

Integrated DNA Technologies

RNase H2 Enzyme is a recombinant endoribonuclease that binds to RNA-DNA duplexes, and cleaves the RNA strand leaving a 5'phosphate and a 3'hydroxyl group. The RNase H2 enzyme differs from RNase H1 in that RNase H2 will cleave at a single ribonucleotide residue embedded within a heteroduplex. RNase H2 will not cleave single-stranded RNA.

Source

Codon optimized *Pyrococcus abyssi* RNase H2 gene over-expressed in *E. coli*.

Enzyme requirements

- monovalent cation: 50-75 mM K⁺/Na⁺ or 32 mM NH₄⁺
- divalent cation: 2-8 mM Mg⁺⁺, 0.6-1.5 mM Mn⁺⁺, or 0.5-0.75 mM Co⁺⁺
- pH 8.0-8.4
- nonionic detergent: 0.01% Triton X100 or 0.01% Tween 20

Temperature

RNase H2 activity is optimal around 75 °C, with significant activity retained with temperatures as low as 50 °C. It retains maximal catalytic activity at 95°C for over 30 minutes.

Substrates

RNA-DNA duplex with as little as a single ribose-base embedded in a DNA strand. If the substrate contains a stretch of ribose bases, cleavage will occur at multiple sites within the RNA containing strand. In the case of a single RNA containing duplex, a 3'OH and a 5'phosphate containing oligonucleotides are produced.

Example S-rC 14-1-15 (RNA base lowercase)

5' CTCGTGAGGTGATGcAGGAGATGGGAGGCG 3'

3' GAGCACTCCACTACGTCCTCTACCCTCCGC 5'

Cleavage products

5' CTCGTGAGGTGATG-OH 3'

/5Phos/cAGGAGATGGGAGGCG 3'

5'CGCCTCCCATCTCCTGCATCACCTCACGAG 3'

Maximal cleavage efficiency requires the positioning of the RNA base to be 8-10 bases in from the 5' end, and 4 or more bases from the 3' end.

Unit definition

One enzymatic unit is the amount of enzyme needed to cleave 1 nmole of the DNA-RNA-DNA heteroduplex substrate S-rC 14-1-15 (shown above) per minute at 70°C in Mg⁺⁺ Cleavage Buffer (10 mM Tris-HCl pH 8.0, 50 mM NaCl, 4 mM MgCl₂, 10 µg/mL BSA)

5' CTCGTGAGGTGATGcAGGAGATGGGAGGCG 3'

3' GAGCACTCCACTACGTCCTCTACCCTCCGC 5'

Molecular weight

- 27,573.6 daltons

Storage conditions

IDT recommends storage at -20°C in low protein binding tubes.

Research Purposes Only: RNase H2 enzyme is sold by IDT for the customer's research purposes only. Except pursuant to a separate, written agreement with IDT, RNase H2 enzyme is not sold for use in any clinical, diagnostic, validation or therapeutic applications.