Ver: 2001

Taq DNA Polymerase

（BW-AT0101）

Contents

Kit Contents

Catalog#	BW-AT0101-01	BW-AT0101-02	BW-AT0101-03
Taq DNA Polymerase (5 U/μL)	50 μL (250U)	100 μL (500U)	200 μL (1000U)
5×Taq Buffer (Mg^{2+})	2 ×1.0 mL	4×1.0 mL	8×1.0 mL
User Manual	1	1	1

Introduction

Taq DNA Polymerase is a thermostable DNA Polymerase isolated from a strain of Thermus sp. Taq has a half-life of 3 hours at 95℃. Taq has high fidelity with an error frequency $10/10^6$ (or $0.01/10^3$) during DNA synthesis.

Taq is designed for use in primer extension reaction. Taq can also be used for sequencing. DNA sequencing at high temperature may decrease the second structure of some DNA templates and permit polymerization through base- paired region. DNA sequencing with Taq DNA Polymerase produces uniform bands intensities and low background.

From the date of production, the product should be stored at -20℃, can be stored for 1 year.

Reaction setup

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

Component	25 μL reaction	50 μL reaction	Final Concentration
5×Taq Buffer (Mg^{2+})	5 μL	10 μL	1×
10 mM dNTPs	0.5 μL	1 μL	200 μM
10 μM Forward Primer	0.5 μL	1 μL	0.2 μM (0.05–1 μM)
10 μM Reverse Primer	0.5 μL	1 μL	0.2 μM (0.05–1 μM)
Template DNA	variable	variable	<1000 ng
Taq DNA Polymerase	0.125 μL	0.25 μL	1.25 units/50 μL PCR

Nuclease-free water	Up to 25 µL	Up to 50 µL	

Notes: Gently mix the reaction. Collect all liquid to the bottom of the tube by a quick spin if necessary. Overlay the sample with mineral oil if using a PCR machine without a heated lid.

Transfer PCR tubes from ice to a PCR machine with the block preheated to 95℃ and begin thermocycling.

Thermocycling conditions for a routine PCR

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

General Guidelines

1. Template:

   Use of high quality, purified DNA templates greatly enhances the success rate of PCR.

   Recommended amounts of DNA template for a 50 µL reaction are as follows:

DNA	Amount
genomic	0.1 µg–1 µg
plasmid or viral	0.5 ng- 10 ng
Phage DNA	0.1ng-10 ng
E.coli DNA	10 ng-100 ng

2. Primers: Oligonucleotide primers are generally 20–40 nucleotides in length and ideally have a GC content of 40–60%. Computer programs such as Primer 3 can be used to design or analyze primers. The final concentration of each primer in a reaction may be 0.05–1.0 µM, typically 0.1–0.5 µM.
3. Mg^{2+} and additives: Mg^{2+} concentration of 1.5–2.0 mM is optimal for most PCR products generated with Taq DNA Polymerase. The final Mg^{2+} concentration in 1× Standard Taq Reaction Buffer is 1.5 mM. This supports satisfactory amplification of most amplicons. However, Mg^{2+} can be further optimized in 0.5 or 1.0 mM increments using $MgCl_2$. Amplification of some difficult targets, like GC-rich sequences, may be improved with additives, such as DMSO or formamide.
4. Deoxynucleotides: The final concentration of dNTPs is typical 200 µM of each dNTP.
5. Taq DNA Polymerase Concentration: We generally recommend using Taq DNA Polymerase at a concentration of 25 Units/mL (1.25 units/50 µL reaction). However, the optimal concentration of Taq DNA Polymerase may range from 5–50 Units/mL (0.25–2.5 Units/50 µL reaction) in specialized applications.
6. Denaturation: An initial denaturation of 30 seconds at 95°C is sufficient for most amplicons from pure DNA templates. For difficult templates such as GC-rich sequences, a longer initial denaturation of 2–4 minutes at 95°C is recommended prior to PCR cycling to fully denature the template. With colony PCR, an initial 5 minute denaturation at 95°C is recommended. During

thermocycling a 15–30 seconds denaturation at 95℃ is recommended.

7. Annealing: The annealing step is typically 15–60 seconds. Annealing temperature is based on the Tm of the primer pair and is typically 45–68℃. Annealing temperatures can be optimized by doing a temperature gradient PCR starting 5℃ below the calculated Tm. The Tm calculator is recommended to calculate an appropriate annealing temperature. When primers with annealing temperatures above 65℃ are used, a 2-step PCR protocol is possible.
8. Extension: The recommended extension temperature is 68℃. Extension times are generally 1 minute per kb. A final extension of 5 minutes at 68℃ is recommended.
9. Cycle number: Generally, 25–35 cycles yields sufficient product. Up to 45 cycles may be required to detect low-copy-number targets.

Limited Use and Warranty

This product is intended for *in vitro* research use only. Not for use in human.

This product is warranted to perform as described in its labeling and in BEIWO's literature when used in accordance with instructions. No other warranties of any kind expressed or implied, including, without limitation, implied warranties of merchantability or fitness for a particular purpose, are provided by BEIWO. BEIWO's sole obligation and purchaser's exclusive remedy for breach of this warranty shall be, at the option of BEIWO, to replace the products, BEIWO shall have no liability for any direct, indirect, consequential, or incidental damage arising out of the use, the results of use, or the inability to use it product.

For technical support or learn more product information, please contact us or visit our website.

Contact Us: 400-115-2855

www.beiwobiomedical.com

Customer Support:

market@beiwobiomedical.com

Technical Support:

tech@beiwobiomedical.com