RNase A, DNase and Protease-free

**#EN0531** 10 mg
Lot: Expiry Date:

Concentration: 10 mg/ml

Store at -20°C

In total 1 vial.

**Description**
RNase A is an endoribonuclease that specifically degrades single-stranded RNA at C and U residues. It cleaves the phosphodiester bond between the 5'-ribose of a nucleotide and the phosphate group attached to the 3'-ribose of an adjacent pyrimidine nucleotide. The resulting 2', 3'-cyclic phosphate is hydrolyzed to the corresponding 3'-nucleoside phosphate (1, 2).

**Applications**
- Plasmid and genomic DNA preparation (3, 4).
- Removal of RNA from recombinant protein preparations.
- Ribonuclease protection assays. Used in conjunction with RNase T1 (3).
- Mapping single-base mutations in DNA or RNA (5, 6).

**Source**
Bovine pancreas.

**Molecular Weight**
13.7 kDa monomer.

**Concentration**
Protein concentration is determined by measuring the absorbance at 278 nm using molar absorption coefficient \( \varepsilon = 9800 \text{ M}^{-1}\text{cm}^{-1} \) (7).
Definition of Activity Unit
One unit of the enzyme causes an increase in absorbance of 1.0 at 260 nm when yeast RNA is hydrolyzed at 37°C and pH 5.0. Fifty units are approximately equivalent to 1 Kunitz unit (8).

Specific activity
\[ \geq 5000 \text{ u/mg protein (} \geq 100 \text{ Kunitz units/mg protein).} \]

Storage Buffer
The enzyme is supplied in: 50 mM Tris-HCl (pH 7.4) and 50% (v/v) glycerol.

Inhibition and Inactivation
- Inhibitors: the most potent inhibitor is a mammalian ribonuclease inhibitor, e.g., RiboLock™ RNase Inhibitor (#EO0381).
  Other inhibitors: uridine 2',3'-cyclic vanadate, 5'-diphosphoadenosine 3'-phosphate and 5'-diphosphoadenosine 2'-phosphate (2), SDS, diethyl pyrocarbonate, 4 M guanidinium thiocyanate plus 0.1 M 2-mercaptoethanol and heavy metal ions.
- Not inactivated by heating, reliably removed by spin column or phenol/chloroform extraction.

Note
- Recommended concentration of RNase A is 1-100 µg/ml depending on the application.
- The enzyme is active under a wide range of reaction conditions. At low salt concentrations (0 to 100 mM NaCl), RNase A cleaves single-stranded and double-stranded RNA as well the RNA strand in RNA-DNA hybrids. However, at NaCl concentrations of 0.3 M or higher, RNase A specifically cleaves single-stranded RNA (9).

QUALITY CONTROL ASSAY DATA

Endodeoxyribonuclease Assay
No detectable conversion of covalently closed circular DNA to a nicked DNA was observed after incubation of 5 µg of RNase A with 1 µg of pUC19 DNA in 20 µl of buffer (25 mM Tris-HCl (pH 8.0), 5 mM MgCl₂, 5 mM NaCl) for 18 hours at 37°C.

Labeled Oligonucleotide (LO) Assay
No detectable degradation of a single-stranded or double-stranded labeled oligonucleotide was observed after incubation with 5 µg of RNase A in buffer (25 mM Tris-HCl (pH 8.0), 5 mM MgCl₂, 5 mM NaCl) for 18 hours at 37°C.

Protease Assay
No degradation of protease substrate was determined after incubation of 25 µg of RNase A with 200 µg of azocasein for 18 hours at 37°C.

Quality authorized by: Jurgita Zilinskiene

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References


PRODUCT USE LIMITATION.

This product is developed, designed and sold exclusively for research purposes and in vitro use only. The product was not tested for use in diagnostics or for drug development, nor is it suitable for administration to humans or animals. Please refer to www.fermentas.com for Material Safety Data Sheet of the product.