Taq DNA Polymerase RED
Cat #: 42-402R

Unit Size: 10,000 Units

Buffers:
10X Ammonium Reaction Buffer:
750mM Tris-HCl, pH 8.5; $(NH_4)_2SO_4$; Mg^{2+} Free; 1% Tween® 20.
Separate 50 mM $MgCl_2$ solution

Concentration: 1 unit/µl

Storage: -20°C.

Reagent for *in vitro* laboratory use only

General Description

Apex Red Taq DNA Polymerase is a thermostable recombinant DNA polymerase, which exhibits very high activity in primer extension and other molecular biology applications. The enzyme is isolated from Thermus aquaticus and has a molecular weight of approximately 94 kDa.

Apex Red Taq DNA Polymerase has both a 5'→3' DNA polymerase and a 5'→3' exonuclease activity. The enzyme lacks a 3'→5' exonuclease activity (no proofreading ability). Taq DNA Polymerase leaves an A' overhang, which makes the enzyme ideal for TA cloning.

Apex Red Taq DNA Polymerase contains a red dye which provides easy and quick identification of reactions to which enzyme was added and allows confirmation of complete mixing. The inert dye has no effect on downstream processes. Apex Red Taq DNA Polymerase is added directly to the reaction mix and is used in the same way as standard Taq DNA Polymerase.

Key Features

- The choice when high-fidelity is not required
- Red dye identifies tubes which contain enzyme and facilitates confirmation of complete mixing
- High performance thermostable DNA polymerase
- Ideal for rich amplifications
- Optimal for TA cloning

Unit definition

One unit is defined as the amount that incorporates 10 nmol of dNTPs into acid-precipitable form in 30 minutes at 72°C under standard assay conditions.

Storage and Dilution Buffer

Enzyme is supplied in 20mM Tris-HCl pH 8.3, 100mM KCl, 0.1mM EDTA, 1mM DTT, 0.5% Tween® 20, 50% glycerol.

Quality control

Each lot of Taq DNA Polymerase is tested for contaminating activities with no traces of endonuclease, nicking or exonuclease activity.

Protocol

This protocol serves as a guideline for primer extensions. Optimal reaction conditions such as incubation times, temperatures, and amount of template DNA may vary and must be individually determined.

- Set up reaction mixtures in an area separate from that used for DNA preparation or product analysis.

1. Thaw 10X Buffer, dNTP mix, and primer solutions. **It is important to mix the solutions completely before use to avoid localized concentrations of salts.**

2. Prepare a master mix according to Table 1. The master mix typically contains all the components needed for extension except the template DNA.

   In some applications more than 1.5 mM $MgCl_2$ is needed for the best results. For this reason, 50mM $MgCl_2$ is included with the kit. Table 2 provides the volume of 50mM $MgCl_2$ to add to the master mix if a certain $MgCl_2$ concentration is required.

3. Mix the master mix thoroughly and dispense appropriate volumes into reaction tubes. Mix gently, e.g., by pipetting the master mix up and down a few times.

4. Add template DNA to the individual tubes containing the master mix.

5. Program the thermal cycler according to the manufacturer's instructions.

   For maximum yield and specificity, temperatures and cycling times should be optimized for each new template target or primer pair.

6. Place the tubes in the thermal cycler and start the reaction.

Table 1. Reaction components (Master Mix and Template DNA) for a 50µl reaction

Component	Vol./reaction	Final Conc.
10X Mg^{2+} Free Buffer	5µl	1X
$MgCl_2$ 50 mM	0.5-5µl	0.5-5mM
dNTP mix (12.5 mM of each)	0.8µl	0.2mM of each dNTP
Primer A	Variable	0.1–1.0µM
Primer B	Variable	0.1–1.0µM
Taq DNA Polymerase	Variable	1 – 5 units
PCR Grade Water	Variable	- - - -
Template DNA	Variable	Variable
TOTAL volume	50µl	- - - -

Final $MgCl_2$ conc. in reaction (mM)	0.5	1.0	1.5	2.0	2.5	3.0	3.5
Additional volume of 50mM $MgCl_2$	0.5	1.0	1.5	2.0	2.5	3.0	3.5

Table 2. $MgCl_2$ concentration in a 50µl reaction

Related Products

Taq Polymerase kits (500 units)	Cat#
With 10X Standard and Ammonium Reaction Buffer	42-800B1
With 10X Combination Buffer	42-800B3
Glycerol Free	42-800B4

Hot Start DNA Polymerase (500 units)	Cat#
With 10X Ammonium and Combination Reaction Buffer	42-106

High Fidelity - Proof reading (500 units)	Cat#
Hi-Fi PR™ Taq 2.5 U/µl	42-110

All polymerases are also available in kits, Mg^{2+} free buffers and 50 mM $MgCl_2$.

Master Mixes (500 reactions)	Cat#
2X Taq DNA Polymerase Master Mix, 1.5 mM $MgCl_2$	42-132
2X Taq RED Master Mix, 1.5 mM $MgCl_2$	42-138
2X Hot Start Master Mix Buffer I, 1.5 mM $MgCl_2$	42-198

The shown master mixes are ammonium based. Also available with balanced ammonium and potassium based buffers.

Real-time PCR (400 reactions)	Cat#
qPCR 2X Master Mix for Probe, without ROX™	42-116P
qPCR 2X Master Mix for Probe, low ROX™	42-118P
qPCR 2X Master Mix for Probe, high ROX™	42-120P
qPCR 2X GREEN Master Mix, without ROX™	42-116PG
qPCR 2X GREEN Master Mix, low ROX™	42-118PG
qPCR 2X GREEN Master Mix, high ROX™	42-120PG

Ultrapure dNTPs	Cat#
dNTP set, 100 mM each: 250 µl of each dA, dC, dG and dT	42-410
dNTP Set, 100 mM each: 1 ml of each dA, dC, dG and dT	42-403
dNTP Mix 40 mM (1 x 500 µl): 10 mM each dA, dC, dG, dT	42-411
dNTP Mix 100 mM (2 x 1 ml): 25 mM each dA, dC, dG, dT	42-405
dNTP Mix 10 mM (10 x 1 ml): 2.5 mM each dA, dC, dG, dT	42-406

Other concentrations and Single dNTPs are available.

DNA Ladders	Cat#
Apex 100 bp-Low DNA Ladder, 250 applications	19-109
Apex 1 kb DNA Ladder, 333 applications	19-115
Apex 200 bp DNA Ladder, 200 applications	19-111
Apex ECON Mini DNA Ladder, 100 applications	19-130
Apex ECON Low DNA Ladder, 100 applications	19-131
Apex ECON PCR Ladder, 100 applications	19-132

Accessory reagents	Cat#
50 mM $MgCl_2$, 3 × 1.5 ml	42-303
Nuclease-Free Water, PCR Grade, 6 x 5 ml	42-710