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C8-Alkyne-dT-CE-phosphoramidite

http://www.lumiprobe.com/p/alkyne-dt-amidite-octadiyne-c8

C8-Alkyne-dT-CE-phosphoramidite serves as a powerful tool in oligonucleotide synthesis, enabling researchers to create highly functionalized DNA constructs through click chemistry. Its applications span from basic research in molecular biology to advanced therapeutic strategies.

The primary application of C8-Alkyne-dT-CE-phosphoramidite is in the copper-catalyzed azide-alkyne cycloaddition (CuAAC) reaction, commonly referred to as click chemistry. This method allows for the efficient and selective modification of oligonucleotides by attaching azide-containing labels, such as fluorescent dyes or biotin. The reaction typically yields high conversion rates within 30 minutes to 4 hours, making it suitable for rapid labeling of DNA.

C8-Alkyne-dT-CE-phosphoramidite can be used to create dual-labeled or even triple-labeled oligonucleotides. In a typical procedure, a single alkyne-modified nucleotide is first incorporated into the oligonucleotide during solid-phase synthesis. Subsequent click reactions can introduce additional labels, allowing for complex oligonucleotide designs that can be used in applications like multiplexed imaging or targeted delivery systems.

Another significant application is in the development of dual-labeled hydrolysis probes for real-time PCR (TaqMan probes). The alkyne group allows for the incorporation of a quencher at one end and a fluorescent reporter at the other, facilitating sensitive detection of nucleic acids during amplification.

C8-Alkyne-dT-CE-phosphoramidite is also employed in studies involving RNA and DNA hybridization. The presence of an alkyne does not interfere with hybridization, making it possible to design probes that can be easily modified post-synthesis without affecting their binding properties.

In therapeutic applications, oligonucleotides modified with C8-Alkyne-dT-CE can be designed to target specific cellular pathways or deliver therapeutic agents directly to cells. This capability is enhanced through the use of click chemistry to attach drug molecules or other functional groups that facilitate cellular uptake or targeting.

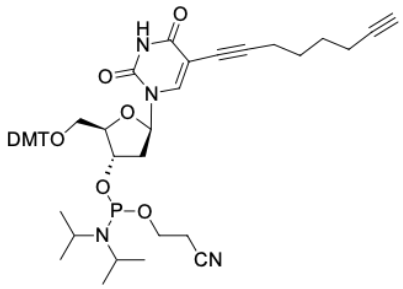
Recommendations for using the reagent:

Coupling: Standard conditions identical to normal nucleobases.

Deprotection: Deprotection: remove DMT in standard conditions, typically with 1% DCA or TFA in dry DCM for 1-2 min at 25°C.

Cleavage: typically in concentrated ammonium hydroxide for 5 hours at 60°C (or 1 hour for fast-deprotecting amidites). AMA mixture (concentrated aqueous ammonia/40% methylamine 1:1) for 15 min at 65°C.

The C8-Alkyne-dT-CE-phosphoramidite is stable in solution for 1-2 days, so it should be used promptly after preparation to avoid degradation.



Structure of C8-Alkyne-dT-CE-phosphoramidite

General properties

Appearance:	white powder
Molecular weight:	834.95

CAS number:	938186-76-6
Solubility:	DCM, acetonitrile, DMF
Quality control:	NMR ^{1}H, HPLC-MS (95%), functional testing
Storage conditions:	12 months after receival at -20°C in the dark. Transportation: at room temperature for up to 3 weeks. Desiccate.
Legal statement:	This Product is offered and sold for research purposes only. It has not been tested for safety and efficacy in food, drug, medical device, cosmetic, commercial or any other use. Supply does not express or imply authorization to use for any other purpose, including, without limitation, in vitro diagnostic purposes, in the manufacture of food or pharmaceutical products, in medical devices or in cosmetic products.

Oligo synthesis details

Diluent:	anhydrous acetonitrile
Coupling conditions:	standard conditions identical to normal nucleobases
Cleavage conditions:	in standard conditions, typically with 1% DCA or TFA in dry DCM for 1-2 min at 25 °C.