**Product Information**

*Taq* DNA Polymerase, from *Thermus aquaticus* recombinant, expressed in *Escherichia coli*

Catalog Number D1806
Storage Temperature –20 °C

**Introduction**

*Taq* DNA Polymerase is a thermostable enzyme derived from the thermophilic bacterium *Thermus aquaticus*. The enzyme is in a recombinant form, expressed in *E. coli*. It is able to withstand repeated heating to 95 °C without significant loss of activity. The enzyme is approximately 94 kDa by SDS-PAGE with no detectable endonuclease or exonuclease activity. It has 5′→3′ DNA polymerase activity and 5′→3′ exonuclease activity. Each lot of *Taq* DNA Polymerase is tested for PCR amplification and double-stranded sequencing. The enzyme is supplied at 5 units/µL and comes with an optimized 10× reaction buffer.

**Unit Definition:** One unit incorporates 10 nmol of total deoxyribonucleoside triphosphates into acid precipitable DNA in 30 minutes at 74 °C.

**Reagents Provided**

- *Taq* DNA Polymerase, Catalog No. D6677
  5 units/µL in 20 mM Tris-HCl, pH 8.0, 100 mM KCl, 0.1 mM EDTA, 1 mM DTT, stabilizers, 50% glycerol
- 10× PCR Buffer, Catalog No. P2192
  100 mM Tris-HCl, pH 8.3, 500 mM KCl, 15 mM MgCl₂ and 0.01% gelatin

**Reagents required, but not provided**

- 10 mM dATP, Catalog No. D6920
- 10 mM dCTP, Catalog No. D7045
- 10 mM dGTP, Catalog No. D7170
- 10 mM TTP, Catalog No. T7791
  or, in place of individual nucleotides
- Deoxynucleotide Mix, Catalog No. D7295 containing 10 mM dATP, 10 mM dCTP, 10 mM dGTP, 10 mM TTP
- Water, PCR Reagent, Catalog No. W1754
- Mineral Oil, Catalog No. M8662 (optional)
- Thermal cycler
- Primers
- DNA to be amplified
- 0.2 ml or 0.5 ml Thin-Walled PCR Tubes, Catalog Nos. P3114 and P3364

**Precautions and Disclaimer**

This product is for R&D use only, not for drug, household, or other uses. Please consult the Material Safety Data Sheet for information regarding hazards and safe handling practices.

**Storage**

Store at –20 °C

**Amplification Procedure**

The optimal conditions for the concentration of *Taq* DNA polymerase, template DNA, primers, and MgCl₂ will depend on the system being utilized. It may be necessary to determine the optimal conditions for each individual component. This is especially true for the *Taq* DNA polymerase, cycling parameters, and the MgCl₂ concentration. It is recommended the enzyme and the MgCl₂ be titrated to determine the optimal efficiency.

1. Add the following reagents to a 0.2 or 0.5 ml microcentrifuge tube in the following order:

<table>
<thead>
<tr>
<th>Amount</th>
<th>Component</th>
<th>Final Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>w µL</td>
<td>Water</td>
<td></td>
</tr>
<tr>
<td>5 µL</td>
<td>10× PCR Buffer</td>
<td>1×</td>
</tr>
<tr>
<td>1 µL*</td>
<td>10 mM dATP</td>
<td>200 µM</td>
</tr>
<tr>
<td>1 µL*</td>
<td>10 mM dCTP</td>
<td>200 µM</td>
</tr>
<tr>
<td>1 µL*</td>
<td>10 mM dGTP</td>
<td>200 µM</td>
</tr>
<tr>
<td>x µL</td>
<td>Forward primer</td>
<td>0.1-0.5 µM</td>
</tr>
<tr>
<td>y µL</td>
<td>Reverse primer</td>
<td>0.1-0.5 µM</td>
</tr>
<tr>
<td>0.5 µL</td>
<td><em>Taq</em> DNA Polymerase</td>
<td>0.05 units/µL</td>
</tr>
<tr>
<td>z µL</td>
<td>Template DNA</td>
<td>200 pg/µL</td>
</tr>
<tr>
<td>50 µL</td>
<td>Total reaction volume</td>
<td></td>
</tr>
</tbody>
</table>

*Note: The individual nucleotides (4 µL total) may be substituted by 1 µL of Deoxynucleotide Mix, Catalog No. D7295.*
2. Mix gently by vortex and briefly centrifuge to collect all components to the bottom of the tube.

3. Add 50 µL of mineral oil to the top of each tube to prevent evaporation if using a thermal cycler without a heated lid.

4. The amplification parameters will vary depending on the primers and the thermal cycler used. It may be necessary to optimize the system for individual primers, template, and thermal cycler. Typical cycling parameters:

<table>
<thead>
<tr>
<th>Cycle Type</th>
<th>Temperature</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Denature template</td>
<td>94 °C</td>
<td>1 min</td>
</tr>
<tr>
<td>Anneal primers</td>
<td>55 °C</td>
<td>2 min</td>
</tr>
<tr>
<td>Extension</td>
<td>72 °C</td>
<td>3 min</td>
</tr>
</tbody>
</table>

5. The amplified DNA can be evaluated by agarose gel electrophoresis and subsequent ethidium bromide staining. Mineral oil overlay may be removed by a single chloroform extraction (1:1), recovering the aqueous phase.

References

Related Products

**Reagents**
- Lambda DNA Hind III Digest, Catalog No. D9780
- Enhanced Avian HS RT-PCR kits, Catalog No HSRT100 (100 reactions).

**Equipment**
- PCR Multiwell Plate, 96-well, Catalog No. Z374903
- PCR Multiwell Plate, 384-well, Catalog No. Z374911
- PCR Microtubes, 0.2 ml, attached caps, Catalog No. Z374873
- PCR Microtubes, 0.2 ml strip tubes with strip caps, Catalog No. Z374962
- Sealing accessory for PCR vessels, Micro Mats, Catalog No. Z374938
- PCR Workstation, 120V, Catalog No. Z376213
- PCR Workstation, 240V, Catalog No. Z376221

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