



# Pyrophosphatase, Inorganic (yeast), GMP Grade

Cat No.: GMP-M036

animal-free, ampicillin-free

## 01/ Product Description

Inorganic Pyrophosphatase catalyzes the hydrolysis of inorganic pyrophosphate into two orthophosphates:  $P_2O_7^{4-} + H_2O + PPase \rightarrow 2HPO_4^{2-}$ . Applied in nucleic acid amplification experiments, PPase can hydrolyze the inorganic pyrophosphate generated by the polymerization to avoid its inhibition effect to synthesis of RNA strand.

Pyrophosphatase, Inorganic (yeast) is GMP Grade produced in *E. coli*. Our manufacturing processes are strictly controlled to ensure the end products free from host protein or nucleic acid contaminations and other impurities following the Pharmaceutical Manufacturing Guidelines. We guarantee the manufacturing and quality control comply with GMP regulation for tracking each and every step of the manufacturing process, including raw material sourcing.

This product has completed the DMF record of FDA and passed the HALAL certification.

## 02/ Quality Criterion

Element	Standard
<b>Appearance</b>	Clear and transparent solution
<b>Identification</b>	Positive
<b>Visible Particles</b>	Meet the specification
<b>pH</b>	7.5-8.5
<b>Activity</b>	98U/ml-102U/ml
<b>Purity</b>	≥95%
<b>Protein Content</b>	Meet the specification
<b>Endonuclease Residues</b>	The degradation of substrate was ≤10%
<b>Exonuclease Residues</b>	The degradation of substrate was ≤10%
<b>RNase Residues</b>	The degradation of substrate was ≤10%
<b>Bacterial Endotoxins</b>	<5EU/ml
<b>Exogenous DNA Residues</b>	≤100pg/mg
<b>Host-cell Protein Residues</b>	≤50ppm
<b>Mycoplasma</b>	Negative
<b>Heavy Metals</b>	≤10ppm
<b>Microbial Limit</b>	Total aerobic microbial count≤1cfu/10ml, total yeasts and molds count≤1cfu/10ml

## 03/ Complying to Following Regulations

- ISO 9001:2015, certified facility.
- GMP Appendix – Cellular therapeutic product National Medical Products Administration.
- The Pandect of Genetic Therapeutic Product for Human Chinese Pharmacopoeia Commission.
- USP Chapter <1043>, Ancillary Materials for Cell, Gene, and Tissue-Engineered Products.
- USP Chapter <92>, Growth Factors and Cytokines Used in Cell Therapy Manufacturing.
- Ph. Eur. General Chapter 5.2.12, Raw Materials of Biological Origin for the Production of Cell-based and Gene Therapy Medicinal Products.

For Research or Manufacturing Use Only

Novoprotein Scientific Inc.

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## 04/ Product Feature

1. Hydrolysis of inorganic pyrophosphate.
2. Facilitate Synthesis of DNA.
3. Increase RNA production in vitro synthesis.
4. Thermostability: optimum reaction temperature at 25°C; Inactivation, at 65°C, for 10 mins.

## 05/ Application

1. For IVT, increase yield rate of RNA.
2. For PCR, increase yield rate of DNA.
3. Remove contamination of PPi in reagent of SNP genotyping by method of pyrophosphate assay.
4. Facilitate the synthesis of protein, RNA and DNA.
5. Catalyze the reaction of PPi + H<sub>2</sub>O → 2Pi..

## 06/ Definition of the Enzyme Activity

At standard reaction condition, within 1 minute, the amount of enzyme required to generate 1 μmol phosphate from pyrophosphate is defined as one unit of enzyme activity.

## 07/ Buffer for Storage

20mM Tris-HCl, 100mM NaCl, 1mM DTT, 0.1mM EDTA, 50% (v/v) Glycerol, pH 8.0.

## 08/ Storage Conditions

At -20±5°C.

## 09/ Product Packaging

SKU	Size	Components	Volume
GMP-M036-01A	10 U	Pyrophosphatase, Inorganic (yeast), GMP Grade (0.1U/μl)	100μl
GMP- M036-M001	100 U	Pyrophosphatase, Inorganic (yeast), GMP Grade (0.1U/μl)	1ml
GMP- M036-M010	1 KU	Pyrophosphatase, Inorganic (yeast), GMP Grade (0.1U/μl)	10ml
GMP- M036-M050	5 KU	Pyrophosphatase, Inorganic (yeast), GMP Grade (0.1U/μl)	50ml

## 10/ Precautions

1. The enzyme shows bioactivity in various reaction buffers. Usually, the enzyme can be directly added in HDA amplification, LAMP amplification, etc.
2. The amount of the enzyme needs to be optimized in different reactions, possibly functional at a concentration of 0.05 ~ 1U/ml.
3. The optimal reaction temperature of this enzyme is 25°C, it is active at 16 ~ 37°C, and the enzyme can be inactivated by 65°C for 10min.
4. Mg<sup>2+</sup> is indispensable for bioactivity of this enzyme.

## 11/ Related Product

Cat. No.	Product Name	Cat. No.	Product Name
GMP-M062	Vaccinia Capping Enzyme, GMP Grade	GMP-E125	RNase Inhibitor, GMP Grade
GMP-M072	mRNA Cap 2'-O-Methyltransferase, GMP Grade	GMP-E127	DNase I, GMP Grade
GMP-M012	<i>E. coli</i> Poly(A) Polymerase, GMP Grade	GMP-E121	T7 RNA Polymerase, GMP Grade
GMP-S023-026	NTPs, GMP Grade		