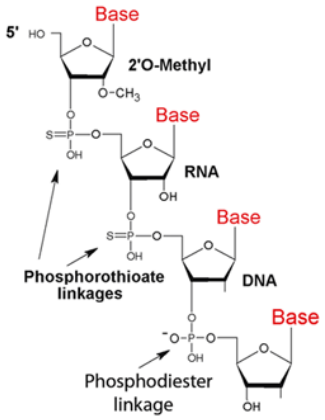
Phosphorothioate (SOX)

Category	Antisense
Modification Code	*
Reference Catalog Number	26-6401
5 Prime	Y
3 Prime	Y
Internal	Y
Molecular Weight(mw)	16



Minimum Pricing Note that the above pricing is for one site only. Minimum charges apply for 15 sites per oligo.

Phosphorothioate modification is to the backbone linkage modifying the phosphodiester linkage to phosphorothioate. This imparts considerable nuclease resistance and is used widely in the design of antisense oligonucleotides (ODN).
An antisense oligonucleotide refers to a short, synthetic DNA or RNA strand that is complementary in sequence to a short target sequence on a particular mRNA strand, which upon specific hybridization to its target induces inhibition of gene expression. The mechanism of inhibition is based on two properties: first, the physical blocking of the translation process by the presence of the short double-stranded region, and second, in the case of antisense DNA, the resulting DNA-RNA duplex is susceptible to cleavage by cellular RNase H activity, which degrades the mRNA and prevents proper translation. The latter property is the classic mode of action for antisense oligos. The former property can be used when it is necessary to design an antisense oligo with certain modifications that result in it not supporting RNase-H activity (1,2).
Click here for more information on antisense design & applications

References

(1) Sazani, P., Kole, R. Therapeutic potential of antisense oligonucleotides as modulators of alternative splicing. J. Clin. Invest. (2003), 112: 481-486. (2) Juliano, R., Alam, Md.R., Dixit, V., Kang, H. Mechanisms and strategies for effective delivery of antisense and siRNA oligonucleotides. Nucleic Acids Res. (2008), 36: 4158-4171. (3) Chan, J.H., Lim, S., Wong, W.S. Antisense oligonucleotides: from design to therapeutic applications. Clin. Exp. Pharmacol. Physiol. (2006), 33: 533-540. (4) Kurreck, J. Antisense technologies. Improvement through novel chemical modifications. Eur. J. Biochem. (2003), 270: 1628-1644. (5) Crooke, S.T. Progress in antisense technology. Annu. Rev. Med. (2004), 55: 61-95.