

## KlenTherm™ DNA Polymerase

**FOR RESEARCH USE ONLY**

**Cat. GC-001-1000**

### DESCRIPTION

KlenTherm™ DNA polymerase is thermostable polymerase corresponding to the KlenTaq polymerase described by W. M. Barnes. It is a N-terminally truncated Taq DNA polymerase. As expressed from a gene construct in E.coli, translation initiates at Met236, bypassing the 5'-3' exonuclease domain of the DNA polymerase-encoding gene. This deletion leaves a highly active and even more heat-stable DNA polymerase activity. Repeated exposure to 98°C, in the recommended reaction buffer, does not seem to diminish the enzyme activity. Significant activity remains even after exposure to 99°C. The full length enzyme does not tolerate these treatments.

You can use KlenTherm™ DNA polymerase also for Long-PCR up to 35 kb in combination with thermostable proof-reading polymerases (e.g. AccuTherm™). GeneCraft offers several mixtures of KlenTherm™ DNA polymerase called Synergy™.

In special applications KlenTherm™ DNA polymerase has proven better specificity than regular Taq polymerase. This results in minimising of unspecific DNA amplification products.

KlenTherm™ DNA polymerase is similar to, yet distinct from, USB Taq and Cetus Stoffel fragment. You will need more KlenTherm than Taq protein if the nucleic acid incorporation is more than 500 bp. KlenTherm™ DNA polymerase is shipped at higher (10 u/μl) concentration, so that it can easily incorporate 2 kb, if the same quantity is used as for full-length Taq. The use of KlenTherm™ is especially recommended for amplifications of small fragments from genomic DNA.

The 10x reaction buffer (on request with or without MgCl<sub>2</sub>) is delivered free of charge. KlenTherm has a very low 3'-A-Overhang-adding activity.

### APPLICATION

**Fidelity:** The relative mutation rate during polymerization is twofold lower for KlenTherm as compared to the full-length Taq DNA polymerase

**Long PCR:** KlenTherm™ in combination with a Pfu DNA polymerase (AccuTherm™) exhibiting a proof-reading activity can amplify up to 35 kb DNA fragments.

**Mutation analysis:** KlenTherm™ has a reduced tendency to extend a mismatched 3'-oligonucleotide end making it suitable for mutation analysis with mutationspecific oligos (ARMS analysis).

### CONCENTRATION

**10 units/μl.**

### UNIT DEFINITION

One unit is defined as the amount of enzyme that incorporates 10 nmoles of dNTPs into acid insoluble form in 30 min at 72.C under the assay conditions 25 mM TAPS (tris-(hydroxy-methyl)-methyl-amino-propanesul-fonic acid, sodium salt) pH 9.3 (at 25.C), 50 mM KCl, 2 mM MgCl<sub>2</sub>, 1 mM β-mercaptoethanol) and activated calf thymus DNA as substrate.



<b>STORAGE BUFFER</b>	10 mM K-phosphate buffer pH 7,0; 100 mM NaCl; 0,5 mM EDTA; 1 mM DTT; 0,01% Tween 20; 50% glycerol (v/v).
<b>REACTION BUFFER</b>	500 mM KCl, 100 mM Tris-HCl (pH 9 at 25°C), 1% Triton X100, 3.5 mM MgCl <sub>2</sub> .
<b>STORAGE TEMPERATURE</b>	Store KlenTherm™ DNA polymerase below 0°C, preferably at -20°C, in a constant temperature freezer.

**FUNCTIONAL ANALYSIS**                      *Tested functionally in a unit activity test.*

## REFERENCE

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2. Detection of Alternatively Spliced Transcripts in Leukemia Cell Lines by Minisequencing on Microarrays. *Clinical Chemistry* . 52: 202-211, 2006
3. Yuanyuan Xiao, etc. A multi-array multi-SNP genotyping algorithm for Affymetrix SNP microarrays. *Bioinformatics*. 2007 23(12):1459-1467.
4. Eduard Akhunov, etc. Single nucleotide polymorphism genotyping in polyploid wheat with the Illumina GoldenGate assay. *Theor Appl Genet*. 2009 Aug;119(3):507-17.
5. Daniel C. Chen, etc. Comparison of GenFlex Tag array and Pyrosequencing in SNP genotyping. *J Mol Diagn*. 2003 Nov;5(4):243-9.
6. Michael M. Shi. Enabling large-scale pharmacogenetic studies by high-throughput mutation detection and genotyping technologies. *Clin Chem*. 2001 Feb;47(2):164-72.

