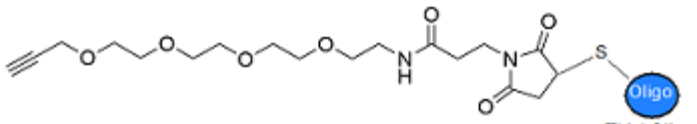
Alkyne-PEG4-Maleimide

Category	Click Chemistry
Modification Code	Alk-PEG4-Mal
Reference Catalog Number	26-6764
5 Prime	Y
3 Prime	Y
Internal	Y
Molecular Weight(mw)	382.41



Alkyne PEG4 Maleimide Oligo

[26-6764-XX]

Click here for a complete list of Click Chemistry Oligo Modifications

This modification is a post synthesis maleimide conjugation to a reduced thiol amino group thus an additional modification with thiol group is required. A C3 or C6 thiol group can be placed at the 5' or for internal positions Thiol C6 dT modified base is used.
Yield of Post Synthesis NHS, Maleimide & Click Ligand Conjugation* Oligo Scale of Synthesis Yield, nmols 50 nmol 2 nmol 200 nmol 5 nmol 1 umol 16 nmol 2 umol 30 nmol 5 umol 75 nmol 10 umol 150 nmol 15 umol 225 nmol * The yield will be lower for oligos longer than 50mer. Click here for yield table of long oligos. * Click here for RNA Oligos scale of synthesis and yield. **NHS Ligand conjugation** requires a primary amino group. Gene Link offers a wide selection of amino modifications for 5', 3' and internal sites.
Click here for a list of conjugation chemistry modifications. **Maleimide Ligand conjugation** requires a thiol group. Gene Link offers a wide selection of thiol modifications for 5', 3' and internal sites.

Click here for a list of conjugation chemistry modifications. **Click Chemistry Ligand conjugation** requires a corresponding Click modification; examples Alkyne:Azide, Azide:DBCO, BCN:Azide, BCN:Tetrazine and TCO:Tetrazine. Gene Link offers a wide selection of click modifications for 5', 3' and internal sites. Click here for a list of click chemistry modifications.

Alkyne PEG4 Maleimide can be used to incorporate an active alkyne onto the 5' or 3'end of an oligonucleotide, as well as at an internal position. Incorporation of this modification to the oligo is done via conjugation to a thiol group. As a result, the alkyne group is separated from the oligo by a spacer arm of varying length, which serves to reduce steric interaction between the reactive group and the oligo. The presence of the alkyne allows the user to use Click Chemistry (a [3+2] cycloaddition reaction between alkynes and azides, using copper (I) iodide as a catalyst) to conjugate it to a variety of azide-containing labels/tags (e.g., fluorescent dyes, biotin, or oligos, with extremely high regioselectivity and efficiency (1,2). When conjugation to an azide-oligo is desired, preparation of the azide-oligo can be achieved using either an Azidobutyrate NHS Ester or the 5' Bromohexyl modifier (see their respective tech sheets for details). Click chemistry can be used to form short, cyclic oligos that can be used as research tools in various biophysical and biological studies (3). In particular, they have considerable potential for in vivo work, as cyclic oligos are known to be very stable in serum for up to several days.

References

1. Huisgen, R. *Angew. Chem. Int. Ed.* (1963), **2**: 565-568.
2. Rostovtsev, V.V., Green, L.G., Fokin, V.V., Sharpless, K.B. A Stepwise Huisgen Cycloaddition Process: Copper(I)-Catalyzed Regioselective Ligation of Azides and Terminal Alkynes. *Angew. Chem. Int. Ed.* (2002), **41**: 2596-2599.
3. Kumar, R., El-Sagheer, A., Tumpane, J., Lincoln, P., Wilhelmsson, L.M., Brown, T. Template-Directed Oligonucleotide Strand Ligation, Covalent Intramolecular DNA Circularization and Catenation Using Click Chemistry. *J. Am. Chem. Soc.* (2007), **129**: 6859-6864.