

# T4 DNA Polymerase

Cat. Nos. D0602H and D0605H

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### 1. Introduction

T4 DNA Polymerase has both a template-directed DNA polymerase activity, which extends a DNA primer in the 5'→3' direction, and a potent 3'→5' exonuclease activity. The enzyme is often used to convert both 5'-protruding and 5'-recessed DNA termini to blunt ends. T4 DNA Polymerase does not displace oligodeoxynucleotides hybridized to a DNA template, so the enzyme can also be used to introduce site-specific mutations by primer extension of "mutated" oligodeoxynucleotides annealed to a single-stranded template.

The polymerase and exonuclease activities of T4 DNA Polymerase can also be exploited to label the 3' end of DNA molecules by the following method. First, DNA is treated with the enzyme in the absence of deoxynucleoside triphosphates (dNTPs) to partially degrade the 3' end of both DNA strands. Then, radiolabeled dNTPs are added, allowing the enzyme to fill in the single-stranded regions. Strand-specific hybridization probes can then be made by cleaving the double-stranded DNA and purifying the appropriate fragment on a gel.

T4 DNA Polymerase is available in 200- and 500-Unit sizes at a concentration of 5 U/μl. A 10X Reaction Buffer is also provided.

### 2. Product Specifications

**Storage:** Store only at -20°C in a freezer without a defrost cycle.

**Storage Buffer:** T4 DNA Polymerase is supplied in a 50% glycerol solution containing 50 mM Tris-HCl (pH 7.5), 100 mM NaCl, 0.1% Triton® X-100, 0.1 mM EDTA, and 1 mM dithiothreitol (DTT).

**Unit Definition:** One unit converts 10 nmol of dNTPs into acid-insoluble material in 30 minutes at 37°C.

**Activity Assay:** The activity assay is performed in a reaction containing 33 mM Tris-acetate (pH 7.5), 66 mM potassium acetate, 10 mM magnesium acetate, 0.5 mM DTT, 3.5 μg micrococcal nuclease-treated calf thymus DNA, 33.5 μM each dNTP, and 0.01-0.1 Unit of T4 DNA Polymerase.

**10X T4 DNA Polymerase Buffer:** 330 mM Tris-acetate (pH 7.5), 660 mM potassium acetate, 100 mM magnesium acetate, and 5 mM DTT.

**Contaminating Activity Assays:** T4 DNA Polymerase is free of contaminating RNase activity, and any detectable endonuclease activity, as judged by agarose gel electrophoresis following incubation of more than 100 Units of enzyme for 16 hours at 37°C with 1 μg of supercoiled pUC19 DNA.

### 3. Related Products

The following products are also available:

- dNTP Solutions
- T4 DNA Ligase
- End-It™ DNA End-Repair Kit
- GELase™ Agarose Gel-Digesting Preparation

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