

Product Information

Phosphatase, Acid from potato

Lyophilized powder, ≥ 0.5 units/mg solid**P3752**

Product Description

CAS Number: 9001-77-8

Enzyme Commission (EC) Number: 3.1.3.2

Synonyms: Acid phosphatase, APase, Orthophosphoric-monoester phosphohydrolase (acid optimum)

Molecular mass:³ ~69 kDaCarbohydrate residues (%):³

- Mannose: 5.0
- Glucosamine: 3.6
- Rhamnose: 3.4
- Glucose: 2.5
- Galactose: 1.5

pH Optimum:³ 5.0–5.3pH Range:⁴ 4–7

Temperature optimum: 37 °C

Substrates:^{3,5}

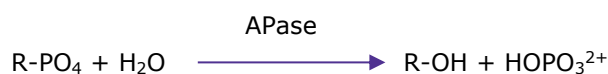
- α -glycerylphosphate
- ATP
- Fructose-6-phosphate
- Inorganic pyrophosphate
- Glucose-6-phosphate
- *p*-nitrophenyl phosphate

 K_M (mM):³

- *p*-nitrophenyl phosphate: 1.25
- Inorganic pyrophosphate: 40.0

Activators:⁶ Cu^{2+} , Mg^{2+} , Mn^{2+} , Zn^{2+} , Hg^{2+} (< 0.4 mM)Inhibitors:^{3,6} Al^{3+} , Hg^{2+} (> 0.4 mM), MoO_4^{2-} , Zn^{2+} , urea

Acid phosphatases (APase) are a family of enzymes that non-specifically catalyze the hydrolysis of monoesters and anhydrides of phosphoric acid to produce inorganic phosphate at an optimum pH of 4 to 7, by the following general reaction:

Their function in the production, transport, and recycling of phosphate is critical for the metabolic and energy transduction processes of the cell. As a group, APases may be as important as kinases in regulatory processes.¹Plant APases have been localized in the cytosol, vacuoles, and cell walls. One key role is phosphate acquisition to mobilize organic phosphates in the soil.² Phosphate starvation also induces APase generation.Potato tuber APase is a monomeric glycoprotein. The carbohydrate component makes up 16.6% of the molecular mass.³ Several publications⁷⁻¹³ have cited use of product P3752 in their research protocols.

Precautions and Disclaimer

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.

Reagent

Specific activity: 0.5-3.0 units/mg solid

Unit definition: One unit will hydrolyze 1.0 μmole of *p*-nitrophenyl phosphate per minute at pH 4.8 at 37 °C.

APase is assayed spectrophotometrically in a 1.1 mL reaction mixture containing 41 mM citrate buffer, pH 4.8 at 37 °C, 6.9 mM *p*-nitrophenyl phosphate, and 0.015-0.025 unit APase.

Preparation Instructions

APase is soluble in cold water (0.15-0.25 unit/mL). Prepare solutions immediately before use.

One publication cites preparation of stock solutions of this APase product in 0.1 M acetate buffer (pH 5.6), at 6.25 mg of this product per 1 mL of buffer.¹⁴ Alternatively, another publication has prepared 6.25 mg/mL stock solutions of this same enzyme in 0.4 M acetate buffer (pH 5.6).¹⁵

Storage/Stability

Store the product at -20 °C. When stored at -20 °C, the enzyme retains activity for at least one year.

In solution, APase can lose half its activity after 30 minutes at 60 °C, and 100% of its activity after two hours at 70 °C.³

References

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