HB230406

# Deoxyribonuclease I (DNase I) GMP-grade (2 U/μL)

## Product Information

| Product Name | Catalog No. | Size |
|---|---|---|
| Deoxyribonuclease I (DNase I) GMP-grade (2 U/μL) | 10611ES76 | 500 U |
| | 10611ES84 | 2,000 U |
| | 10611ES92 | 10,000 U |
| | 10611ES98 | 100 KU |

## Product Description

DNase I is an endonuclease that can digest single-stranded and double-stranded DNA to produce single deoxynucleotides or single-stranded or double-stranded oligodeoxynucleotides. It can hydrolyze the phosphodiester bond to produce monodeoxynucleotides and oligodeoxynucleotides containing 5'-phosphate groups and 3'-OH groups. The average digestion product is the smallest polytetranucleotide. DNase I can catalyze many forms of DNA, such as single-stranded DNA, double-stranded DNA, and even chromatin (its cutting rate is affected by histones).The optimum pH range is 7-8. The activity of DNase I depends on $Ca^{2+}$ and can be activated by divalent metal ions, such as $Co^{2+}$, $Mn^{2+}$, $Zn^{2+}$, etc. 5 mM $Ca^{2+}$ can protect the enzyme from being hydrolyzed. In the presence of $Mg^{2+}$, the enzyme can recognize and cut any site on any strand of DNA randomly; and in the presence of $Mn^{2+}$, it can recognize two strands of DNA at the same time and cut at almost the same site to form blunt ends, Or sticky ends with 1-2 nucleotides protruding. DNase I is widely used in the preparation of DNA-free RNA; remove the template DNA after in vitro transcription; prepare DNA-free RNA before RT-PCR and RT-qPCR reactions; combine with DNA polymerase I to perform DNA labeling through nick translocation; DNA fragmentation library construction.

This product is produced in accordance with GMP process requirements, and the product is provided in liquid form.

## Product Properties

| | |
|---|---|
| **Source** | Recombinant *E. coli* with DNase I gene |
| **Optimum Temperature** | 37℃ |
| **Storage Buffer** | 10 mM Tris-HCl pH 7.6，2 mM $CaCl_2$，50%(v/v) Glycerol |
| **Unit Definition** | The amount of enzyme required to increase the absorbance at 260 nm of the reaction solution by 0.001 in 1 minute at 25°C and pH 5.0 using calf thymus DNA as the substrate is defined as one activity unit (Kunitz Unit).(The reaction buffer is: 10 mM Tris-HCl pH 7.6, 2.5 mM $MgCl_2$, 0.5 mM $CaCl_2$, 1 μg plasmid DNA.) |

## Contents

| Contents No. | Name | Catalog No./Specification | | | |
|---|---|---|---|---|---|
| | | 10611ES76 (500 U) | 10611ES84 (2,000 U) | 10611ES92 (10,000 U) | 10611ES98 (100 KU) |
| 10611 | Deoxyribonuclease I (DNase I) GMP-grade (2 U/μL) | 250 μL | 1 mL | 5 mL | 50 mL |

## Shipping and Storage

Deoxyribonuclease I (DNase I) GMP-grade products are shipped with dry ice and can be stored at -15℃ ~ -25℃ for one year.

## Experimental methods

**Plasmid template digestion**

1. Reaction system:

Use the RNase-free centrifuge tube and pipette tip to prepare the following reaction system:

| | |
|---|---|
| 10× DNase I Buffer* | 1 μL |
| DNase I | 1 μL |
| RNA | x |
| Rnase-free ddH2O | Up to 10 μL |

【Note】1×DNase I Buffer: 10 mM Tris-HCl, 2.5 mM $MgCl_2$, 0.5 mM $CaCl_2$, pH7.6 @25℃

2. Reaction conditions

37℃, 15-30 min later, add a final concentration of 2.5 mM EDTA solution and mix well at 65℃ for 10 min. The processed template can be used in subsequent reactions such as capping reaction

**DNase I inactivation or inhibition**

After adding EDTA to a final concentration of 2.5 mM, heating at 65°C for 10 min can inactivate DNase I. Phenol and chloroform extraction can also inactivate DNase I. The following conditions all have significant inhibitory effect on DNase I: Metal ion chelating agents, zinc ions with a concentration of millimoles/liter, 0.1% SDS, DTT, mercaptoethanol and other reducing agents,the salt concentrations above 50-100 mM.

## Note

1. Enzymes should be stored in an ice box or on an ice bath when used, and should be stored at -20°C immediately after use.
2. For your safety and health, please wear personal protective equipment (PPE), such as laboratory coats and disposable gloves, when operating with this product.