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DBCO-TEG-phosphoramidite

http://www.lumiprobe.com/p/dbco-teg-phosphoramidite

DBCO-TEG phosphoramidite is designed for the incorporation of a DBCO group at the 5′ end of oligonucleotides. Due to sterical effects DBCO conjugates with azides in copper-free click reactions. This bioorthogonal method allows for bioconjugation without the toxic effects associated CuAAC method, making it suitable for biological applications. The TEG spacer increases solubility and helps separate the hydrophobic DBCO moiety from the oligonucleotide backbone, minimizing potential steric hindrance during reactions.

Unlike alkyne click reagents DBCO-TEG enables reactions without the need for copper catalysts, avoiding potential toxicity and complications associated with copper in biological systems.

The DBCO moiety exhibits high reactivity towards azides, allowing for efficient conjugation within a relatively short time frame (4-17 hours at room temperature) compared to other reagents.

DBCO is bioorthogonal, meaning it does not react with other functional groups in biological systems (e.g., amines, hydroxyls), making it suitable for in vivo applications. It is also tolerate to tetrazine reagents and may be used in tandem with other click-reagents like TCO-phosphoramidite for example, to achieve orthogonal oligonucleotide modification.

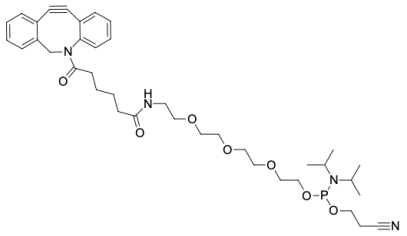
DBCO-TEG phosphoramidite is stable during standard oligonucleotide synthesis conditions, including deprotection with ammonium hydroxide, which allows for straightforward handling and processing.

The triethylene glycol (TEG) spacer enhances solubility and reduces steric hindrance, facilitating more efficient conjugation reactions compared to other click reagents that may lack such spacers.

Recommendations for using the reagent:

DBCO-TEG-modified oligonucleotides remain compatible with a range of reaction conditions, including UltraMild deprotection protocols, which can be advantageous for sensitive applications.

Compatible solvents: Anhydrous acetonitrile is preferred. DBCO-TEG-modified oligonucleotides can be conjugated with azide-containing compounds in organic solvents (e.g., DMSO) or aqueous buffers. Reaction completion typically occurs within 4-17 hours at room temperature.



Structure of DBCO-TEG-phosphoramidite

General properties

Appearance:	white powder
Molecular weight:	708.84
CAS number:	1527468-08-1
Molecular formula:	$C_{38}H_{53}N_4O_7P$
Solubility:	in most dry organic solvents (e.g. DMSO, DMF, acetonitrile, DCM, acetone, toluene). Sensitive to moisture in solvents.
Quality control:	NMR ^{1}H and ^{31}P (95 %)
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:	10-12 minutes at room temperature.
Cleavage conditions:	stable to deprotection with ammonium hydroxide for 2 hours at 65 °C or overnight at room temperature. Compatible with AMA for deprotection, showing only slight degradation of the cyclooctyne after 2 hours. Oxidation: for oxidation step recommended to use 0.5 M CSO in anhydrous acetonitrile, Iodine oxidation is suitable to no more than 8-10 cycles.