

Klenow Fragment DNA Polymerase

Cat. Nos. KP810250 and KP8100K

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1. Introduction

Klenow Fragment DNA Polymerase is a DNA-dependent DNA polymerase with 5'→3' polymerase and 3'→5' exonuclease activities, but lacks the 5'→3' exonuclease activity of *E. coli* DNA Polymerase I¹ from which it is derived. Klenow Fragment DNA Polymerase is often referred to as *E. coli* DNA Polymerase I Large Fragment.

Klenow Fragment DNA Polymerase I is suitable for generating blunt ended pieces of DNA due to its 3'→5' exonuclease activity that removes non-template encoded 3' additions.

Klenow Fragment DNA Polymerase I is available in two sizes, 250 units and 1,000 units, each at concentration of 5 U/μl at a specific activity of >1 x 10⁴ Units/mg. Each is supplied with a 10X Reaction Buffer.

Applications

- Random primer labeling of DNA.²
- DNA sequencing.³
- Second-strand cDNA synthesis.⁴
- Strand displacement amplification.⁵

2. Product Specifications

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

Storage Buffer: Klenow Fragment DNA Polymerase is supplied in a 50% glycerol solution containing 50 mM Tris-HCl (pH 7.5), 100 mM NaCl, 1.0 mM dithiothreitol (DTT), 0.1 mM EDTA, and 0.1% Triton® X-100.

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

10X Reaction Buffer: 0.2 M Tris-HCl (pH 7.5), 50 mM MgCl₂, and 5.0 mM DTT.

Quality Control: Klenow Fragment DNA Polymerase is function-tested in a reaction containing 20 mM Tris-HCl (pH 7.5), 5 mM MgCl₂, 0.5 mM dithiothreitol, 10 μg of denatured activated calf thymus DNA, 2.5 μM each dNTP, and varying amounts of Klenow Fragment DNA Polymerase.

Contaminating Activity Assays: Klenow Fragment DNA Polymerase is free of detectable endonuclease and RNase activities.

3. Kit Contents

Cat. #	Concentration	Quantity
Klenow Fragment DNA Polymerase		
KP810250	5 Units/μl	250 Units
KP8100K	5 Units/μl	1,000 Units
Each supplied with a 10X Reaction Buffer		

4. Related Products

The following products are also available:

- Exo-Minus Klenow DNA Polymerase
- DNA Polymerase I, *E. coli*
- dNTP Solutions

5. References

1. Lehman, I.R. (1981) *The Enzymes Academic Press* **14**, 16.
2. Feinberg, A.P. and Vogelstein, B. (1984) *Anal. Biochem.* **137**, 266.
3. Sanger, F. *et al.*, (1977) *Proc. Natl. Acad. Sci. USA* **74**, 5463.
4. Sambrook, J. *et al.*, (1989) *Molecular Cloning: A Laboratory Manual (2nd ed.)* New York: Cold Spring Harbor Laboratory Press.
5. Walter, N.G. (1995) *J. Mol. Biol.* **254**, 856.

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