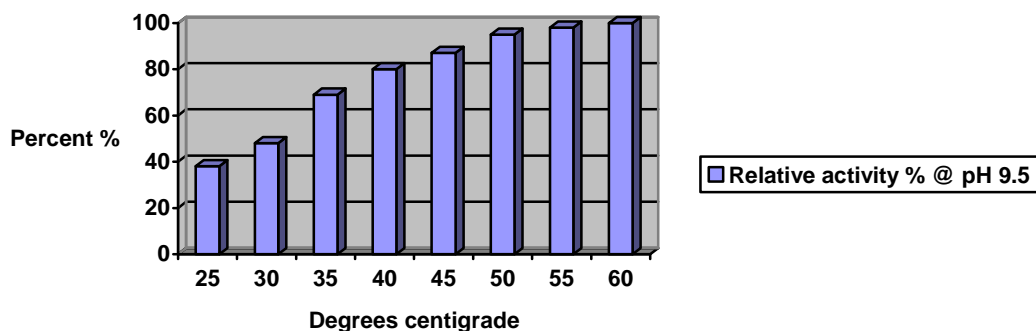


Figure 2



### Packaging

Protease AT – 5L is available in bulk and in 25Kg drums, 220Kg drums, and 1100Kg IBC's

### Storage stability

Protease AT – 5L is formulated for long-term storage stability. Keep below 25 deg. C and out of direct sunlight

**Regulatory status**

Protease AT – 5L is a licheniformis protease with CAS registry no. 9014-01-1. Licheniformis protease is listed on the TSCA, EINECS, DSL, ACOIN, and other regulatory invoices.

**Safety and handling**

Inhalation of aerosols and mists from protease AT- 5L should be avoided. In case of accidental spillage or 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 (MSDS).

**Technical service**

Enzyme Supplies Limited will work with customers to enhance processes and optimise the performance of its enzymes

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