Phosphatase, Alkaline
from bovine intestinal mucosa

Catalog Number A2356
Storage Temperature 2–8 °C

CAS RN 9001-78-9
EC 3.1.3.1
Synonyms: alkaline phosphomonoesterase, phosphomonoesterase, glycerophosphatase, alkaline phosphohydrolase, alkaline phenyl phosphatase, orthophosphoric-monoester phosphohydrolase (alkaline optimum)

Product Description
Bovine intestinal alkaline phosphatase is a dimeric, membrane-derived glycoprotein. At least three isoforms exist, which typically possess two N-linked and one or more O-linked glycans per monomer. The enzyme requires zinc, and magnesium or calcium divalent ions for activity.

Alkaline phosphatase has a broad specificity for phosphate esters of alcohols, amines, pyrophosphate, and phenols. It is routinely used to dephosphorylate proteins and nucleic acids.

K_M:
1.5 x 10^-3 M (p-Nitrophenyl phosphate)
19 x 10^-3 M (phosphoenolpyruvate)

Molecular mass: 140–160 kDa
Extinction co-efficient: E_278 = 7.6–10.5
Isoelectric point: 4.4–5.8

pH Optimum: The enzyme is most stable in the pH range 7.5–9.5. The pH optimum for enzymatic activity is pH 8–10. The pH optimum will change depending upon substrate, substrate concentration, and ionic concentration. The enzyme activity for this product is determined at pH 9.8 (diethanolamine buffer enzyme assay).

Applications of alkaline phosphatase include conjugation to antibodies and other proteins for ELISA, Western blotting, and histochemical detection.

Alkaline phosphatase may be used to dephosphorylate the 5’-termini of DNA or RNA to prevent self-ligation. DNA or RNA can also be tagged with radiolabeled phosphate (via T4 polynucleotide kinase) after dephosphorylation with alkaline phosphatase. It has also been used to dephosphorylate casein and other proteins.

Inhibitors:
Chelating agents, arsenate, cysteine, iodine, inorganic phosphate, pyrophosphate, disopropyl phosphate, triphenylphosphate, disopropyl fluorophosphate, and L-phenylalanine.

Levamisole (Catalog Number L9756) is typically used to inhibit endogenous alkaline phosphatase activity, while only slightly inhibiting the intestinal enzyme.

This product is supplied as a solution in 50% glycerol containing 5 mM Trizma® HCl, 5 mM MgCl₂, and 0.1 mM ZnCl₂, pH 7.0

Specific Activity: ≥6,000 units/mg protein (DEA units)

Unit Definition: One DEA unit will hydrolyze 1 μmole of 4-nitrophenyl phosphate per minute at pH 9.8 at 37 °C. One glycine unit is equal to ~3 DEA units.

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.

Preparation Instructions
Dilute solutions of alkaline phosphatase should be prepared in 10 mM Trizma-HCl, pH 8.0, 1-5 mM MgCl₂, and 0.1-0.2 mM ZnCl₂. 50% Glycerol can be included for long-term storage at 2–8 °C.

Storage/Stability
Store the solution, as supplied, at 2–8 °C. The product remains active for at least 1 year.
References


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