DATA SHEET

Product Specifications

DNA & RNA Purification, Electrophoresis Reagents, Polymerase Chain Reaction
Custom Primers and Probes
Hybridization and Detection Reagents

RNase A Solution, DNase Free

	Catalog Number	Description	Size
❑	40-5101-02	RNase A Molecular biology grade solution. DNase Free. 2 mg/ml; 200 µl	400 µg
❑	40-5101-10	RNase A Molecular biology grade solution. DNase Free. 2 mg/ml; 1 ml	2 mg
❑	40-5101-01	RNase A Molecular biology grade solution. DNase Free. 10 mg/ml; 1 ml	10 mg

Storage:

Shipped on ice. Store at -20°C.

Product Description:

RNase A is purified from bovine pancreas. RNase A is an endonuclease that specifically cleaves single-stranded RNA at 3' phosphate linkages of pyrimidine (uracil or cytosine) residues leaving pyrimidine 3' phosphates and RNA oligonucleotides with terminal pyrimidine 3' phosphates. This enzyme does not require co-factors and divalent cations for the activity and it does not hydrolyze DNA as DNA lacks 2′-OH groups essential for the formation of cyclic intermediates.

Supplied in ready to use solution of 2 mg/ml in 50mM Tris-HCl pH 7.4 and 50% glycerol; 4 µl is sufficient for routine RNase treatment to digest RNA in 1.5 ml plasmid mini preps. A high concentration solution of 10 mg/ml is also available.

Applications and Recommended Product Use:

RNase A applications include protocols to hydrolyze RNA to RNA oligonucleotides and is generally used in plasmid and genomic DNA purification protocols to eliminate carry over RNA. Specific applications include RNase protection assay to RNA sequence analysis.

Supplied in ready to use solution in 50% glycerol (50mM Tris-HCl pH 7.4 and 50% glycerol). 1 µl (30 units/µl) is sufficient for routine RNase treatment to digest RNA in 1.5 ml plasmid mini preps.

This preparation does not require the classic boiling of RNase A solution to inactivate DNase. Boiling is not recommended.

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

RNase A Inhibitors. The most potent inhibitor is a ~50kDa protein from cytosol of mammalian cells, e.g. natural RNase inhibitor. Other inhibitors: uridine 2',3'-cyclic vanadate, 5'-diphosphoadenosine 3'-phosphate and 5'-diphosphoadenosine 2'-phosphate, SDS, diethyl pyrocarbonate, 4M guanidinium thiocyanate plus 0.1M 2mercaptoethanol and heavy metal ions.
RNase A activity survives boiling and thus complete inactivation is performed by phenol extraction, chaotropic salts, autoclaving of reagents and labware etc.

Specifications:

Enzyme Name:	RNase A
Source:	Bovine pancreas
EC Number:	3.1.27.5
Molecular Weight:	13,700 Da
Solution Form:	50mM Tris-HCl pH 7.4 and 50% glycerol
Concentration:	30 units/ µl [approximately 6 mg/ml]
Unit Definition:	One Kunitz unit of RNase A is the amount of enzyme required to cause an increase in absorbance of 1.0 at 260 nm at 37°C (pH 5.0) when yeast rRNA is hydrolyzed to acid-soluble oligonucleotides. Fifty units are approximately equivalent to 1 Kunitz unit
Purity:	The enzyme is chromatographically purified and is tested for protease and DNase activities.
Quality Control Tests:	The absence of DNase and proteases confirmed by appropriate quality tests. Functionally tested for RNA digestion in a plasmid DNA purification procedure.

References:

1. SAMBROOK, J., RUSSELL, D. W. (2001) *Molecular Cloning: A Laboratory Manual*, the third edition, Cold Spring Harbor Laboratory Press, Cold Spring Harbor, New York, 7.63-7.74.
2. SHARMA, R. C., MURPHY A. J., DE WALD, M. G. AND SCHIMKE, R. T. (1993) *BioTechniques*, **14**, 176-178.
3. Ausubel, F.M., et al., Current Protocols in Molecular Biology, vol. 1, John Wiley & Sons, Inc., Brooklyn, New York, 3.13.1, 1994-2005.
4. Kunitz, M.A., A spectrophotometric method for the measurement of ribonuclease activity, J. Biol. Chem., 164, 563-568, 194

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