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## RiboShield™ RNase Inhibitor

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### Product description

RiboShield™ RNase Inhibitor is a recombinant protein that blocks the activity of a wide range of ribonucleases to reliably protect your RNA from RNase digestion. The inhibitor is designed for use in RNA-sensitive applications such as RT-qPCR, cDNA synthesis and RNA-seq, where the presence of even small amounts of RNase can be highly detrimental to RNA quality and experimental outcome.

RiboShield™ RNase Inhibitor has a molecular weight of 50kDa and is purified from a strain of *Pichia pastoris* expressing a modified human placental gene. The inhibitor binds noncovalently to RNases at a 1:1 ratio, and has a  $K_i$  value of approximately  $10^{-14}$ M when binding to RNase A<sup>1</sup>. Moreover, the very rapid kinetics of association to RNases guarantees immediate protection of your RNA.

Some cysteine residues present in human placental protein have been implicated in the oxidation sensitivity of the protein<sup>2</sup>. RiboShield™ RNase inhibitor does not contain these residues, resulting in a molecule more resistant to oxidative stress.

The high thermostability of RiboShield™ ensures activity up to 65°C for 30 minutes. The inhibitor can block the activity of a wide range of ribonucleases, including eukaryotic RNases of the neutral type (e.g. RNases A, B and C). It does not inhibit RNases T1, T2, U1, U2, CL3, RNase I and H. The inhibitor is free from ribonucleases and phosphatases, and is inactivated by heating at 75°C for 15 minutes.

### References

<sup>1</sup> Lee FS, Shapiro R, Vallee BL. *Tight-binding inhibition of angiogenin and ribonuclease A by placental ribonucleas inhibitor*. Biochemistry. 1989; 28:225–230.

<sup>2</sup> Kim BM, Schultz LW, Raines RT. *Variants of ribonuclease inhibitor that resist oxidation*. Protein Science. 1999; 8(2):430–434.

Component	2500 units	10000 units
RiboShield™ RNase Inhibitor (40U/μL)	1 x 62.5μL	4 x 62.5μL

### Instructions for use

We recommend adding 40 units of RiboShield™ RNase inhibitor to a 20μL reaction (1μL per reaction). Titration may be required in case of templates derived from RNase-rich sources.

### Shipping and storage

On arrival the kit should be stored between -30°C and -15°C. If stored correctly the kit will retain full activity for 12 months. Avoid multiple freeze-thaw cycles and exposing product to frequent changes in temperature

### Limitations of product use

The product may be used for in vitro research purposes only.

### Technical support

Help and support is available on our website at <https://pcrbio.com/resources/> including answers to frequently asked technical questions. For technical support and troubleshooting you can submit a technical enquiry online, or alternatively email [technical@pcrbio.com](mailto:technical@pcrbio.com) with the following information:

- Reaction type and setup,
- Cycling conditions,
- Screen grabs of gel images or amplification traces