For Research Use Only

Reference Guide

HotStart Taq Polymerase Enzyme (5U/µl)

Catalog	Description
HL_HSTaq - 50	250Units
HL-HSTaq - 100	500Units
HL-HSTaq - 250	1000Units

Store at - 20°C
PI/HL-HSTaq - 01

Product Description

HotStart *Taq* Polymerase is a chemically modified DNA-dependent polymerase designed to be inactive at room temperature. The active site of HotStart *Taq* Polymerase is blocked by a chemical modification that only gets released at higher temperatures. This technology helps in avoiding unwanted amplification at temperatures below 45°C and thus allows the reactions to be set up at room temperature. The enzyme helps in non-specific amplification and has a 5' -> 3' polymerase activity.

Source

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

Reagents Supplied

- HotStart *Taq* Polymerase Enzyme (5U/µl)
- 10X *Taq* Buffer with $Mgcl_2$ (1ml)
- 25mM Magnesium Chloride (500µl)

Unit definition

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.

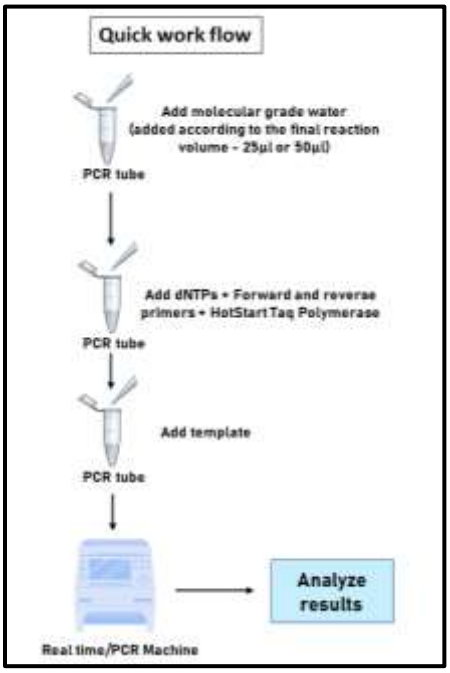
PCR protocol

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)
HotStart *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 $Mgcl^2$ provided if required	

Recommended PCR program

Operation	Temp	Time	Cycles
Initial denaturation	95°C	15 min	1
Denaturation	95°C	15 sec	35-45 cycles
Annealing	45-68°C (User defined)	1 - 5 sec	
Extension	72°C	1min/kb	
Final Extension	72°C	5-10min	1

PCR Protocol



Notes:

Mg^{+2} ions: HotStart *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 no specificity while low concentration of Mg^{+2} may reduce the yield.

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

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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 to 1 µM.

Applications

- Primer extension
- Molecular Biology applications
- DNA sequencing
- Routine PCR amplification for TA cloning
- Amplified fragment length polymorphism

*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 HL – UFPCM – 200 – 1ml
3.	UltraFast Real Time PCR Mix 5X with UDG	HL – UUFPCM – 100 – 500µl HL – UUFPCM – 200 – 1ml
4.	Taq Polymerase Enzyme (5U/µl)	HL - Taq – 50 – 250Units HL - Taq – 100 – 500Units HL - Taq – 200 – 1000Units
5.	Klen Bst Polymerase Enzyme (8U/µl)	HL - KBst – 100 – 800Units HL - KBst – 200 – 1600Units HL – KBst – 400 – 13200Units
6.	QuickStart Taq Polymerase Enzyme (5U/µl)	HL - QSTaq – 50 – 250Units HL - QSTaq – 100 – 500Units HL – QSTaq – 200 – 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.

Our product references
Vinodhini M, Anant Gokarn, Sachin Punata (2020) Blood 136 (Supplement 1): 24 - 25

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