Datasheet

Description:

Deoxyribonuclease I (DNase I) from beef pancreas is an endonuclease (glycoprotein), which preferentially cleaves the phosphodiester bond in the DNA behind pyrimidine nucleotides. This results in a polynucleotide with a 5'-phosphate and a free OH-group in position 3'. DNase I cleaves single-stranded and double-stranded DNA as well as chromatin. The specificity of the enzyme reaction (single-strand-'Nicks' versus double-strand breakes) is determined by the ions available.
In the presence of Mg2+ single-strand nicks are generated and in the presence of Mn2+ double-strand breakes. The pH-optimum of DNase I is 7.8 and it is activated by divalent cations. Maximum activation requires the presence of Mg2+ and additional Ca2+.
Calcium ions (5 mM) protect DNase I from proteolytic digest. Inhibition is achieved by citrate, if activation is done by magnesium, but not if manganese has been the activator. Besides it is inhibited by chelators such as EDTA and SDS or β-mercaptoethanol.

The enzyme is used in molecular biology techniques like digestion of DNA, in the RNA purification or generating "random nicks" for "nick translation" or 'footprint'-assays or investigations on chromatin.

Applications:

- Degradation of DNA template in transcription reactions
- Removal of contaminating genomic DNA from RNA samples
- DNase I footprinting
- Nick Translation

Unit definition: One unit is defined as that amount of enzyme which causes an increase of absorbance at 260 nm of 0.001 per minute at 25°C based on the method of Kunitz.
DNase I is readily soluble in e. g. 0.15 M sodium chloride or in reaction buffer (e. g. 50 mM Tris · Cl, pH 7.5; 10 mM MgCl2 (single-strand 'nicks') and 10 mM MnCl2 (double-strand breakes), respecitvely; 50 µg/ml BSA
For storage dissolve DNase I in 50 % glycerol (w/v); 20 mM Tris · Cl, pH 7.5; 1 mM MgCl2. For stability reasons the concentrations should be at least 1 mg/ml (The maximum solubility is 10 %).

This solution is stable for more than one year (ref. 2 Suppl. 8 page 3.12.5). The lyophilized form is stable for 2 - 5 years if kept at +4°C. If a solution is protease-free, DNase I will not loose significant activity at pH 5 - 7 and 62°C for 5 hours. The enzyme may be heat-inactivated (10 minutes at 99°C).

RNase-free DNase I: Dissolve DNase I at 1 mg/ml in 0.1 M iodoacetic acid plus 0.15 M sodium acetate at a final pH of 5.3. The solution is then heated 40 minutes at 55°C and cooled. Finally, 1 M CaCl2 is added to the solution to

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Order Information

Prod. No.	Description	Quantity
4908-050	DNase I	50 mg
4908-250	DNase I	250 mg
4908-1000	DNase I	1000 mg

by Bioswisstec AG
Ebnatstrasse 65
8200 Schaffhausen

visit seraglob.com
info@seraglob.com

Tel +41 52 620 33 44
Fax +41 52 620 33 45