Cat. No.: ETAQ-001

Taq DNA Polymerase

(ETERBIO-EZ-ETAQ-001)

Lot:_____

Expiry Date: yy / mm / dd

Store at -20℃

Origin
E. coli cells that carry the *polA* gene from *Thermus aquatics*.

Specification
Appearance Colorless-liquid
Activity ≧5 U/μl

Functions
Deoxynucleoside triphosphate + DNA(n) = diphosphate + DNA(n+1), 5'-3' polymerase and 5'-3' exonuclease, DNA repair, recombination and replication.

Reagents Supplied with Enzyme
10X Eternal *Taq* Reaction Buffer.

PROPERTIES

Unit Definition
One unit is defined as the amount of enzyme that synthesizes 1 nmol of DNA within 3 minutes at 72℃.

Unit Assay Conditions
1X Eternal *Taq* Reaction Buffer, 125 μM dNTPs and 15 nM primed M13 DNA.

1X Eternal *Taq* Reaction Buffer
10 mM Tris-HCl (pH 8.8), 50 mM KCl, 1.5 mM $MgCl_2$, 0.1% Triton X-100.

Storage Buffer
20 mM Tris-HCl (pH 8.0), 100 mM KCl, 1 mM DTT, 0.1 mM EDTA, 0.5% Tween® 20, 50% Glycerol.

Molecular Weight
Theoretical: 97,000 daltons.

5' - 3' Exonuclease
Yes.

3' - 5' Exonuclease
No.

Storage
Store at -20℃. Stable for 1 year in constant freezer temperature. Store at 4℃ for a few weeks. Avoid repeated freeze-thawing cycles.

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CERTIFICATE OF ANALYSIS

Endonuclease Assay
No conversion of covalently closed circular DNA to nicked form was detected after incubation of 10 units of *Taq* DNA Polymerase with 1 µg of supercoiled plasmid DNA (pUC19) in 1X Eternal *Taq* Reaction Buffer for 4 hours at 37℃.

Exonuclease Assay
No degradation of DNA was observed after incubation of 1 µg of lambda DNA/*Hin*dIII fragments in 1X Eternal *Taq* Reaction Buffer containing 10 units *Taq* DNA Polymerase for 4 hours at 37℃. No degradation of DNA was observed after incubation of 1 µg of lambda DNA/*Hin*dIII fragments in 1X Eternal *Taq* Reaction Buffer containing 10 units *Taq* DNA Polymerase for 4 hours at 70℃.

Functional Assay
Good performance in PCR was tested for amplification of 1.8 kb gene.

USAGE
We recommend assembling all reaction components on ice and quickly transferring the reaction to a thermocycler preheated to the denaturation temperature (95℃).

Component	50 µl reaction	Final Concentration
10X *Taq* Reaction Buffer	5 µl	1X
Primer A	Variable	0.1–1.0 µM
Primer B	Variable	0.1–1.0 µM
10 mM dNTPs	1 µl	200 µM of each dNTP
Template DNA	Variable	< 1.0 µg
Taq DNA Polymerase	0.5 µl	2.5 U/50 µl PCR
Nuclease-free water	to 50 µl	

Thermocycling conditions for a routine PCR.

Step	Temperature	Time
Initial Denaturation	95℃	30 seconds
30 Cycles	95℃ 45-68℃ 72℃	15-30 seconds 15-60 seconds 1 minute/kb
Final Extension	72℃	5 minutes
Hold	4-10℃	

***Mg^{2+} and additives**
The optimal Mg^{2+} concentration of 1.5 mM empirically, as provided in the 1X Eternal *Taq* Reaction Buffer, will generate satisfactory amplification of most amplicons. However, in some difficult targets, Mg^{2+} can be improved by increasing 0.5-1.5 mM. Amplification of some cases, reactions may be improved with additives, like DMSO.

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Rev. 1