**I INTRODUCTION**

*Taq* DNA Polymerase is a thermostable DNA Polymerase isolated from an *E. coli* strain that carries the *Taq* DNA polymerase gene. *Taq* DNA polymerase is the most common polymerase used for PCR* reactions.

**II APPLICATIONS**

*Taq* DNA Polymerase can be used in most applications including the following:

- PCR.
- 3’ A-tailing of blunt ends.
- Primer extension.
- DNA sequencing.

**III KEY FEATURES**

Key features of *Taq* DNA Polymerase:

- Terminal transferase activity. *Taq* DNA Polymerase has terminal transferase activity which results in the addition of a single nucleotide (adenosine) at 3’ end of the extension product.
- High-purity. No contamination activity has been detected in standard test reactions.

**IV SHIPPING AND STORAGE**

This product is shipped on blue ice. Store the product at –20°C.

**V GENERAL PCR PROTOCOL USING *Taq* DNA POLYMERASE**

1. Thaw all the reagents for PCR on ice. **Vortex to mix to remove concentration gradient** and then spin down briefly.
2. Set up 50 μl PCR reaction in a thin-wall PCR tube on ice by the following recipe:
   - 5 μl 10X Taq buffer solution containing Mg²⁺.
   - 1 μl 10 mM dNTP stock
   - 1 μl Forward primer (50 uM)
   - 1 μl Reverse primer (50 uM)
   - 2 μl Template (up to 100 ng/μl) sterile or filtered H₂O
   - 39.5 μl sterile or filtered H₂O
   - 0.5 μl Taq polymerase (5 units/μl)

3. Program PCR cycler as following and start:
   - Initial denaturing: 94°C for 3 minutes
   - Then 30 cycles of:
     - 94°C for 30 seconds
     - 55°C for 45 seconds
     - 72°C for 60 seconds (about 1 kb/minute)
   - Extension: 72°C for 7 minutes

4. When the temperature of PCR cycler reaches 94°C, put PCR reaction tube in and continue the program.

5. Analyze PCR fragments on an agarose or polyacrylamide gel.

Note:
1. This is a basic protocol. One needs to optimize the reagent concentrations, conditions and parameters.
2. This protocol is for PCR cycler with a hot lid. Otherwise, mineral oil needs to be added to prevent evaporation.
3. 5% DMSO, 1M betaine, or both can be included in PCR reaction to improve the results when a GC-rich template is used.

VI ORDER INFORMATION

Taq DNA Polymerase, Cat. No. E00007-1000  Cat. No. E00007-50000
Green Taq DNA Polymerase, Cat. No. E00043

* The PCR process is covered by U. S. Patent numbers 4683195 and 4683202 issued to Cetus and owned by Hoffman-La Roche Inc. GenScript does not encourage or support the unauthorized use of the PCR process. Use of this product is recommended for persons that either have a license to perform PCR or are not required to obtain a license.

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For Research Use Only.
Taq DNA Polymerase without Mg$^{2+}$

Cat. No.: E00008
Size: 1,000 U

Description:
Taq DNA Polymerase is a thermostable DNA Polymerase isolated from an E. coli strain that carries the Taq DNA polymerase gene. Taq DNA Polymerase is the most common polymerase used for PCR* reactions.

Key Feature:
- Terminal transferase activity. Taq DNA Polymerase has terminal transferase activity which results in the addition of a single nucleotide (adenosine) at 3' end of the extension product.
- High-purity. No contamination activity has been detected in standard test reactions.

Unit Definition:
One unit is the amount of enzyme that can incorporate 10 nmol of dNTP into acid-insoluble material in 30 minutes at 74°C.

10 X reaction Buffer (without Mg$^{2+}$):
500 mM KCl, 100 mM Tris HCl (pH 9.0 at 25°C), 1% Triton X-100 Buffer. This buffer is optimized for use with 200 µM dNTPs.

Note: If the reaction is performed without this buffer, then add 0.1% Triton X-100 (final concentration) to ensure high activity.

Storage Buffer and Concentration:
The enzyme is delivered in 5 units/µl in 20 mM Tris HCl (pH 8.0), 0.1 mM EDTA, 1 mM DTT, 0.1% Triton X-100 and 50% glycerol.

Storage:
This product can be stored at -20°C for future using.

Formulation:
GenScript Taq DNA Polymerase has been formulated using GenScript's proprietary technology. The enzyme can be shipped at room temperature or even 37°C for seven days without any loss of activity.

Applications:
Taq DNA Polymerase can be used in most applications including the following:
- PCR*
- 3' A-tailing of blunt ends
- Primer extension
- DNA sequencing

Example

![PCR performance, activity, nuclease.]

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<tr>
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<td>9</td>
<td>0.5</td>
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</tbody>
</table>

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**Taq DNA Polymerase, concentrated**

**Cat. No.** E00012  
**Size:** 2500 U  
**Description:** Taq DNA Polymerase is a thermostable DNA polymerase isolated from an *E. coli* strain that carries the *Taq* DNA polymerase gene. *Taq* DNA Polymerase is the most common polymerase used in PCR*. In some cases, such as RAPD PCR, adding large volume of general *Taq* DNA polymerase (5 U/μl), which has a high concentration of glycerol in its storage buffer, will increase the glycerol concentration in the reaction mix, interfering with PCR performance. The use of concentrated *Taq* DNA Polymerase (25 U/μl), with a far slimmer dose of glycerol, can prevent poor PCR efficiency.  
**Note:** Concentrated *Taq* DNA Polymerase (GenScript, E00012) is supplied with 10X reaction buffer containing 15 mM magnesium chloride. The dNTP (10 mM) mixture may be ordered separately (See related products).  
**Key Feature:**  
- Terminal Transferase Activity: A single nucleotide (adenosine) is added to the 3' end of the extension product.  
- High-Purity: No contamination activity has been detected in standard test reactions.  
**Concentration:** Supplied in 25 units/μl in 20 mM Tris HCl (pH 8.0), 0.1 mM EDTA, 1 mM DTT, 0.1% *Triton X-100* and 50% glycerol.  

**Unit Definition:**  
One unit is defined as the amount of enzyme that can incorporate 10 nmol of dNTP into acid-insoluble material in 30 minutes at 74°C.  
**10 X reaction Buffer (with Mg²⁺)**  
500 mM KCl, 100 mM Tris HCl (pH 9.0 at 25°C), 15 mM MgCl₂, 1% Triton X-100 Buffer. This buffer is optimized for use with 200 μM dNTPs.  
**Important:**  
If another reaction buffers are used with *Taq* DNA Polymerase, Triton X-100 must be added to a final concentration of 0.1% to ensure high enzyme activity with *Taq* DNA Polymerase;  
**Storage:**  
Store the product at -20°C.  
**Formulation:**  
GenScript *Taq* DNA Polymerase has been formulated using GenScript's proprietary technology. The enzyme can be shipped at room temperature or stored at 37°C for seven days without any significant loss of activity.  
**Applications:**  
The applications of *Taq* DNA Polymerase are as follows:  
- PCR*  
- 3’ A-tailing of blunt ends (T/A-cloning)  
- Primer extension  
- DNA labeling reactions

**QC Tests**  
PCR performance, activity, nuclease.

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