For Research Use Only

Reference Guide

# Taq Polymerase Enzyme (5U/µl)

| Catalog | Description |
|---|---|
| HL – Taq – 50 | 250Units |
| Hl – Taq – 100 | 500Units |
| HL – Taq – 200 | 1000Units |

Store at – 20°C
PI/HL – Taq – 01

## Product Description

*Taq* Polymerase Enzyme is a temperature-resistant DNA-dependent polymerase used for the amplification of DNA using Polymerase chain reaction (PCR). It is a thermostable DNA polymerase that has 5'→3' polymerase and exonuclease activity but lacks 3'→5' exonuclease (proofreading) activity. The enzyme is ideal for gene amplifications up to 3kb.

## Source

Modified synthetic *Taq* DNA Polymerase gene from *Thermus aquaticus* is expressed and purified in *E. coli* strain.

## Reagents Supplied

- *Taq* Polymerase Enzyme (5U/µl),
- 10X *Taq* buffer with $MgCl_2$ (1ml)
- 25mM Magnesium Chloride (500µl)

## Unit definition (5U/µl)

One unit is the amount of enzyme required to catalyze the incorporation of 10 nmol of dNTP into acid-insoluble material in 30 minutes at 65°C

## Storage conditions

The recommended storage condition is -20°C.

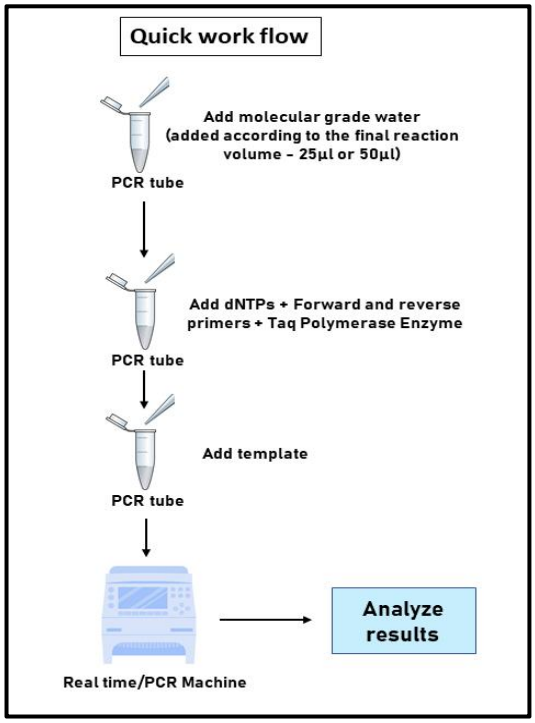
### PCR Protocol

| Component | Volume (µL) |
|---|---|
| 10X *Taq* Buffer with $Mgcl_2$ (10X) | 2.5 |
| 10 mM dNTPs | 0.5 |
| Forward primer (10 pmol/µL) | 0.4-0.7 |
| Reverse primer (10 pmol/µL) | 0.4-0.7 |
| Template DNA | Variable (user defined) |
| *Taq* Polymerase Enzyme (5U/µL) | 0.5 |
| Molecular Grade Water | Make up to 25 |

**Note:** In the above reaction, the concentration of $Mgcl_2$ will be 2.5mM and this can be adjusted according to the experiment with the additional Mgcl2 provided if required

### Recommended PCR Program

| Operation | Temp | Time | Cycles |
|---|---|---|---|
| Initial denaturation | 95°C | 1-5 min | 1 |
| Denaturation | 95°C | 30 sec | 30-35 cycles |
| Annealing | 45-68°C (User defined) | 30-60 sec | |
| Extension | 72°C | 1 min/kb | |
| Final Extension | 72°C | 5-10 min | 1 |




**Notes:**

**$Mg^{+2}$ ions**: *Taq* DNA polymerase effectively amplifies the target with 1.5 mM Mgcl2. However, the reactions can be optimized for DNA samples which may require higher concentrations of $MgCl_2$. Very high levels of $Mg^{+2}$ promote non-specificity while low concentration of $Mg^{+2}$ may reduce the yield.

Reference Guide

**Additive:** The presence of the inhibitors in the samples can affect PCR. Using reagents like DMSO, betaine, etc. can improvise the PCR outcome. However, this should be done with careful standardization

**Template:** Optimal DNA template concentration usually used in PCR is up to 1 ng for both plasmid and phage DNA while 10-15ng for genomic DNA. The higher concentrations of template DNA generate non-specific PCR products whereas lower concentrations affect the PCR amplification

**dNTPs:** Generally, 200µM of each dNTP is recommended for the PCR. However, on a few occasions, higher concentrations of dNTP may be required whereas the concentration of $Mg^{+2}$ has to be adjusted accordingly as $Mg^{+2}$ binds to dNTPs.

**Primers:** The suggested concentration of primers for PCR ranges between 0.1 and 1µM.

## Applications

- Primer extension
- Routine PCR amplification for TA cloning
- DNA sequencing
- RFLP

***We recommend referring to our quick enzyme guide to choose the right enzyme for your needs**

| Taq Polymerase Enzyme | QuickStart Taq Polymerase Enzyme | HotStart Taq Polymerase Enzyme | Klen BST Polymerase Enzyme |
|---|---|---|---|
| Used for endpoint PCR | Real-time PCR and Endpoint PCR | Real-time PCR | Real-time LAMP and LAMP |
| Works with temperature shifts | Works with temperature shifts | Works with temperature shifts | Ideal for isothermal PCRs 60°C – 65°C |
| No activation | 30 seconds activation | 15 minutes activation | No activation |

**Other PCR products from Huwel LifeSciences that you may be interested**

| S.No. | Product description | Catalogue No. |
|---|---|---|
| 1. | Universal PCR Mix (2X) | HL – UPM – 100 – 1.25ml |
| 2. | UltraFast Real Time PCR Mix 5X | HL – UFPCM – 100 – 500µl<br>HL – UFPCM – 200 – 1ml |
| 3 | UltraFast Real Time PCR Mix 5X with UDG | HL – UUFPCM – 100 – 500µl<br>HL – UUFPCM – 200 – 1ml |
| 4 | HotStart Taq Polymerase Enzyme (5U/µl) | HL - HSTaq – 50 – 250Units<br>HL - HSTaq – 100 – 500Units<br>HL - HSTaq – 200 – 1000Units |
| 5 | QuickStart Taq Polymerase Enzyme (5U/µl) | HL - QSTaq – 50 – 250Units<br>HL - QSTaq – 100 – 500Units<br>HL – QSTaq – 1000Units |

**References**


- Chien, A., Edgar, D.B. and Trela, J.M. (1976) *J. Bact.*, 127, 1550-1557
- Kaledin, A.S., Sliusarenko, A.G. and Gorodetskii, S.I. (1980) *Biokhimiya*, 45, 644-651
- Lawyer, F.C. et al. (1993) *PCR Methods and Appl.*, 2, 275-287
- Longley, M.J., Bennett, S.E. and Mosbaugh D.W. (1990) *Nucleic Acids Res.*, 18, 7317-7322


**For further information on protocols and details, please contact our technical support:**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