

Product Information

Phosphatase, Alkaline

from *Escherichia coli*

Product Number **P 5931**

Storage Temperature -0°C

EC 3.1.3.1

Synonyms: Orthophosphoric-monoester phosphohydrolase (alkaline optimum); alkaline phosphomonoesterase; phosphomonoesterase; glycerophosphatase; alkaline phosphohydrolase; alkaline phenyl phosphatase

Product Description

Alkaline phosphatase, which is normally located in the periplasm of *E. coli*, is a dimeric, zinc and magnesium containing protein. Though the subunits are believed to be coded by the same gene, they develop molecular heterogeneity after translation. The enzyme belongs to a group of phosphohydrolases having an optimal pH for *in vitro* activity of approximately 10. The actual optimum varies depending on the nature and concentration of the substrate, the type of buffer, the phosphate acceptor, and to some extent the nature of the isoenzymes. The enzyme requires divalent ions (Mg^{2+} , Co^{2+} , or Mn^{2+}) as an activator and contains Zn^{2+} as a constituent metal ion. The enzyme is inhibited by chelating agents and inorganic phosphates.

The product is supplied as a lyophilized powder containing Tris buffer salts, MgSO_4 , and ZnSO_4 . The protein content is approximately 50% (Biuret-TCA).

Specific Activity: 30-60 units/mg protein

Unit Definition: One unit will hydrolyze 1 μmole of 4-nitrophenyl phosphate per minute at pH 10.4 at 37°C (in glycine buffer).

The enzyme activity is determined by measuring the increase in absorbance at 410 nm resulting from the hydrolysis of p-nitrophenylphosphate to p-nitrophenol. The reaction is performed in 87 mM glycine buffer with 0.9 mM MgCl_2 , 0.87 mM ZnCl_2 , and 6 mM p-nitrophenyl phosphate at pH 10.4 at 37°C . Immediately before use, the enzyme solution is prepared at 0.1-0.2 unit per ml of cold 1.0 mM MgCl_2 .

Precautions and Disclaimer

This product is for laboratory research use only. Please consult the Material Safety Data Sheet for information regarding hazards and safe handling practices.

Preparation Instructions

The product is soluble in 1 mM MgCl_2 (1 mg/ml), yielding a clear, colorless solution.

Storage/Stability

The product is stable for 4 years when stored desiccated at -0°C .

References

1. Takanami, M., Mol. Biol., **23**, 135-148 (1967).
2. Sambrook, J., et al., in Molecular Cloning: A Laboratory Manual, (Cold Spring Harbor, NY: 1989), p 5.72.
3. Mossner, E., et al., Hoppe Seyler's Z. Physiol. Chem., **361**, 543-549 (1980).
4. Reid, T.W., et al., Enzymes, **3**, 373-416 (1971).
5. Anderson, R.A., et al., PNAS, **72**, 2989-93 (1975).
6. Malamy, M.H., and Horecker, B.L., Biochemistry, **3**, 1893-1897 (1964).
7. Stadtman, T.C., Alkaline phosphatases. in The Enzymes, 2nd ed., vol. 5, Boyer, P.D., et al., eds, Academic Press (New York, NY: 1961), pp. 55-71.

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