

Shrimp DNase, Recombinant

- Selectively degrades double-stranded DNA, leaving single-stranded DNA and RNA intact
- Totally inactivated at 70°C within a 30 min incubation
- Free of contaminating RNase
- Eliminates concern with handling bovine-derived DNase



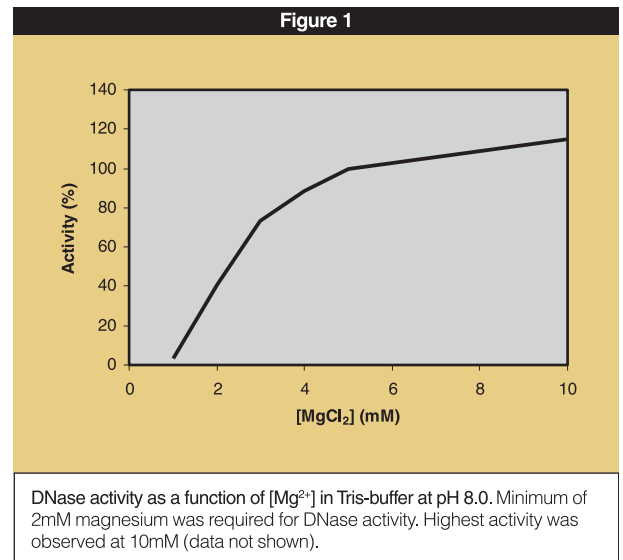
Source:

Pichia pastoris strain containing overproducing clone of *Pandalus borealis* DNase.

Description:

Shrimp DNase is an endonuclease that cleaves phosphodiester linkages in DNA to yield di- and oligonucleotides with 5'-phosphate and 3'-hydroxyl termini. This DNase has a remarkably high specific activity towards double-stranded DNA (dsDNA). The activity towards dsDNA is 5000-fold higher than towards single-stranded DNA, and thus can be used selectively to degrade dsDNA, leaving single-stranded DNA intact. The activity of this enzyme depends on Mg^{2+} concentration (Fig. 1) and is stimulated by Ca^{2+} . However, Ca^{2+} also stimulates the RNase activity of Shrimp DNase and should be avoided when RNA integrity is critical.

The DNase activity favors low ionic strength. Activity decreases with increasing ionic strength. This recombinant enzyme can be heat-inactivated by a moderate heat treatment without the use of EDTA (Fig. 2). Shrimp DNase is totally inactivated at 70°C after a 25-30 min incubation.



Applications:

1. Selective degradation of dsDNA leaving ssDNA and RNA intact.
2. Removal of DNA from RNA prior to RT-PCR.
3. Removal of DNA template after *in vitro* transcription.
4. Nick translation with DNA Polymerase I (PN 70010).
5. Footprint determination of DNA binding protein.

Unit Definition:

One unit increases the absorbance at 260 nm by 0.001 O.D. per min at 25°C and pH 5.0 using high molecular weight DNA as a substrate according to the method of Kunitz⁽¹⁾.

Concentration:

2 units/ μ l

Shipping and Storage:

Shipped on dry ice. Store at -20°C.

Properties:

Molecular Weight: 47 kDA

Optimum pH: 8.0

K_m (apparent): 0.01 mg/ml

Activators: Mg^{2+} (Optimum: 10mM) and Ca^{2+} (Optimum: 1mM in the presence of Mg^{2+})

Inactivation: 70°C for 30 min

Ionic Strength: Low (10-20mM Tris-HCl)

Purity:

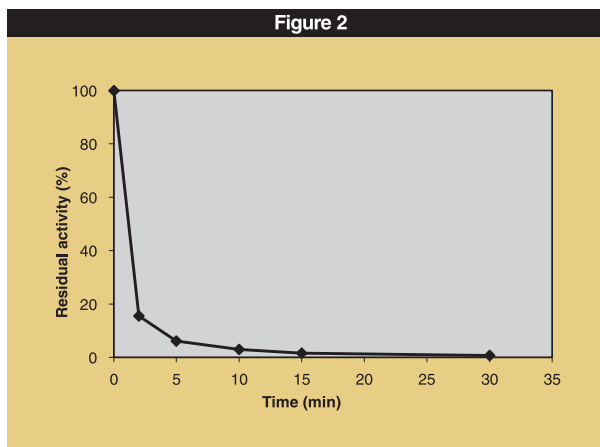
Greater than 98% pure as determined by SDS-PAGE. Tested for contaminating single-stranded exonuclease and ribonuclease.

Storage Buffer:

20mM Tris-HCl, pH 7.5, 2mM $MgCl_2$, 10mM NaCl and 50% glycerol.

Shrimp DNase, Recombinant PN 78314

Pack Size	List Price
100 units	\$75.00
500 units	\$300.00
Customs By Request	



Residual activity of Shrimp DNase. 60 units Shrimp DNase in 200 μ l assay buffer was incubated at 70°C. Aliquots were taken out at indicated intervals and residual activity was measured. Shrimp DNase was totally inactivated at 70°C in 25 to 30 min.

Assay Conditions:

The reaction mixture contains 100mM NaAC, pH 5.0, 5mM $MgCl_2$, 50 μ g/ml calf thymus DNA and Shrimp DNase. Incubation temperature is 25°C (1 ml reaction volume).

Protocol Recommendation:

For the degradation of dsDNA a reaction buffer containing 20mM Tris-HCl, pH 7.5, 10mM $MgCl_2$ and 1mM $CaCl_2$ can be used. Addition of 1mM $CaCl_2$ approximately doubles the DNase activity.

Reference:

1.KUNITZ, (1950) *J. Gen. Physiol.* **33**, 349.



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