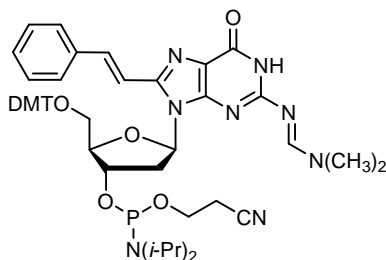


8-Styryl-dG CEP

Product No. BA 0352

Product Information



C₅₁H₅₉N₈O₇P
Mol. Wt.: 927.04

Ogasawara and co-workers have reported the use of 8-substituted dG derivatives that provide reversible duplex regulation *via* a light induced *trans-cis* isomerization.^{1,2} The *trans* isomer of 8-styryl-2'-deoxyguanosine (^{8ST}G) is one such photochromic nucleoside (PCN). When a 12-bp duplex containing ^{8ST}G is irradiated for 5 minutes at 370 nm, the double bond isomerizes to the *cis* geometry with 86% conversion. Subsequent irradiation for 2 minutes at 254 nm returns the double bond to the *trans* geometry with 94% conversion. Both *trans* and *cis* isomers are thermally stable but readily interconvert at room temperature upon irradiation with light of the appropriate wavelength. The *T_m* value of the duplex containing a *trans*-PCN is 7.9 °C higher than the *T_m* value of the same duplex containing a *cis*-PCN. When three ^{8ST}G insertions are inserted into a 20-bp duplex, the *trans*-PCNs permit duplex formation whereas the *cis*-PCNs cause denaturation of the duplex. This phenomenon is evidenced by changes in the circular dichroism spectra before and after irradiation of the duplex containing *trans*-PCNs at 370 nm. Conversely, when the single strands containing *cis*-PCNs are irradiated at 254 nm, hybridization occurs as the *trans* isomer is formed.

Use: For oligonucleotide synthesis, employ acetonitrile diluent at the concentration recommended by the synthesizer manufacturer. Use standard coupling protocols; in our hands, extended coupling times were not required and coupling efficiencies of 99% could be obtained. Cleavage from the solid support may be carried out by standard procedures, and standard nucleobase deprotection conditions may be employed.

References

1. Ogasawara, S.; Saito, I.; Maeda, M. *Tetr. Lett.*, **2008**, *49*, 2479-82.
2. Ogasawara, S.; Maeda, M. *Angew. Chem. Int. Ed.*, **2008**, *47*, 8839-42.