Product Specifications

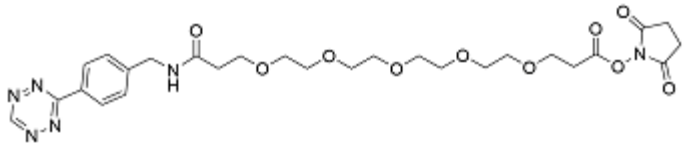
Custom Oligo Synthesis, antisense oligos, RNA oligos, chimeric oligos, Fluorescent dyes, Affinity Ligands, Spacers & Linkers, Duplex Stabilizers, Minor bases, labeled oligos, Molecular Beacons, siRNA, phosphonates Locked Nucleic Acids (LNA); 2′-5′ linked Oligos

Oligo Modifications

For research use only. Not for use in diagnostic procedures for clinical purposes.

Tetrazine-PEG5-NHS

Category	Click Chemistry
Modification Code	Tz-PEG5-N
Reference Catalog Number	26-6748
5 Prime	Y
3 Prime	Y
Internal	Y
Molecular Weight(mw)	419.45



All NHS modifications are post synthesis conjugation to a primary amino group thus an additional modification with an amino group is required. A C3, C6 or C12 amino group can be placed at the 5' or for the 3' end a C3 or C7 amino and for internal positions an amino modified base is used, e.g Amino dT C6. **YIELD** NHS based 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.

Click here for a complete list of Click Chemistry Oligo Modifications

Tetrazines are even more reactive than triazines toward nucleophiles and electron-rich dienophiles. This makes them attractive for click chemistry and they find application as conjugation tags for materials chemistry and, especially, for bio-orthogonal chemistry. In other applications they are attractive for high-energy materials, coordinating ligands, and as potent bioactive compounds.

The tetrazine will react with strained alkenes such as trans-cyclooctene, norbornene and cyclopropene to yield a stable dihydropyridazine linkage. The extremely fast kinetics and selectivity enables the conjugation of two low abundance biopolymers in an aqueous and otherwise complex chemical environment. This bioorthogonal reaction possesses excellent selectivity and biocompatibility such that the complimentary partners can react with each other within richly functionalized biological systems, in some cases, living organisms. Thus, tetrazine-TCO ligation has found numerous applications in fluorescent imaging, drug delivery, PET and SPECT imaging, radionuclide therapy, radiochemistry or drug target identification among several others.

Biocompatible – click reaction occurs efficiently under mild buffer conditions; requires no accessory reagents such as a copper catalyst or reducing agents (e.g. DTT)

Chemoselective – tetzines and trans-cyclooctene groups do not react or interfere with other functional groups found in biological samples but conjugate to one another with high efficiency

Unprecedented kinetics – inverse-electron demand Diels-Alder chemistry is the fastest bioorthogonal ligation available

Solubility – easily dissolves in aqueous buffers

Methyltetrazine-PEG4-NHS Ester is one of the most stable tetrazines commercially available.

In addition to stabilization provided by the electron donating methyl group, the electron donating alkoxy substituent on the aromatic ring further improves the stability of Methyltetrazine-PEG4-NHS Ester. The aqueous solubility of this reagent is substantially enhanced by a hydrophilic polyethylene glycol (PEG) spacer arm.

References

1. Devaraj, N.K. and Weissleder, R. Biomedical Applications of Tetrazine Cycloadditions. *Acc Chem Res.*(2011) 44: 816–827
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