Taq DNA Polymerase

(Enzyme and buffer only)

1. Catalog No.

Cat. No	Product	Size
K0560010	Taq DNA Polymerase I	1000U
K0560050	Taq DNA Polymerase I	5000U
K0560310	Taq DNA Polymerase II ($MgCl_2$ Free Reaction Buffer)	1000U
K0560350	Taq DNA Polymerase II ($MgCl_2$ Free Reaction Buffer)	5000U

2. Storage

1 year at -20°C

3. Contents

Taq DNA Polymerase I

Component	Cat.No	K0560010	K0560050
Taq DNA Polymerase (5U/ul)	K0560010	O (1000U)	-
	K0560050	-	O (5000U)
10X Taq PCR Buffer I (containing $MgCl_2$)	K0561011	O (1.5ml x 4)	O (1.5ml x 20)

Taq DNA Polymerase II

Component	Cat.No	K0560310	K0560350
Taq DNA Polymerase (5U/ul)	K0560310	O (1000U)	-
	K0560350	-	O (5000U)
10X Taq PCR Buffer II	K0561012	O (1.5ml x 4)	O (1.5ml x 20)
$MgCl_2$ Solution (25mM)	K0561041	O (1.0ml x 2)	O (1.0ml x 10)

4. Description

Taq DNA Polymerase is the enzyme from the cloned Thermus aquaticus expressed in E.coli. This unmodified enzyme replicates DNA at 74°C and exhibits a half-life of 40 minutes at 95°C. The enzyme catalyzes the polymerization of nucleotides into duplex DNA in the 5'→3' direction in the presence of magnesium and also possesses a 5'→3' exonuclease activity. Taq DNA Polymerase is recommended for use in PCR but is not recommended for use in DNA sequencing reactions.

- Ultrapure, thermostable recombinant enzyme
- Highly thermostable: 10min at 97°C, 60min at 94°C
- 5'→3' exonuclease activity
- Extra A addition activity
- Amplification range:
  - Lambda DNA: up to 6Kb (Max. 12Kb)
  - Human genomic DNA: up to 2Kb (Max. 4Kb)
- Composition of Taq polymerase and Taq PCR buffer with or without $MgCl_2$
- No Nuclease, RNase, Protease contamination

5. Application

- Amplification of genomic DNA and cDNA targets up to 3kb long
- GC-rich sequences or secondary structures
- TA Cloning
- Differential Display
- Degenerate PCR

6. Unit Definition

One unit is defined as the amount of enzyme required to catalyze the incorporation of 10nmol of dNTPs into an acid-insoluble product in 30 minutes at 74°C.

7. PCR Amplification

1. Add the following reagents to a thin-walled PCR microcentrifuge tube or plate.

Component	Final Concentration	Volume/reaction	
10x Taq PCR Buffer (I or II)	1X	2 μL	5 μL
25mM MgCl2 [a)]	1.5-4.0mM	Variable	Variable
dNTP mix (2.5 mM each)	200uM of each dNTP	1.6 μL	4 μL
5' Primer	0.1 - 0.5 uM	Variable	Variable
3' Primer	0.1 - 0.5 uM	Variable	Variable
Taq DNA Polymerase (5unit/μL)		0.2 μL	0.5 μL
Distilled water		Variable	Variable
Template		Variable	Variable
Total reaction volume		**20 μL**	**50 μL**

Note:

a) The separate $MgCl_2$ solution is supplied with Taq Buffer II only.

2. Mix gently.

3. When using a thermal cycler without a heated lid, add approximately 100ul of mineral oil on top of the mixture.

4. Perform thermal cycling.

Step		Temp.	Time	Cycles
Initial Denaturation		94℃	2-5 min	1
Cycling	Denaturation	94℃	0.5-1 min	25-35
	Annealing	50-68℃	0.5-1 min	
	Extension	72℃	1 min (~1kb/imin)	
Final Extension		72℃	10 min	1

Note:

a. Primers should be 15 to 30 bases in length and near 50% G+C content.
b. For amplification of difficult templates, we recommend you use Magic Buffer. It will improve DNA amplification of templates that have a high G+C content and a high degree of secondary structure. We recommend that the volume added should not exceed 25 %(v/v) of final PCR volume.

5. The amplified DNA can be detected by various electrophoresis techniques. The most common techniques are agarose or polyacrylamide gel electrophoresis depending on the size of the amplicon.