

# Product Information

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## Apyrase, High Activity from potato (*S. tuberosum*)

Catalog Number **A2230**  
Storage Temperature  $-20\text{ }^{\circ}\text{C}$

CAS RN 9000-95-7  
EC 3.6.1.5

### Product Description

Apyrase has adenosine 5'-triphosphatase and adenosine 5'-diphosphatase activities. There are at least two isoenzymes present in different varieties of *S. tuberosum*:<sup>1,2</sup> one with a high ATPase/ADPase ratio ( $\sim 10$ ) and another with a low ratio ( $\sim 1$ ). The two isozymes are glycoproteins with approximately the same molecular mass, 49 kDa (gel filtration)<sup>2</sup> and 45 kDa ( $\gamma$ -ray inactivation).<sup>3</sup>



Isoelectric point:<sup>2</sup>

pI = 8.74 (Pimpernel isoform)  
pI = 6.69 (Desiree isoform)

Divalent metal ions are required for activity and best activity is observed with calcium ion at 5 mM.

Optimal pH:<sup>2</sup> pH 6.0, (50% activity at pH 4.6 and 8.4)  
For hydrolysis of organic di- and triphosphates, the optimal pH is 6, and for inorganic substrates, the optimal pH is 5.1.

This product is derived from red potatoes and supplied as a lyophilized powder containing  $\geq 30\%$  protein with the balance potassium succinate buffer salts. It contains predominately the Desiree isoform.

Specific Activity:

ATPase  $\geq 600$  units/mg protein  
ADPase  $> 50\%$  of base activity  
Acid phosphatase  $\leq 2\%$  of base activity

Unit Definition: One unit will liberate 1.0  $\mu\text{mole}$  of inorganic phosphate from ATP or ADP per minute at pH 6.5 at  $30\text{ }^{\circ}\text{C}$ .

### Precautions and Disclaimer

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

### Preparation Instructions

This product is soluble in water (1 mg/ml).

To prepare solutions of  $< 1$  mg/ml, dissolve the product in HEPES buffer, pH 7.5, containing 1 mM  $\text{MgCl}_2$ , 1 mM DTT, 1 mM EDTA, and 1 mg/ml bovine serum albumin.

### Storage/Stability

Store the product at  $-20\text{ }^{\circ}\text{C}$ . When stored at  $-20\text{ }^{\circ}\text{C}$ , the enzyme retains activity for at least one year.

An enzyme solution ( $\geq 1$  mg/ml in water) retains activity stored frozen in aliquots. This solution retains activity between pH 5–7. Outside this pH range, activity is lost rapidly.

Repeated freeze-thaw cycles and room temperature exposure for several hours will result in loss of activity. A solution of apyrase stored at  $2\text{--}8\text{ }^{\circ}\text{C}$  will gradually form a black insoluble precipitate with nearly the same activity as the soluble form.

### References

1. Molnar, J., and Lorand, L., Studies on Apyrases. Arch. Biochem. Biophys., **93**, 353 (1961).
2. Kettlun, A., et al., Properties of Two Apyrases from *Solanum tuberosum*, Phytochemistry, **21**, 551 (1982).
3. Traverso-Cori, A., et al., Arch. Biochem. Biophys., **109**, 173 (1965).

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