

Universal Nuclease

Cat. No.: B1523051 | Pack size: 100µl / 2×100µl / 4×100µl | Storage: Store at -20°C, Avoid repeated freezing and thawing

Product Description

Universal Nuclease is a highly purified recombinant nuclease expressed in *Escherichia coli*. It can degrade all types of DNA and RNA, including single-stranded, double-stranded, linear and circular forms. Experimental results show that it exhibits excellent degradation activity against sperm DNA, viral nucleic acids and eukaryotic genomic DNA. The end products of complete digestion are oligonucleotide fragments of 2~5 bases, which are below the hybridization detection limit.

This product remains active at pH 6.0~10.0 and 0~42 °C in the presence of 1-2 mM Mg^{2+} , and its activity is not affected by surfactants or reducing agents.

Main Applications:

- 1.Reduce solution viscosity during protein extraction;
- 2.Sample preparation for two-dimensional gel electrophoresis;
- 3.Removal of residual nucleic acids in biological products.

Recommended Digestion Conditions

Condition	Recommended Value
Universal Nuclease	2000 U/L
pH	8.0-8.5
Temperature	37 °C
Reaction Time	1-2 h

Reagent Tolerance

Reagent	Experimental Result	Reagent	Experimental Result
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Reagent	Experimental Result	Reagent	Experimental Result
DTT	≤500 mM, no effect on enzyme activity	PO ₄ ³⁻	≤100 mM, no effect on enzyme activity
BME	≤500 mM, no effect on enzyme activity	Mg ²⁺	Essential for enzyme activity; 100 mM does not inhibit enzyme activity
Na ⁺	≤1 M, no effect on enzyme activity	Mn ²⁺	≤15 mM, no effect on enzyme activity
K ⁺	≤500 mM, no effect on enzyme activity	Ca ²⁺	≤25 mM, no effect on enzyme activity
EDTA	≥0.1 mM, inhibits enzyme activity	Zn ²⁺	≤10 mM, no effect on enzyme activity
Triton X-100	≤5%, no effect on enzyme activity	Tween-80	≤5%, no effect on enzyme activity
SDS	≥0.1%, affects enzyme activity	(NH ₄) ₂ SO ₄	≤100 mM, no effect on enzyme activity
Urea	≤2 M, no effect on enzyme activity	GuHCl	≤0.5 M, no effect on enzyme activity
β-Propiolactone	≤0.05%, no effect on enzyme activity	Formalin	≤0.05%, no effect on enzyme activity

MS Analysis of Enzymatic Hydrolysis Products of Nucleic Acids

MS analysis was performed on the products of plasmid DNA hydrolyzed by nuclease for 1 hour. The main hydrolysis products were 2-base and 6-base fragments, while other low-abundance fragments ranged from 3 to 20 bases.

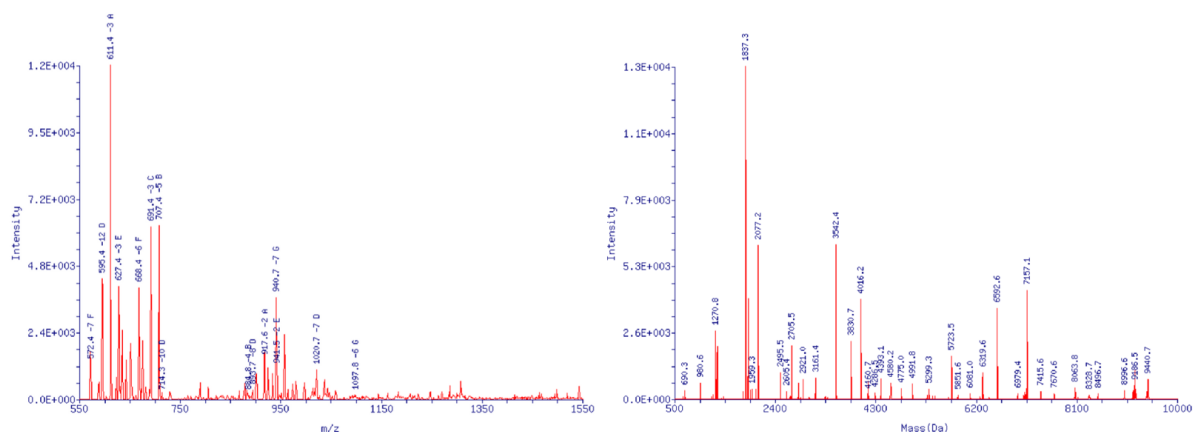


Figure 1. MS analysis of enzymatic hydrolysis products of nucleic acids.

