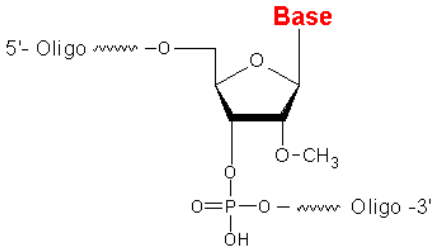
2'-O methyl G

Category	Nuclease Resistance
Modification Code	mG
Reference Catalog Number	27-6410G
5 Prime	Y
3 Prime	Y
Internal	Y
Molecular Weight(mw)	359.24



2' O-Methyl Base

[27-6410-XX]

2’-O-Methyl guanosine G is classified as a 2’-O-Methyl RNA monomer. 2’-O-Methyl nucleotides are most commonly used **to confer nuclease resistance** to an oligo designed for anti-sense, siRNA or aptamer-based research, diagnostic or therapeutic purposes, when specific 2’-OH is not required. Nuclease resistance can be further enhanced by phosphorothiolation of appropriate internucleotide linkages within the oligo.

The hydrogen bonding behavior of a 2’-O-Methyl RNA/RNA base pair is closer to that of an RNA/RNA base pair than a DNA/RNA base pair. Consequently, the presence of 2’-O-Methyl nucleotides **improves duplex stability**. Indeed, incorporation of a 2’-O-Methyl nucleotide into an anti-sense oligo (resulting in a 2’-O-Methyl RNA/DNA chimeric), lead to a **increase** in the Tm of its duplex with RNA, relative to that formed by an unmodified anti-sense DNA oligo, **of 1.3°C per 2’-O-Methyl RNA residue added** (2). Moreover, from a synthesis standpoint, the coupling efficiency of 2’-O-Methyl phosphoramidites are higher than those of RNA monomers, resulting in higher yield of full-length oligos. **References**

1. Cotton, M.; Oberhauser, B.; Burnar, H. *et al.* 2’O methyl and 2’O ethyl oligoribonucleotides as inhibitors of the in vitro U7 snRNP-dependent messenger-RNA processing event. *Nucleic Acids Res.* (1991) , **19**:2629-2635.
2. Kawasaki, A.M. *et al.*, Uniformly modified 2'-deoxy-2'-fluoro phosphorothioate oligonucleotides as nuclease resistant antisense compounds with high affinity and specificity for RNA targets, *Journal of Medicinal Chemistry* (1993), **36**: 831-841.