

## **Product Specifications**

Custom Oligo Synthesis, antisense oligos, RNA oligos, chimeric oligos, Fluorescent dyes, Affinity Ligands, Spacers & Linkers, Duplex Stabilizers, Minor bases, labeled oligos, Molecular Beacons, siRNA, phosphonates Locked Nucleic Acids (LNA); 2'-5' linked Oligos

## Oligo Modifications

For research use only. Not for use in diagnostic procedures for clinical purposes.

## Spacer 9

Category	Spacers	
Modification Code	Sp9	5'-Oligowwo _ JP_Cwwoligo-3'
Reference Catalog Number	26-6440	HO O O O O O O O O O O O O O O O O O O
5 Prime	Υ	HO 0 P - GwwDligo-3'
3 Prime	Υ	5 Spacer 9
Internal	Υ	5'-Oligovarro
Molecular Weight(mw)	212.14	3' Spacer 9
		Spacer 9 [26-6440-XX]

Spacer 9 is a triethylene glycol chain that is 9 atoms long (6 carbons + 3 oxygens), and is used to incorporate a spacer arm into an oligonucleotide. Spacer 9 can be incorporated in consecutive additions whenever a longer spacer is required. Spacer 9 has been used to form non-nucleotide bridges in hairpin loops in oligonucleotides (1), for linking oligonucleotides to epitopes for drug development (2), and for solid-phase immobilization of hybridization probes (3). Multiple incorporation of Spacer 9 has been used to form long, flexible linker arms between the two domains (double-helix forming and triple-helix forming, respectively) of a bifunctional DNA oligonucleotide, in order to maximize the binding flexibility of the two domains for their respective targets (4). This oligo was used to form a peptide nucleic acid (PNA)-DNA conjugate for use in site-directed recombination applications. **References** 

- 1. Nelson, J.S., Giver, L., Ellington, A.D., Letsinger, R.L. Incorporation of Non-Nucleotide Bridge into Hairpin Oligonucleotides Capable of High-Affinity Binding to the Rev Protein of HIV-1. *Biochemistry*. (1996), **35**: 5339-5344.
- 2. Palma, E., Klapper, D.G., Cho, M.J. Antibodies as Drug Carriers III: Design of Oligonucleotides with Enhanced Binding Affinity for Immunoglobulin G. *Pharm. Res.* (2005), **22**: 122-127.
- 3. Beattie, W.G., Meng, L., Turner, S.L., Varma, R.S., Dao, D.D., Beattie, K.L. Hybridization of DNA targets to glass-tethered oligonucleotide probes. *Mol. Biotechnol.* (1995), **4**: 213-225.
- 4. Rogers, F.A., Vasquez, K.M., Egholm, M., Glazer, P.M. Site-directed recombination via bifunctional PNA-DNA conjugates. *Proc. Natl. Acad. Sci. USA* (2002), **99**: 16695-16700.

