Super nuclease, over Benzonase

Cat #: C-BSM2907

Size: 25 KU / 50 KU / 100 KU

Storage: -20°C

Components

Components	Size 1	Size 2	Size 3
Super nuclease, over Benzonase (250 U/µl)	25 KU	50 KU	100 KU

Product Introduction

Super nuclease is a genetically engineered recombinant product obtained through gene expression. Similar to Benzonase Nuclease, it is a broad-spectrum nuclease secreted by Serratia marcescens, consisting of two subunits with a size of 26 kDa each. It is also known as a non-restrictive endonuclease, exhibiting 34 times stronger activity than DNase I. It can efficiently cleave both single-stranded and double-stranded DNA and RNA, digesting them into 5'-monophosphate oligonucleotides of 3-5 base lengths (below the hybridization limit). Its activity requires Mg2+ ions, and it has an optimal pH range of 6 to 10 and a preferred reaction temperature of 37°C. This product is based on the wild-type Benzonase and has been improved through genetic engineering, expressed and purified in yeast. It has no residual bacterial endotoxins and maintains high stability and digestion activity under a wide range of conditions (6 M urea, 0.1 M Guanidine HCl, 0.4% Triton X100, 0.1% SDS, 1 mM EDTA, 1 mM PMSF, 0.4% Sodium deoxycholate). It is widely used as the preferred enzyme preparation in various scientific research fields, as well as in the vaccine, protein, and polysaccharide pharmaceutical industries, for the removal of nucleic acid residues from samples or products, enhancing sample purity and product bioefficacy.

Enzyme Activity Definition

One unit (U) of activity is defined as the amount of enzyme required to cause a change of 1.0 in the A260 absorption peak within a 30-minute reaction at 37°C and pH 8.0 in a 2.625 ml reaction system (equivalent to complete digestion of 37 μg of herring sperm DNA into oligonucleotides).

Application :

1. Degrades DNA and RNA in various forms, making it an optimal tool for removing nucleic acid (DNA and RNA) contamination in the preparation of vaccines, antibodies, cell therapies, and other biological products to meet the FDA's standards of nucleic acid residue not exceeding 10 pg/dose in biopharmaceuticals for therapeutic use.
2. Reduces the viscosity of cell lysates by degrading nucleic acids, facilitating solution filtration/ultrafiltration processes, shortening processing time, improving the separation efficiency of precipitates and supernatants during the purification of viruses, AAV vectors, and inclusion bodies derived from cells, and enhancing chromatographic purification efficiency, ultimately improving yield and product purity.
3. Applications in bioanalysis: Can be used to prepare ELISA samples, chromatography, two-dimensional electrophoresis (protein mapping), and Western blot analysis to improve resolution and sample recovery.

Quality Control

Protein Purity Detection:

The product has been tested by SDS-PAGE, and the purity is ≥95%.

Proteinase Residual Detection:

Incubate the product with a protein substrate at 37°C for 16 hours and detect the substrate using SDS-PAGE gel electrophoresis. There should be no significant change in the protein substrate.

Endotoxin Residual Detection:

Endotoxin residue < 10 EU/ml

Notes:

1. When working with RNA samples, add them in RNase-free tubes.

2. The effective working temperature range for Super nuclease (Benzonase) is 0 to 42°C, with the optimal working temperature being 37°C. Enzyme activity may decrease at low temperatures, but this can be compensated for by adding 2 to 5 times the amount of Benzonase Nuclease or extending the digestion time (2 to 3 hours).

3. Crude products containing high amounts of proteins, cell walls, or other salts may partially inhibit the enzyme activity. In such cases, it is necessary to increase the enzyme dosage.

4. The enzyme activity is ≥250 U/μl. For small-volume preparations, the enzyme can be diluted in a dilution buffer (20 mM Tris-Cl pH 8.0, 2 mM MgCl2, 2 mM NaCl) to a certain concentration before adding it to the system. The diluted solution can only be stored for a few days at 4°C.

5. The product is supplied in liquid form and can be directly added to the lysis buffer for co-use.

6. For your safety and health, please wear lab coat, disposable gloves, and a mask during the experimental procedure.

Disclaimer

The reagent is only used in the field of scientific research, not suitable for clinical diagnosis or other purposes.