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 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**

Related Products

Substrates
SIGMA FAST™ p-Nitrophenyl Phosphate Tablets, To prepare 20 ml (Product Code N 2770)
SIGMA FAST™ p-Nitrophenyl Phosphate Tablets, To prepare 5 ml (Product Code N1891)
4-Methylumbelliferyl Phosphate (4-MUP) Liquid Substrate System (Product Code M 3168)

Inhibitors
1,10-Phenanthroline monohydrate (Product Code P 9375)
Diethylenetriaminepentaacetic acid (Product Code D 6518)
Ethylene glycol-bis(2-aminoethylether)-N,N,N',N'-tetraacetic acid (Product Code E 4378)
Ethylenediaminetetraacetic acid disodium salt dihydrate (Product Code ED2SS)

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