# *Taq* DNA Polymerase

**Technical Manual No. 0213** **Update date 08302013**



## 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.



860 Centennial Ave., Piscataway, NJ 08854, USA
Toll-Free: 1-877-436-7274 Tel: 1-732-885-9188 Fax: 1-732-210-0262 Email: order @genscript.com Web: www.genscript.com

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 $Mg^{2+}$.
   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 $H_2O$
   39.5 µl sterile or filtered $H_2O$
   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℃, put PCR reaction tube in and continue the program.
5. Analyze PCR fragments on a 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.

**GenScript USA Inc.**
860 Centennial Ave., Piscataway, NJ 08854
Tel: 732-885-9188, 732-885-9688
Fax: 732-210-0262, 732-885-5878
E-mail: info@genscript.com
Web: http://www.genscript.com
**For Research Use Only.**

**DATASHEET**

# Taq DNA Polymerase without $Mg^{2+}$

Version: 2013-08-30

**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.

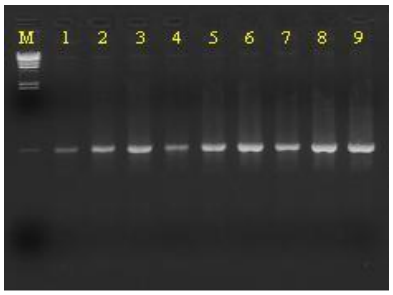
**Applications:**

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

- PCR*
- 3" A-tailing of blunt ends
- Primer extension
- DNA sequencin

**Example**

PCR performance, activity, nuclease.




| Lane | Taq | United Used |
|---|---|---|
| 1 | Leading Brand A | 0.1 |
| 2 | | 0.25 |
| 3 | | 0.5 |
| 4 | Leading Brand B | 0.1 |
| 5 | | 0.25 |
| 6 | | 0.5 |
| 7 | Genscript | 0.1 |
| 8 | | 0.25 |
| 9 | | 0.5 |

* The PCR process is covered by US. Patents Nos. 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 who either have a license to perform PCR or are not required to obtain a license. Sale of this product is restricted to regions or countries where native *Taq* DNA polymerase patents have been invalidated.

**DATASHEET**

# *Taq* DNA Polymerase, concentrated

Version: 2013-09-10

**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 $Mg^{2+}$)**

500 mM KCl, 100 mM Tris HCl (pH 9.0 at 25B0C), 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.

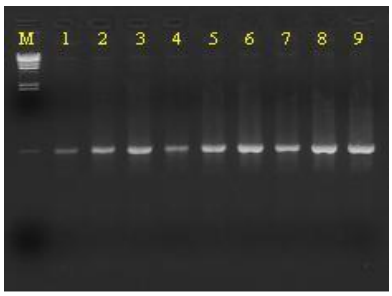
**Applications:**

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.




| Lane | Taq | United Used |
|---|---|---|
| 1 | Leading Brand A | 0.1 |
| 2 | | 0.25 |
| 3 | | 0.5 |
| 4 | Leading Brand B | 0.1 |
| 5 | | 0.25 |
| 6 | | 0.5 |
| 7 | Genscript | 0.1 |
| 8 | | 0.25 |
| 9 | | 0.5 |

* The PCR process is covered by US. Patents Nos. 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 who either have a license to perform PCR or are not required to obtain a license. Sale of this product is restricted to regions or countries where native *Taq* DNA polymerase patents have been invalidated.