

Product Information

Phosphatase, Alkaline from *Escherichia coli*

Lyophilized powder, 30-60 units/mg protein (in glycine buffer)

P5931

CAS Registry Number: 9001-78-9

Enzyme Commission (EC) Number: 3.1.3.1

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

Storage Temperature: -20 °C

Molecular Mass: ~94 kDa¹

Product Description

Alkaline phosphatase is a dimeric metalloprotein, containing zinc and magnesium, that catalyzes the hydrolysis and the transphosphorylation of various phosphomonoesters. In *E. coli* specifically, alkaline phosphatase is normally located in the periplasm.¹⁻¹⁴ Though the subunits are believed to be coded by the same gene, the subunits develop molecular heterogeneity after translation.

The enzyme belongs to a group of phosphohydrolases that have an optimal pH for *in vitro* activity of ~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. As the enzyme generally requires divalent ions (Mg²⁺, Co²⁺, or Mn²⁺) as an activator and contains Zn²⁺ as a constituent metal ion, chelating agents and inorganic phosphates inhibit the enzyme.

Several dissertations have cited use of this product in their research.^{15,16}

Precautions and Disclaimer

This product is for R&D use only. Not for drug, household, or other uses. Please consult the Safety Data Sheet for information regarding hazards and safe handling practices.

Product

The product is supplied as a lyophilized powder containing Tris buffer salts, MgSO₄, and ZnSO₄.

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 that results from the hydrolysis of *p*-nitrophenylphosphate to *p*-nitrophenol. The reaction is performed in 87 mM glycine buffer with 0.9 mM MgCl₂, 0.87 mM ZnCl₂, 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/mL of cold 1.0 mM MgCl₂.

Preparation Instructions

The product is soluble in aqueous solution with 1 mM MgCl₂ (1 mg/mL), yielding a clear, colorless solution.

Storage/Stability

The product has a recommended rested date of 4 years when unopened and properly at -20 °C. This product may be stored under desiccator conditions.

References

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