Specifications

Parameter	Specification
Product Name	Universal Nuclease, CAS No.9025-65-4
Grade	ActiBioPure™, Bioactive, Pharmaceutical grade, Recombinant, EnzymoPure™
Specifications & Purity	Bioactive, Recombinant, ActiBioPure™, EnzymoPure™, pharmaceutical grade, ≥99%(SDS-PAGE), expressed in E.coli; ≥250 U/μL; Protein concentration: See COA
Biochemical and Physiological Mechanisms	Catalyzes the hydrolysis of both DNA and RNA, double- or single-stranded, at the 3' position of the phosphodiester bond to produce 5'-phosphorylated mono-, di-, tri- and tetranucleotides. DNA is a slightly better substrate than RNA.
Bioactivity	≥250 U/μL
Accession #	P13717
CAS	9025-65-4
Enzyme Commission	EC 3.1.30.2
Molecule Type	Enzyme
Concentration	expressed in E.coli; ≥250 U/μL; Protein concentration: See COA
Storage	Store at -20°C, Avoid repeated freezing and thawing
Shipped In	Ice chest + Ice pads
Stability And Storage	Store at -20°C long term (36 months). Upon receipt, it is recommended to aliquot. Avoid storage under -70°C.
Unit definition	One unit of activity is defined as the amount of enzyme required to increase the absorbance of DNA at A ₂₆₀ by 1.0 when incubated at 37°C for 30 minutes (equivalent to the amount of enzyme that completely digests 37 μg of DNA).

Safety & Precautions

- Read the current Safety Data Sheet (SDS) before use and follow local laboratory safety and EHS requirements.
- Wear appropriate personal protective equipment, including lab coat, gloves, and eye protection.
- Use only for research and laboratory applications. Do not use for human or animal diagnostics, therapeutics, food, household, or cosmetic applications.

Quality Control

QC Item	Method	Acceptable Range
Appearance	Visual inspection	Solution should be clear and free from visible contamination unless otherwise stated on the COA.
Activity	Functional activity assay	Meets the activity specification stated in the lot-specific COA.
Product identity and specifications	Lot-specific quality testing	Conforms to the approved product specification and certificate of analysis.
Storage and packaging	Label and packaging inspection	Pack size, storage condition, lot number, and expiry information are verified before release.

Troubleshooting

Issue	Possible Causes	Corrective Action
Product performance below expectation	Suboptimal sample preparation or incompatible workflow conditions	Review the Product Description and optimize reagent amount, incubation time, and sample handling.
Inconsistent results	Variation in sample type, storage, or operator technique	Use consistent sample preparation, follow the recommended storage condition, and validate the workflow for the intended application.
Storage deviation	Temperature or light exposure outside labeled conditions	Consult the SDS and COA before use. Discard material if performance or

Issue	Possible Causes	Corrective Action
		safety is uncertain.

Contact & Global Offices

Whether you have a technical question, need help with a quotation, or want to inquire about an order, our regional teams are ready to assist. Please contact the office for your region; for general inquiries, the North American office is the corporate primary.

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Limitations & Disclaimer

- For Research Use Only (RUO). Not for use in human or animal diagnostics, therapeutics, or in vivo applications. Not for food, cosmetic, or household use.
- This product is not a CE-marked in vitro diagnostic device under IVDR (EU) 2017/746 and is not an FDA-cleared device under 21 CFR. Use is restricted to verified businesses, institutions, and qualified professionals for research and development purposes.
- Where any component is classified as hazardous under CLP (EC) 1272/2008 or OSHA HCS (29 CFR 1910.1200), the product Safety Data Sheet (SDS) takes precedence over this document for handling, storage, and disposal information.
- Performance depends on sample type, sample condition, handling, and operator technique. Users are responsible for validating the product for their specific application.
- Aladdin product labels, SDS, COA, and approved specifications take precedence over this document. If product formulation, label, SDS, storage conditions, pack size, or quality specifications change, this document should be reviewed and reissued.