



Ver. HB221110

Deoxyribonuclease I (DNase I) GMP-grade (2 U/ μ L)

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.

Components

Components No.	Name	10611ES76 (500 U)	10611ES84 (2,000 U)	10611ES92 (10,000 U)
10611	Deoxyribonuclease I (DNase I) GMP-grade (2 U/ μ L)	250 μ L	1 mL	5 mL

Specifications

Source	Recombinant <i>E. coli</i> with DNase I gene
Optimum temperature	37°C
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 completely degrade 1 μ g of plasmid DNA within 10 min at 37°C. (The reaction buffer is: 10 mM Tris-HCl pH 7.6, 2.5 mM MgCl_2 , 0.5 mM CaCl_2 , 1 μ g plasmid DNA)

Shipping and Storage

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

Instructions

1. Plasmid template digestion

1.1 Reaction system:

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



10 \times DNase I Buffer*	1 μ L
DNase I	1 μ L
RNA	x
Rnase-free ddH ₂ O	Up to 10 μ L

*10 \times DNase I Buffer: 10 mM Tris-HCl, 2.5 mM MgCl₂, 0.5 mM CaCl₂, pH7.6 at 25°C

1.2 Reaction conditions

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

2. 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.

Notes

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.