Polynucleotide phosphorylase
from *Synechocystis* species strain PCC6803
histidine-tagged, recombinant,
expressed in *Escherichia coli*

Catalog Number N9914
Storage Temperature –70 °C

EC 2.7.7.8

Synonyms: Polyribonucleotide nucleotidyltransferase, PNPase

**Product Description**

Polynucleotide phosphorylase (PNPase) is a bifunctional enzyme with a phosphorolytic 3’ to 5’ exoribonuclease activity and a 3’-terminal oligonucleotide polymerase activity. It is also involved in mRNA processing and degradation in bacteria, plants, and humans.

*Synechocystis* is a species of cyanobacteria. Cyanobacteria are prokaryotes believed to be related to the evolutionary ancestor of the chloroplast. RNA polyadenylation and degradation mechanisms in cyanobacteria and chloroplasts are very similar, but differ from the mechanisms found in *E. coli*.

The *Synechocystis* PNPase enzymatic activity on different nucleotides may require different assay conditions, e.g., maximal polymerization activity was observed with CDP or UDP at 37 °C, pH 9.1; whereas, ADP and IDP polymerization were maximal at 42 °C. GDP polymerization is temperature sensitive and gave the lowest activity of all the nucleotides tested. At 55 °C a more significant GDP polymerization activity was observed.

The subunit molecular mass of PNPase from *Synechocystis* species strain PCC6803 is 80 kDa with an apparent molecular mass (SDS-PAGE) of ~85 kDa.

The product is supplied as a solution in 20 mM HEPES buffer, pH 7.9, with 0.1 mM EDTA, 2 mM DTT, 12.5 mM MgCl₂, 60 mM KCl, and 20% (w/v) glycerol.

Purity: ≥90% (SDS-PAGE)

Specific activity: ≥500 units/mg-protein

Unit definition: One unit will polymerize 1.0 µmole of ADP, releasing 1.0 µmole of inorganic phosphate in 15 minutes at pH 9.1 at 37 °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.

**Storage/Stability**

Store the product at –70 °C. The product is stable for at least 2 years as supplied.

Avoid repeated freezing and thawing. After initial thawing, the enzyme may be kept for up to 2 months at 2–8 °C or should be refrozen at –20 °C in aliquots.

**References**