

Product Description

Pyrophosphatase, Inorganic GMP-grade is a recombinant inorganic pyrophosphatase expressed and purified from *E. coli*. It catalyzes the hydrolysis of inorganic pyrophosphate (PPi) to orthophosphate (Pi). During in vitro transcription, the enzyme hydrolyzes PPi generated as a by-product of the reaction, relieving its inhibitory effect on the transcription reaction and shifting the equilibrium toward RNA product formation. Addition of this enzyme in in vitro transcription reactions significantly improves RNA yield.

Components

Components	Cat. No.	Quantity	Volume
Pyrophosphatase, Inorganic GMP-grade (0.1 U/μL)	GMP-BP-E03-10	10 U	100 μL
	GMP-BP-E03-100	100 U	1 mL
	GMP-BP-E03-1K	1 KU	10 mL

Storage

Store at -20±5°C.

Product Information

Product Name	Pyrophosphatase, Inorganic GMP-grade
Source	Recombinant <i>E.coli</i>
Activity	0.1 U/μL
Unit Definition	One unit(U) is defined as the amount of enzyme required to catalyze the hydrolysis of inorganic pyrophosphate(PPi) to produce 1 μmol of inorganic phosphate (Pi) per minute.
Storage Buffer	50 mM Tris-HCl (pH=7.9), 100 mM NaCl, 10 mM DTT, 1 mM EDTA, 0.1%(v/v)Triton X-100, 50%(v/v)glycerol

Quality control

1. Solution appearance: clear and transparent, free of visible particulate matter.
2. Activity>0.1 U/μL.
3. Protein purity≥95%.
4. Free of exogenous DNase, RNase, exonuclease, and endonuclease activity.
5. Residual host-cell DNA: ≤100 pg/mg.
6. Residual host-cell protein: <50 ppm.
7. Heavy metals<10 ppm.
8. HBV, HCV, HIV, and mycoplasma: not detected.
9. Bacterial endotoxin: <5 EU/mL.
10. pH 7.5-8.5.

Recommended Usage

For in vitro transcription, a typical starting amount of 0.1U per 20 μL reaction (5 U/mL final concentration) is recommended. The amount may be optimized within the range of 0.05–1 U/μL depending on the specific application.

Application

1. Enhancing RNA yield in in vitro transcription reactions.
2. Promoting DNA and protein synthesis.
3. Catalyzing the hydrolysis of inorganic pyrophosphate to orthophosphate.

Notes

1. This enzyme is active in a wide range of reaction buffers and can generally be added directly to the reaction system.
2. The optimal reaction temperature is 25°C. The enzyme is active within the range of 16-37°C and can be inactivated by heating at 65°C for 10 min.
3. The amount of enzyme required should be optimized for each specific application; refer to the Recommended Usage section for guidance.
4. Mix thoroughly before use. Avoid repeated freeze-thaw cycles.