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# Product Information

**PTPN7, active, GST tagged, human recombinant, expressed in *E. coli* cells**

Catalog Number **SRP5077**
Storage Temperature –70 °C

Synonyms: LC-PTP, LPTP, HEPTP, PTPNI, BPTP-4

## Product Description

PTPN7 gene is preferentially expressed in a variety of hematopoietic cells and is an early response gene in lymphokine stimulated cells.[1] The noncatalytic N-terminus of this PTP can interact with MAP kinases and negatively regulates ERK2 and p38 MAP-kinases activity.[2] PTPN7 was shown to be involved in the regulation of T cell antigen receptor (TCR) signaling, which was thought to function through dephosphorylating the molecules related to MAP kinase pathway.[3]

Recombinant full length human PTPN7 was expressed in *E. coli* cells using an N-terminal GST tag. The gene accession number is NM_002832. Recombinant protein stored in 20 mM MOPS, pH 7.5, 50 mM NaCl, 10 mM glutathione, 0.25 mM DTT, 0.1 mM PMSF, and 30% glycerol.

Molecular mass: ~67 kDa

Purity: 70–95% (SDS-PAGE, see Figure 1)

Specific Activity: 820–1,110 nmole/min/mg (see Figure 2)

## 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

The product ships on dry ice and storage at –70 °C is recommended. After opening, aliquot into smaller quantities and store at –70 °C. Avoid repeated handling and multiple freeze/thaw cycles.

**Figure 1.**
SDS-PAGE Gel of Typical Lot
70–95% (densitometry)

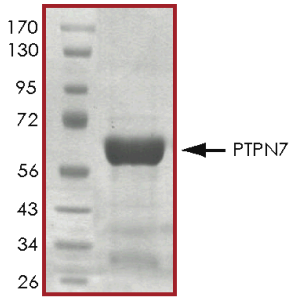
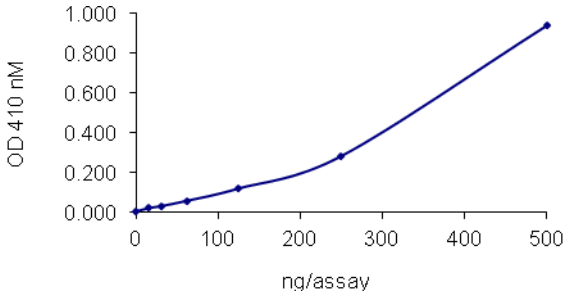



**Figure 2.**
Specific Activity of Typical Lot
820–1,110 nmole/min/mg



**Procedure**

Preparation Instructions

Phosphatase Assay Buffer – 125 mM HEPES, pH7.2, 250 mM NaCl, and 12.5 mM EDTA.

Phosphatase Dilution Buffer – Dilute the Phosphatase Assay Buffer 5-fold with a 5 mM DTT and 65 ng/µl BSA solution.

Phosphatase Solution – Dilute the active PTPN7 (0.1 µg/µl) with Phosphatase Dilution Buffer to the desired concentration.
Note: The lot-specific specific activity plot may be used as a guideline (see Figure 2). It is recommended the researcher perform a serial dilution of active PTPN7 for optimal results.

Stopping Solution – 2 M NaOH

Substrate Stock Solution – Prepare 500 mM *p*-nitro-phenyl phosphate (pNPP) Substrate Stock Solution by dissolving 131.5 mg of pNPP in 1 ml of Phosphatase Dilution Buffer. Store at –20 °C. Avoid direct light exposure.

Substrate Assay Solution – Prepare 50 mM pNPP Substrate Assay Solution by diluting the Substrate Stock Solution 10-fold with Phosphatase Dilution Buffer. Prepare fresh before assay.

Phosphatase Assay

1. Prepare sufficient Substrate Assay Solution.
2. Thaw the active PTPN7 and Phosphate Dilution Buffer on ice.
3. In a pre-cooled microcentrifuge tube, add the following reaction components:
   10 µl of Phosphatase Solution
   20 µl of 50 mM pNPP Substrate Assay solution
   170 µl of Phosphatase Dilution Buffer
4. Set up a blank control as outlined in step 3, substituting 10µl of Phosphatase Dilution Buffer for the Phosphatase Solution.
5. Initiate each reaction by incubating the mixture in a water bath at 37 °C for 20 minutes.
6. After the 20 minute incubation, stop the reaction by the addition of 50 µl of 2 M NaOH Stopping Solution.
7. Measure the absorbance of the reaction solution in a spectrophotometer at 405 nm.
8. Determine the Phosphatase specific activity.

Calculations:

1. Specific Phosphatase Activity (SA) (nmole/min/mg)

$$\text{nmole/min/mg} = \frac{Pv \times OD_{405nm}}{\varepsilon \times d \times T \times Pm}$$

Pv - Phosphatase volume (µl)
ε - extinction coefficient (17.8 µl/nmole/cm)
d - pathlength of light (cm)
T - incubation time (min)
Pm - Phosphatase amount (mg)

**References**


1. Adachi, M. et al., Protein-tyrosine phosphatase expression in pre-B cell NALM-6. Cancer Res., **52**, 737-740 (1992).
2. Pettiford, S.M. et al., The MAP-kinase ERK2 is a specific substrate of the protein tyrosine phosphatase HePTP. Oncogene, **19**, 858-69 (2000).
3. Oh-hora, M. et al., Direct suppression of TCR-mediated activation of extracellular signal-regulated kinase by leukocyte protein tyrosine phosphatase, a tyrosine-specific phosphatase. J. Immunol., **163**, 1282-1288 (1999).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