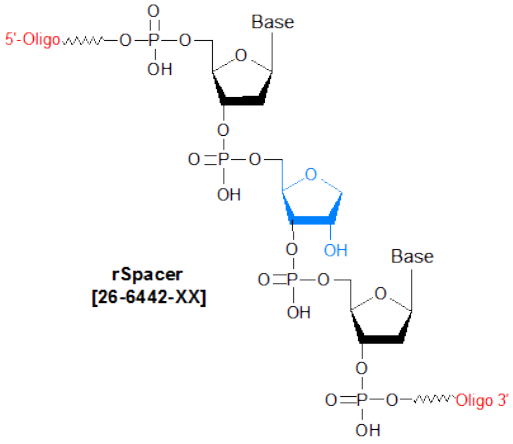
rSpacer

Category	Spacers
Modification Code	rABS
Reference Catalog Number	26-6442
5 Prime	Y
3 Prime	Y
Internal	Y
Molecular Weight(mw)	196.09



Ribo rAbasic Site (rSpacer abasic furan) RiboSpacer (rSpacer) is a tetrahydrofuran derivative, in which a methylene group occupies the 1 position of 2'-ribose. rSpacer is commonly used to mimic an abasic site in an RNA oligonucleotide. Naturally-occurring abasic sites in RNA are less common than in DNA, due to RNA being less susceptible to depurination (1). However, once generated, either spontaneously or via an enzymatic pathway, RNA abasic sites are about 15-fold more stable than DNA abasic sites; this fairly high level of stability could have important biological consequences for long-lived RNAs (for example, tRNAs or rRNA) (2). While such biological consequences have been largely unexplored thus far, abasic site effects on RNA structure and activity has been observed for the case of the hammerhead ribozyme, which catalyzes phosphodiester bond cleavage (3). Introduction of abasic sites at different positions of this ribozyme's core significantly reduced ribozyme activity. Interestingly, the activity was partially rescued for some abasic positions by exogenous addition of the missing base. rSpacer-modified oligonucleotides could serve as important research tools for elucidating the effects of abasic sites on the structure and function of long-lived RNAs and ribozymes. **References**

1. Kochetkov, N.K., Budovskii, E.I. Hydrolysis of N-glycosidic bonds in nucleosides, nucleotides and their derivatives. In *Organic Chemistry of Nucleic Acids* New York: Plenum; (1993). pp. 425-448.
2. Kupfer, P.A., Leumann, C.J. The chemical stability of abasic RNA compared to abasic DNA. *Nucleic Acids Res.* (2007), **35**: 58-68.
3. Peracchi, A., Beigelman, L., Usman, N., Herschlag, D. Rescue of abasic hammerhead ribozymes by exogenous addition of specific bases. *Proc. Natl. Acad. Sci. USA.* (1996), **93**: 11522-11527.