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ProductInformation

Pyrophosphatase, inorganic
from baker's yeast (*S. cerevisiae*)

Product Number **I 1643**
Storage Temperature -0 °C

Product Description

Enzyme Commission (EC) Number: 3.6.1.1
CAS Number: 9024-82-2
Molecular Weight: 71 kDa[1]
Extinction Coefficient: $E^{1\%}$ = 14.5 (280 nm)[2]
pI: 4.75[2]
Synonyms: Inorganic Pyrophosphatase, PPi, Pyrophosphate phosphohydrolase

Inorganic pyrophosphatase from baker's yeast is a homodimer consisting of two equal subunits of molecular weight 32-35 kDa.[2,3]
Inorganic pyrophosphatase catalyzes the following reaction:

Pyrophosphate + H_2O $\rightarrow$ 2- Orthophosphate

This ubiquitous enzyme serves to drive metabolic reactions that produce pyrophosphate, since these reactions typically have equilibrium constants near unity. The catalytic mechanism has been described in the literature.[3] Inorganic pyrophosphatase is a metalloprotease that requires Mg^{2+} for maximal activity. Although the hydrolysis of inorganic pyrophosphate is specific in the presence of Mg^{2+}, both ADP and ATP can be hydrolyzed if zinc is present. The following metals can act as activators: $Mg^{2+} > Zn^{2+} > Co^{2+} > Mn^{2+} > Ca^{2+}$.[2,3,4]

Inorganic pyrophosphatase from yeast is strongly inhibited by EDTA.[2]

Precautions and Disclaimer

For Laboratory Use Only. Not for drug, household or other uses.

Preparation Instructions

The lyophilized powder contains approximately 85% buffer salts (Tris, citric acid and magnesium chloride). This product is soluble in deionized water (2 mg/ml), yielding a clear and colorless solution.

Storage/Stability

A frozen solution containing Mg^{2+} is stable for at least one year at -20 °C.

References

1. Specifications and Criteria for Biochemical Compounds, 3rd ed., National Academy of Sciences (Washington, DC: 1972), p. 108.
2. Butler, L. G., in The Enzymes, 3rd ed., Vol. IV, Boyer, P. D., ed., Academic Press (New York, NY: 1971), pp. 529-540.
3. Cooperman, B. S., The mechanism of action of yeast inorganic pyrophosphatase. Methods Enzymol., **87(pt. C)**, 526-548 (1982).
4. Knight, W. B., et al., Investigations of the metal ion binding sites of yeast inorganic pyrophosphatase. J. Biol. Chem., **259(5)**, 2886-2895 (1984).

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