

Product Information

Phosphatase, Alkaline from shrimp (*Pandalus borealis*)

Product Number **P 9088**

Storage Temperature Below -20 °C

CAS Number: 9001-78-9

Enzyme Commission (EC) Number: 3.1.3.1

Synonyms: Orthophosphoric-monoester phosphohydrolase (alkaline optimum)

Product Description

Shrimp alkaline phosphatase is a dimeric protein with a molecular weight of approximately 58 kDa as determined by SDS-PAGE.¹

Shrimp alkaline phosphatase catalyzes the hydrolysis of the 5' phosphate from DNA and RNA.^{2,3} The advantage of the shrimp enzyme over the traditional calf intestinal alkaline phosphatase is that it is irreversibly inactivated by heating at 65 °C for 15 minutes. Dephosphorylation of DNA with alkaline phosphatase is commonly utilized prior to labeling with ³²P. It can also prevent recircularization and religation of linear plasmid DNA. Shrimp alkaline phosphatase is active on 5' terminally-phosphorylated protruding, recessive and blunt ends.²

Dephosphorylation should be carried out in 0.05 M Tris-HCl, 5 mM MgCl₂, pH 8.5. After the dephosphorylation reaction, the enzyme can then be inactivated by warming to 60 °C for 15 min.

One unit of enzyme will hydrolyze up to 0.2 pmol blunt-ended 5'-terminal phosphorylated DNA at 37 °C for 60 min.

One unit of enzyme will hydrolyze up to 1 pmol 5'-terminal phosphorylated RNA at 37 °C for 60 min.

One unit of enzyme will hydrolyze up to 1 pmol of either 5'-protruding or 5'-recessive terminally-phosphorylated DNA at 37 °C for 10 min.

Reagent

Supplied as a solution in 50% glycerol containing 25 mM Tris-HCl, pH 7.6, 1 mM MgCl₂ and 0.1 mM ZnCl₂.

Precautions and Disclaimer

This product is for laboratory research use only.

Preparation Instructions

Dilutions can be prepared in 0.05 M Tris-HCl, pH 8.5 containing 5 mM MgCl₂.

Storage/Stability

Shrimp alkaline phosphatase should be stored at -20 °C. To prevent denaturation of the enzyme, avoid repeated freeze-thaw cycles.

Product Profile

Unit Definition: One DEA unit will hydrolyze 1 μmole of 4-nitrophenyl phosphate per min. at pH 9.8 at 37 °C.

Specific Activity: minimum 1,000 DEA units/ml.

Protein content is determined by Biuret.

Rnase, Dnase, and Nickase are not detected.

References

1. Olsen, R., Overbo, K., Myrnes, B., Alkaline phosphatase from the hepatopancreas of shrimp (*Pandalus borealis*): a dimeric enzyme with catalytically active subunits, *Comp. Biochem. Physiol.*, 99B, 755-761, 1991.
2. Sambrook, J., Russell, D.W., *Molecular Cloning: A Laboratory Manual*, 3rd ed., Cold Spring Harbor Laboratory Press, Cold Spring Harbor, New York, 2001.
3. Takanami, M., Analysis of the 5'-terminal nucleotide sequences of ribonucleic acids 1. the 5'-termini of *Escherichia coli* ribosomal RNA *J. Mol. Biol.* **23**, 135 (1967)

DOC 06/27/02

Sigma brand products are sold through Sigma-Aldrich, Inc.

Sigma-Aldrich, Inc. warrants that its products conform to the information contained in this and other Sigma-Aldrich publications. Purchaser must determine the suitability of the product(s) for their particular use. Additional terms and conditions may apply. Please see reverse side of the invoice or packing slip.