Version: 03
Update: 08/24/2023

DATASHEET

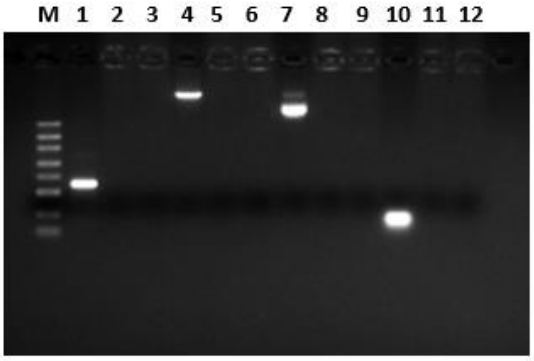
Benz-Nebulase™, tag-free

Cat. No.: Z03695-10; Z03695-100; Z03695-500
Size: 10 kU; 100 kU; 500 kU

Product Introduction

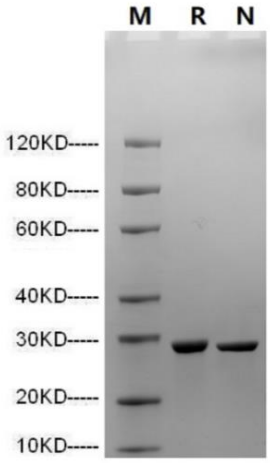
Species:	*Serratia Marcescen*
Tag:	Tag-free
Purity:	≥ 95% as analyzed by reducing SDS-PAGE
Endotoxin Level:	≤ 0.1 EU/kU as determined by gel clotting method
Specific Activity:	≥ 1.1×10^6 U/mg One unit of Benz-Nebulase, tag-free is defined as the amount of enzyme for a ΔA260 of 1.0 (equivalent to the complete digestion of 37 μg DNA) in 30 min.
Enzyme Activity:	≥ 250 U/μL
Expression System:	*E.coli*
Theoretical Molecular Weight:	27.5 kDa
Apparent Molecular Weight:	~27.5 kDa, on SDS-PAGE under reducing conditions
Application:	The **Benz-Nebulase™** is an endonuclease capable of removing all forms of DNA and RNA, including double stranded, single stranded, linearized, and circular forms. The Benz-Nebulase is commonly used in biopharmaceutical production such as vaccine, viral vector, gene and cell therapy manufacturing facilities.
Application Note:	The activity of Benz-Nebulase™, tag-free requires 1-2 mM Mg^{2+}.
Formulation:	Supplied as a solution of 20 mM Tris-HCl, 2 mM $MgCl_2$, 20 mM NaCl, 50% Glycerol, pH 8.0.
Storage & Stability:	This product remains stable for up to 2 weeks at 4 °C or up to 24 months at -20 °C. Avoid repeated freeze-thaw cycles. ***Do not store below -20 °C!***

Data Images



Lane M: DNA marker
Lane 1: PCR product
Lane 2: GenScript Benz-Nebulase™, tag-free + PCR product
Lane 3: Competitor endonuclease+ PCR product
Lane 4: Genomic DNA
Lane 5: GenScript Benz-Nebulase™, tag-free + Genomic DNA
Lane 6: Competitor endonuclease + Genomic DNA
Lane 7: Plasmid DNA
Lane 8: GenScript Benz-Nebulase™, tag-free + Plasmid DNA
Lane 9: Competitor endonuclease + Plasmid DNA
Lane 10: RNA
Lane 11: GenScript Benz-Nebulase™, tag-free + RNA
Lane 12: Competitor endonuclease + RNA

GenScript USA, Inc.
860 Centennial Ave. Piscataway, NJ 08854
Tel: 1-732-885-9188



Lane M：SDS-PAGE marker
Lane R：Reducing (R)
Lane N：Non-reducing (NR)
Purity: > 95% as analyzed by SDS-PAGE

Background

Target Background: The Benz-Neburase is a genetically engineered endonuclease from *Serratia marcescens* used as a DNA eraser in the purification processes of biological molecules. The enzyme cleaves all forms of DNA and RNA into smaller nucleotides of around 5-8 base pairs. Benz-Neburase requires divalent cation, preferably Mg^{2+} for activity, displays a broad pH tolerance, ranging from pH 6 to pH 10, with an optimal pH of 8-8.5, and has a wide temperature tolerance, ranging from 35 °C to 44 °C. The nuclease is a physiologic homodimer and functions more progressively than the monomer. Two disulfide bonds in the nuclease are crucial to its activity and stability. The enzyme is active in a broad range of conditions and is free of proteolytic activity. This makes the enzyme especially useful for biopharmaceutical applications with contaminating DNA residue, such as lysed host cells in viral vector manufacturing processes.

Synonyms: alternative to Benzonase®
Benzonase is a registered trademark of Merck KGaA

References:

1. Nestle, Marion, and W. K. Roberts. "An extracellular nuclease from Serratia marcescens: I. Purification and some properties of the enzyme." *Journal of Biological Chemistry* 244.19 (1969): 5213-5218.
2. Benedik, Michael J., and Ulrich Strych. "Serratia marcescens and its extracellular nuclease." *FEMS microbiology letters* 165.1 (1998): 1-13.
3. Filimonova, Maria N., Kurt L. Krause, and Michael J. Benedik. "Kinetic studies of the Serratia marcescens extracellular nuclease isoforms." *Biochemistry and molecular biology international* 33.6 (1994): 122-1032.
4. Friedhoff, Peter, et al. "A procedure for renaturation and purification of the extracellular Serratia marcescens nuclease from genetically engineered Escherichia coli." *Protein expression and purification* 5.1 (1994): 37-43.
5. Franke, Ingo, Gregor Meiss, and Alfred Pingoud. "On the Advantage of Being a Dimer, a Case Study Using the Dimeric Serratia Nuclease and the Monomeric Nuclease from Anabaena sp. Strain PCC 7120." *Journal of Biological Chemistry* 274.2 (1999): 825-832.

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