Oligo Synthesis

Product Specifications

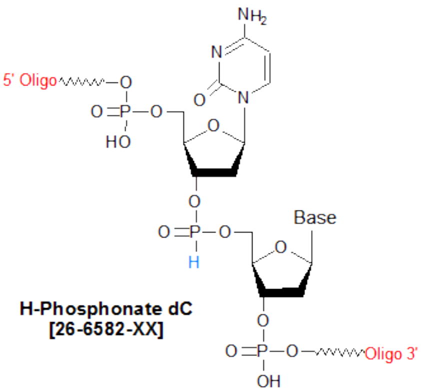
Custom Oligo Synthesis, antisense oligos, RNA oligos, chimeric oligos,
Fluorescent dyes, Affinity Ligands, Spacers & Linkers, Duplex Stabilizers,
Minor bases, labeled oligos, Molecular Beacons, siRNA, phosphonates
Locked Nucleic Acids (LNA); 2'-5' linked Oligos

Oligo Modifications

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

H-Phosphonate dC. dC(H-p)

Category	Others
Modification Code	H-p-dC
Reference Catalog Number	26-6582
5 Prime	Y
3 Prime	Y
Internal	Y
Molecular Weight(mw)	274.19



H-Phosphonate dC
[26-6582-XX]

H-Phosphonate modification has a setup charge of $250.00 per order for special synthesis reagents .

Special notes on H-phosphonate modification.

1. **H-phosphonate chimeric oligos.** H-phosphonate bases/oligos can be synthesized in a sequence with standard bases or modifications containing phosphodiester linkages the 3' end of the sequence. If a chimeric oligo is designed then the H-phosphonate should be on the 5' end with no other standard phosphodiester bases at 5' of the H-phosphonate linked bases. Chemical oligo synthesis starts from the 3' and the phosphodiester linkages are generated by oxidation. Any such oxidation cycle after coupling the H-phosphonate will oxidize the H-phosphonate linkage to phosphodiester linkage.
2. **Special oxidation.** H-phosphonate modified oligos can be supplied with oligo bound to CPG solid support for the end user to perform special oxidation at the H-phosphonate linkage. Example is for S-35 radio-labeled phosphorothioate linkage. Please specify when placing an order.

H-phosphonoamidites are deoxynucleoside amidites modified such that, when incorporated into an oligonucleotide, that base position will have an H-phosphonate backbone linkage instead of the standard phosphodiester linkage. In the H-phosphonate linkage, one of the oxygen bound to the phosphorus atom in a phosphodiester linkage has been replaced by hydrogen. H-phosphonate-modified oligos are typically synthesized when a researcher wants to prepare a S-35 radiolabeled phosphorothioate linkage (1). For the radiolabeled phosphorothioate, an H-phosphonate linkage is incorporated at the desired position using phosphoramidite chemistry, and then S-35 is used to replace the hydrogen atom via a sulfurization reaction (2). For the phosphoroamidate, N,N-dimethylaminoethylamine is reacted with the H-phosphonate to form the substituted linkage. Phosphoroamidates, being a cationic linkage, may provide nuclease resistance and improved cell permeability (3).

References

1. Maier, M.A., Guzaev, A.P., Manoharan, M. Synthesis of Chimeric Oligonucleotides Containing Phosphodiester, Phosphorothioate, and Phosphoramidate Linkages. *Org. Lett.* (2000), **2**: 1819-1822.
2. Wallin, R., Kalek, M., Bartoszewicz, A., Thelin, M., Stawinski, J. On the Sulfurization of H-Phosphonate Diesters and Phosphite Triesters Using Elemental Sulfur.

Phosphorus, Sulfur, and Silicon (2009), **184**: 908-916.
3. Letsinger, R.L., Singman, C.N., Histand, G., Salunkhe, M. Cationic Oligonucleotides.*J. Am. Chem. Soc.* (1988), **1110**: 4470-4471.