

# User Manual

Version 2.0

**Product name:** DNA polymerase, *thermotoga neapolitana*

**Cat #:** DPTN-100, DPTN-200, DPTN-OEM

## Description:

Due to its thermostable nature, DNA polymerase from *thermotoga neapolitana* was identified (1) as an enzyme to be able to withstand the protein-denaturing conditions (such as high temperature), which are required during PCR (2). Similar to *E. coli* DNA polymerase I, but unlike *Taq* DNA polymerase, *Tne* DNA polymerase contains both 3'→5' and 5'→3' exonuclease activity. Therefore, it replaced the DNA polymerase from *E. coli* that was originally used in PCR (3). The optimum temperature for activity of *Tne* DNA polymerase is 75-80°C, with a half-life of 9 minutes at 97.5°C, and can replicate a 1000 bp strand of DNA in less than 10 seconds at 72°C (4).

The DNA products have an A (adenine) overhangs at their 3' ends. This may be useful in TA cloning, whereby a cloning vector (such as a plasmid) that has a T (thymine) 3' overhang is used, which complements with the A overhang of the PCR product, thus enabling ligation of the PCR product into the plasmid vector.

## Application:

- PCR (ordinary and high-throughput)
- Primer Extension
- Microarray Analysis
- Denaturing high performance liquid chromatography (DHPLC)

## Source:

*Thermotoga neapolitana* (*Tne*) DNA polymerase belongs to the DNA polymerase I (Pol I) family.

## Recommended Reaction Condition:

94°C, 1 minute. → (94°C, 10 seconds. → 55°C, 30 seconds. → 72°C, 30 seconds.) for 25 cycles.

## Recommended Storage Condition: -20°C

## Reference:

1. Chien A, Edgar DB, Trela JM (1976). "Deoxyribonucleic acid polymerase from the extreme thermophile *Thermus aquaticus*". J. Bact. 127 (3): 15507. PMC 232952. PMID 8432.
2. Saiki, RK; et al. (1988). "Primer-directed enzymatic amplification of DNA with a thermostable DNA polymerase.". Science 239 (4839): 48791. doi:10.1126/science.2448875. PMID 2448875.
3. Saiki, RK; et al. (1985). "Enzymatic amplification of beta-globin genomic sequences and restriction site analysis for diagnosis of sickle cell anemia". Science 230 (4732): 1350 doi:10.1126/science.2999980. PMID 2999980.
4. Lawyer FC, et al. (1993). "High-level expression, purification, and enzymatic characterization of full-length *Thermus aquaticus* DNA polymerase ...". PCR Methods Appl. 2 (4): 27587. PMID 8324500.