# RealTaq™ DNA Polymerase (with $MgCl_2$ aside)

## High Quality Recombinant Taq

Store at -20°C

**Cat. No. RT001C**
500 units, with dNTP
RealTaq™ DNA Polymerase (5 U/μl) : 100 μl
10X Reaction Buffer (without $Mg^{2+}$): 2 ml
50 mM $MgCl_2$ : 1 ml
10 mM dNTPs Mix : 200 μl

**Cat. No. RT011C**
500 units, without dNTP
RealTaq™ DNA Polymerase (5 U/μl) : 100 μl
10X Reaction Buffer (without $Mg^{2+}$): 2 ml
50 mM $MgCl_2$ : 1 ml

**Cat. No. RTT01C**
2500 units, with dNTP
RealTaq™ DNA Polymerase (5 U/μl) : 5 x 100 μl
10X Reaction Buffer (without $Mg^{2+}$): 5 x 2 ml
50 mM $MgCl_2$ : 5 x 1 ml
10 mM dNTPs Mix : 5 x 200 μl

**Cat. No. RTT11C**
2500 units, without dNTP
RealTaq™ DNA Polymerase (5 U/μl) : 5 x 100 μl
10X Reaction Buffer (without $Mg^{2+}$): 5 x 2 ml
50 mM $MgCl_2$ : 5 x 1 ml

**Cat. No. RT022**
10X Reaction Buffer (without $Mg^{2+}$): 2 ml
50 mM $MgCl_2$ : 1 ml

## Description

RealTaq™ DNA Polymerase is a high quality thermostable enzyme derived from a thermus sp. bacterium. The enzyme is in recombinant form, expressed in E. coli. It is capable of withstanding repeated heating to 95°C without significant loss of activity. The amplified products are up to 8 kb and can be used directly in TA cloning, terminal dA tailing, screening, DNA labeling, DNA sequencing...etc.

## Unit Definition

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

## Error Rate

The error rate of RealTaq™ DNA Polymerase is $1x10^{-5}$ errors per nucleotide per cycle.

## Storage Buffer

20 mM Tris-HCl pH8.0, 0.1 mM EDTA, 1 mM DTT, 1.0% Triton X-100, 50% Glycerol.

## 10X Reaction Buffer

150 mM Tris-HCl pH8.75 at 25°C, 500 mM KCl, 20 mM $MgCl_2$, 1.0% Triton X-100.

## Quality Control

Nuclease activity is not detected after incubation of 1 μg lambda/Hind III DNA with 5 units of RealTaq™ DNA Polymerase in 50 μl reaction volume reaction buffer for 18 hours at 37°C.

| | |
|---|---|
| Recombinant | ✓ |
| 5′ to 3′ Exonuclease | ✓ |
| 3′ to 5′ Exonuclease | ✗ |
| Terminal dA Addition | ✓ |
| Endonuclease Free | ✓ |

## General Reaction Conditions

The optimal conditions for the concentration of RealTaq™ DNA Polymerase, $MgCl_2$, primers and template DNA will depend on the system being utilized. It may be necessary to determine the optimal conditions for each individual component.

1. Add the following components to a sterile microtube on ice :

| Components | Volume | Final Concentration |
|---|---|---|
| 10X Reaction Buffer | 5 μl | 1X |
| $MgCl_2$ | 1~5 μl | 1~5 μM |
| 10 mM dNTP Mix | 0.5 μl | 0.1 μM |
| Primer Mix (10 μM each) | 1 μl | 0.2 μM |
| Template DNA | 0.5~10 μl | n/a |
| RealTaq™ DNA Polymerase (5 U/μl) | 0.25 μl ~0.5 μl | 1.25 ~2.5 units |
| D.W. | add to 50 μl | n/a |

2. Suggested Reaction Parameters for RealTaq™ DNA Polymerase :

| Segment | Number of Cycles | Temperature | Duration |
|---|---|---|---|
| 1 | 1 | 94°C | 1~3 minutes |
| 2 | 25~35 | 94°C (Denature) | 30 seconds~1 minute |
| | | Primer Tm-5°C (Anneal) | 30 seconds~1 minute |
| | | 72°C (Extend) | 1 minute/Kb |
| 3 | 1 | 72°C | 7 minutes |
| 4°C (Cooling) | | | |

3. Analyze the amplification products by agarose gel electrophoresis and visualize by ethidium bromide staining.

**Caution:** Always wear a lab coat, disposable gloves, and protective goggles during the procedure.
**Note:** For research use only. Not for use in diagnostic or therapeutic procedures.

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