Taq DNA Polymerase Kit

1. Catalog No.

Cat. No	Product	Size
K0561002	Taq DNA Polymerase Kit I	500U
K0561003	Taq DNA Polymerase Kit I	1000U
K0561005	Taq DNA Polymerase Kit II ($MgCl_2$ Free Reaction Buffer)	500U
K0561006	Taq DNA Polymerase Kit II ($MgCl_2$ Free Reaction Buffer)	1000U

2. Storage

1 year at -20°C

3. Contents

Taq Polymerase Kit I

Component	Cat.No	K0561002	K0561003
Taq DNA Polymerase I (5U/ul)	K0561002	O (500U)	-
	K0561003	-	O (1000U)
10X Taq PCR Buffer I ($MgCl_2$)	K0561011	O (3.0ml)	O (6.0ml)
dNTP Mixture (2.5mM each)	K1756011	O (1.0ml)	O (2.0ml)
10X Loading Buffer	K0561051	O (1.0ml)	O (2.0ml)
Nuclease Free Water	K0561061	O (1.0ml)	O (2.0ml)
4X Magic Buffer **(Only use for High G+C content)**	K0561031	O (1.0ml)	O (2.0ml)

Taq Polymerase Kit II

Component	Cat.No	K0561005	K0561006
Taq DNA Polymerase II (5U/ul)	K0561005	O (500U)	-
	K0561006	-	O (1000U)
10X Taq PCR Buffer II	K0561012	O (3.0ml)	O (6.0ml)
$MgCl_2$ Solution (25mM)	K0561041	O (3.0ml)	O (6.0ml)
dNTP Mixture (2.5mM each)	K1756011	O (1.0ml)	O (2.0ml)
10X Loading Buffer	K0561051	O (1.0ml)	O (2.0ml)
Nuclease Free Water	K0561061	O (1.0ml)	O (2.0ml)
4X Magic Buffer **(Only use for High G+C content)**	K0561031	O (1.0ml)	O (2.0ml)

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
- Composition of all optimized reagents for PCR reaction (Taq polymerase, Taq PCR buffer with or without $MgCl_2$, dNTP, loading buffer, nuclease free water and Magic buffer) in separate tubes
- A supply of enhancer (Magic buffer) for GC rich template or secondary structures

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 $MgCl_2$ [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. **Magic Buffer is not necessary for normal G+C content. 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.