Applied Biological Materials Inc
Tel: 1-866-757-2414
Email: info@abmGood.com
Website: www.abmGood.com

Precision™ Taq DNA Polymerase

Store at -20°C

Cat. No.	Description	Concentration	Quantity
G078	Precision™ Taq DNA Polymerase	5 U/µl	500 U

Product Description
Precision™ Taq DNA Polymerase is a thermostable enzyme that replicates DNA at 70°C to 80°C. It catalyzes the polymerization of nucleotides into duplex DNA in the 5' to 3' direction in the presence of magnesium. The enzyme has a molecular weight of approximately 90 kDa. Unlike Taq DNA Polymerase, Precision™ Taq DNA Polymerase exhibits 3' to 5' exonuclease (proofreading) activity, that enables the polymerase to correct nucleotide incorporation errors. The error rate of Precision™ Taq DNA Polymerase in PCR is $2.6x10^{-6}$ per nucleotide per cycle. The enzyme can be used in PCR applications that demand high fidelity and can amplify templates up to 6 kb in length. The amplified PCR products are blunt-ended.

Product Components	500 U
Precision™ Taq DNA Polymerase (5 U/µl)	100 µl
5X PCR buffer, with Mg^{2+}	2 ml
25 mM $MgSO_4$	1 ml
5X GC Enhancer	1 ml

Storage Buffer Components
50 mM Tris-HCl (pH 8.2 at 25°C), 0.1 mM EDTA, 1 mM DTT, 0.05 % CHAPS and 50 % glycerol.

Unit Definition
One unit of enzyme catalyzes the incorporation of 10 nmol of deoxyribonucleotides into a polynucleotide fraction in 30 mins at 70°C.

Shipping and Storage
Upon arrival, Precision™ Taq DNA Polymerase should be stored at -20°C. Avoid repeated freeze-thaw cycles of all Precision™ Taq components to retain maximum performance. All Precision™ Taq components are stable for 1 year from the date of shipping if stored and handled properly.

Protocol
The following basic protocol serves as a general guideline and starting point for any PCR amplification. Optimal reaction conditions (incubation times, temperatures, concentration of Taq DNA Polymerase, primers, $MgSO_4$ and template DNA) may vary and need to be optimized for each specific PCR.

All PCR experiments should be assembled in a nuclease-free environment. In addition, DNA sample preparation, reaction set-up and subsequent reaction(s) should be performed in separate areas to avoid cross contamination.

A negative control reaction (omitting template DNA) should always be performed in tandem with sample PCR to confirm the absence of DNA contamination.

1. Add the following components to a sterile 0.2 ml PCR tube sitting on ice.

Components	Volume	Final Concentration
Template DNA	~100 ng	~2 ng/µl
Forward primer (10 µM)	1 - 2.5 µl	200 - 500 nM
Reverse primer (10 µM)	1 - 2.5 µl	200 - 500 nM
5X PCR buffer, with Mg^{2+}	10 µl	1X
25 mM $MgSO_4$ (Optional)*	0 - 3 µl	1.5 - 3 mM
dNTP Mix (10 mM)	1 µl	200 µM
Precision™ Taq DNA Polymerase(5 U/µl)	0.5 - 1 µl	2.5 - 5 U
5X GC Enhancer (Optional)**	10 µl	1X
Nuclease-free H_2O	up to 50 µl	-

* Optimal Mg^{2+} concentration is specific to each DNA template-primer set and can only be determined experimentally.

** 5X GC Enhancer is **optional** and is only recommended for PCR amplification of GC-rich DNA templates.

- *We recommend preparing a mastermix for multiple reactions to minimize reagent loss and enable accurate pipetting.*

2. Mix contents of tube and centrifuge briefly.
3. Incubate tube in a thermal cycler at 94°C for 3 mins to completely denature the template.
4. Perform 30 - 40 cycles of PCR amplification as follows:

   Denature: 94°C for 30 sec

   Anneal: 45 - 72°C for 30 sec

   Extend: 72°C for 1 min/1 kb template

5. Incubate for an additional 5 mins at 72°C and maintain the reaction at 4°C. The samples can be stored at -20°C until use.
6. Analyze the amplification products by agarose gel electrophoresis and visualize by ethidium bromide or SafeView™ (Cat No. G108) staining. Use appropriate molecular weight standards.