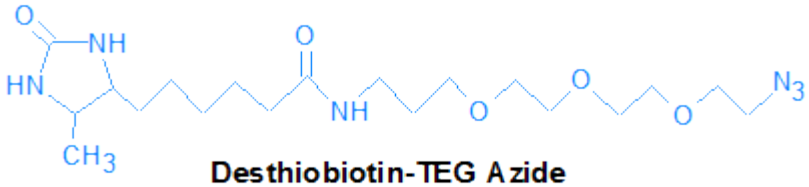
DesthiobiotinTEG Azide

Category	Click Chemistry
Modification Code	DesBioTEG-N3
Reference Catalog Number	26-6725
5 Prime	Y
3 Prime	Y
Internal	Y
Molecular Weight(mw)	414.5



Desthiobiotin-TEG Azide
[26-6725-XX]

Click here for a list of other Affinity Ligand Modifications.
This modification is a post synthesis conjugation to BCN, alkyne or DBCO modification at the appropriate site for click conjugation. Gene Link offers post synthesis click free conjugation to oligos labelled with BCN at the 5' or 3' end. The azide group of Methylene Blue is linked to BCN group on the oligo. BCN group is required on the oligo. Additional charges applies for BCN

BCN-3
BCN-5
YIELD
Post synthesis conjugation modifications yields are lower as compared to direct automated coupling of modifications that are available as amidites. Approximate yield for various scales are given below.
~2 nmol final yield for 50 nmol scale synthesis.
~5 nmol final yield for 200 nmol scale synthesis.
~16 nmol final yield for 1 umol scale synthesis.

Desthiobiotin-TEG Azide is a desthiobiotin attached to a 15-atom mixed polarity triethylene glycol spacer with an azide group at the end. The presence of the azide 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 the Desthiobiotin-TEG Azide to a terminal alkyne-modified oligo with extremely high regioselectivity and efficiency (1,2). Preparation of the alkyne-modified oligo can be achieved using the 5'-Hexynyl modifier (see its respective tech sheet for details). The spacer acts to minimize steric hindrance between the desthiobiotin moiety and the oligo.

Like biotin, desthiobiotin binds to streptavidin, but its binding affinity is considerably less (2x10E-9 M) than that of biotin (4.0x10E-14 M) (3). Consequently, oligonucleotides labeled with desthiobiotin can be easily displaced from streptavidin by biotin, thereby making recovery of the labeled oligo (for example, in affinity purification protocols) from a streptavidin-coated support a relatively simple process (4). Desthiobiotin-labeled oligos can also be conveniently eluted from streptavidin-coated supports by incubation in distilled water at 95C for 10 minutes (5).

Gene Link recommends substitution of desthiobiotin for biotin for those cases where reversible capture of oligonucleotides is desirable. **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. Green, N.M. Spectrophotometric determination of avidin and biotin. *Methods Enzymol.* (1970), **18A**: 418-424.
4. Hirsch, J.D., Eslamizar, L., Filanoski, B.J., Malekzadeh, N., Haugland, R.P., Beechem, J.M., Haugland, R.P. Easily reversible desthiobiotin binding to streptavidin, avidin, and other biotin-binding proteins: uses for protein labeling, detection, and isolation. *Anal. Biochem.* (2002), **308**: 343-357.
5. van Doom, R., Slawiak, M., Szemes, M., Dullemans, A.M., Bonants, P., Kowalchuk, G.A., Schoen, C.D. Robust Definition and Identification of Multiple Oomycetes and Fungi in Environmental Samples by Using a Novel Cleavable Padlock Probe-Based Ligation Detection Assay.*Appl. Environ. Microbiol.* (2009), **75**: 4185-4193.