

## Taq Pol

### Thermostable DNA polymerase

*Thermus aquaticus*, recombinant, *E. coli*

	Cat. No.	Size	Conc.
	PCR-202S	200 units	5 units/ $\mu$ l
	PCR-202L	1000 units	5 units/ $\mu$ l

For *in vitro* use only

Quality guaranteed for 12 months

Store at -20°C, avoid frequent thawing and freezing

#### Description

Taq Pol is recommended for use in routine PCR reactions. It is optimized for high specificity and guarantees minimal by-product formation. The buffer system is recommended for plate based PCR and automated pipetting.

The enzyme replicates DNA at 72°C. It catalyzes the polymerization of nucleotides into duplex DNA in 5'→3' direction in the presence of magnesium. It also possesses a 5'→3' polymerization-dependent exonuclease replacement activity but lacks a 3'→5' exonuclease activity.

#### Unit definition

One unit is defined as the amount of the enzyme required to catalyze the incorporation of 10 nmoles of dNTP's into an acid-insoluble form in 30 minutes at 70°C using hering sperm DNA as substrate.

#### Recommended PCR assay

50 $\mu$ l PCR assay		
5 $\mu$ l	10x Taq Reaction Buffer complete	green cap
200 $\mu$ M	each dNTP	
0.2-1 $\mu$ M	each Primer	
2-50 ng	Template DNA	
0.2-0.5 $\mu$ l (1-2.5 u)	Taq Pol	red cap
Fill up to 50 $\mu$ l	PCR grade H <sub>2</sub> O	

#### Taq Pol (red cap)

5 units/ $\mu$ l Taq DNA Polymerase in 20 mM Tris-HCl, 100 mM KCl, 0.1 mM EDTA, 1 mM DTT, 0.5% Tween-20, 0.5% Nonidet P-40, 50% Glycerol (v/v), pH 8.0 (25°C)

#### 10x Taq Reaction Buffer complete (green cap)

200 mM Tris-HCl, 500 mM KCl, 15 mM MgCl<sub>2</sub>, pH 8.5 (25°C)

#### 10x Taq Reaction Buffer without MgCl<sub>2</sub> (blue cap)

200 mM Tris-HCl, 500 mM KCl, pH 8.5 (25°C)

#### MgCl<sub>2</sub> Stock Solution (yellow cap)

25 mM MgCl<sub>2</sub>

#### Optimization of MgCl<sub>2</sub> concentration

A concentration of 1.5 mM Mg<sup>2+</sup> is recommended for most applications. For an individual optimization use the reaction buffer without MgCl<sub>2</sub> and add MgCl<sub>2</sub> stock solution as shown in the table below.

50 $\mu$ l PCR assay				
MgCl <sub>2</sub> Stock.	2 $\mu$ l	3 $\mu$ l	4 $\mu$ l	6 $\mu$ l
Final MgCl <sub>2</sub> conc.	1 mM	1.5 mM	2 mM	3 mM

#### Recommended cycling conditions

Initial denaturation	94°C	2 min	1x
Denaturation	94°C	30 sec	30x
Annealing <sup>1)</sup>	45-68°C	30 sec	
Elongation <sup>2)</sup>	72°C	30 sec - 4 min	
Final elongation	72°C	2 min	1x

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- 1) The annealing temperature depends on the melting temperature of the primers used.
- 2) The elongation time depends on the length of the fragments to be amplified. A time of 1 min/kb is recommended.

For optimal specificity and amplification an individual optimization of the recommended parameters may be necessary for each new template DNA and/or primer pair.