



## Product Information

### **$\alpha$ -Amylase from porcine pancreas**

Product Number **A 2643**  
Storage Temperature 2-8 °C

#### **Product Description**

Enzyme Commission (EC) Number: 3.2.1.1  
CAS Number: 9000-90-2  
Molecular Weight: 51-54 kDa.<sup>1</sup>

$\alpha$ -Amylase isolated from porcine pancreas is a glycoprotein.<sup>2</sup> It is a single polypeptide chain of approximately 475 residues containing 2 SH groups and four disulfide bridges and a tightly bound  $\text{Ca}^{2+}$  necessary for stability.<sup>3,4</sup> Chloride ions are necessary for activity and stability.<sup>5</sup> The pH range for activity is 5.5 to 8.0, with the pH optimum at 7.<sup>6</sup>

$\alpha$ -Amylase hydrolyzes the  $\alpha$ -(1,4) glucan linkages in polysaccharides of three or more  $\alpha$ -(1,4) linked D-glucose units. The  $\alpha$ -(1,6) bond is not hydrolyzed. Starch or glycogen, the "natural" substrates, can be replaced to a limited extent by low molecular weight compounds.<sup>7</sup>

This product has been treated with diisopropyl fluorophosphate (DFP) and is suspended in 3.2 M  $(\text{NH}_4)_2\text{SO}_4$ , pH 6.1.

#### **Precautions and Disclaimer**

For Laboratory Use Only. Not for drug, household or other uses.

#### **Preparation Instructions**

The product is soluble in water (1 mg/ml), yielding a clear, colorless solution.

#### **Storage/Stability**

$\alpha$ -Amylase is stable in 25 mM Tris-HCl, pH 7.5, with 100 mM KCl, at 0 °C or at -20 °C for at least 9 days.<sup>8</sup> Another recommended storage condition is in 1 mM phosphate, pH 7.3, with 30 mM  $\text{CaCl}_2$  at -15 °C.

#### **References**

1. Cozzone, P., et al, Characterization of Porcine Pancreatic Isoamylases Chemical and Physical Studies. *Biochim. Biophys. Acta*, **207(3)**, 490-504 (1970).
2. Beaupoil-Abadie, B., et al, Determination of the Carbohydrate Content of Porcine Pancreatic Amylase. *Biochim. Biophys. Acta*, **297(2)**, 436-440 (1973).
3. Granger, M., et al, Limited Action of Trypsin on Porcine Pancreatic Amylase: Characterization of the Fragments. *FEBS Lett.*, **56(2)**, 189-193 (1975).
4. Steer, M., et al, The Role of Sulfhydryl Groups in the Action and Structure of Mammalian  $\alpha$ -Amylase. *Biochim. Biophys. Acta*, **334**, 389 (1974).
5. Levitzki, A., and Steer, M. L., The Allosteric Activation of Mammalian  $\alpha$ -Amylase by Chloride. *Eur. J. Biochem.*, **41(1)**, 171-180 (1974).
6. Thoma, J. A., et al, in *The Enzymes*, 3rd. ed., vol. V, Boyer, P. D., ed., Academic Press (New York, NY: 1971), pp. 115-189.
7. *Enzyme Handbook*, Vol. II, Barman, T. E., Springer-Verlag (Berlin-Heidelberg: 1969), pp. 560-561.
8. *Enzyme Handbook*, Vol. 4, Schomburg, D., and Salzmann, M., Springer-Verlag (Berlin-Heidelberg: 1991), EC 3.2.1.1, p. 7.

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