

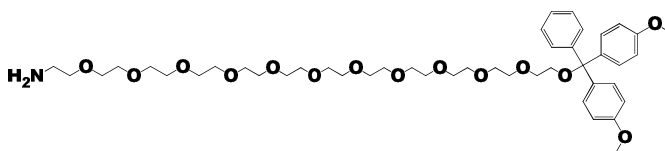
dPEG[®]
Reagents
for
Nucleic Acids



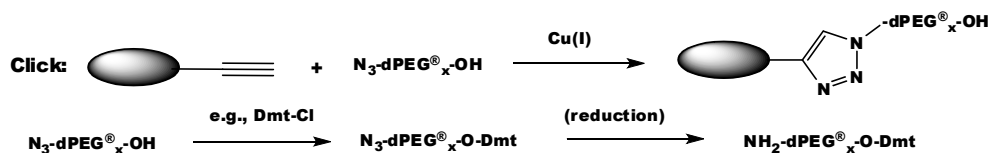
Product Features and Benefits:

- Carbonyl/carboxyl reactive dPEG[®] pegylation reagent that reacts with acids (activated in situ), active esters and aldehydes (and optionally with NaCNBH₃)
- The PROTECTED HYDROXYL, as the 4,4'-dimethoxytrityl (Dmt-) alcohol is easily deprotected with mild acid, including TFE (trifluoroethanol)
- Imparts significant and surprising water solubility, and the modifier itself is non-immunogenic and non-toxic
- Adds 560 D as the pegylation chain which is 38 atoms and 43.9 Å long (extended form)

| Product # | Description | 100 mg | 1000 mg |
|-----------|---------------------------------------------|--------|---------|
| 10342 | Amino-dPEG [®] ₁₂ -ODMT | \$225 | \$900 |



Single compound: Mol. Wt.: 848.03
 dPEG[®] Spacer is 38 atoms and 43.9 Å



Product Features and Benefits:

- $x = 4, 8, 12, 24$ or 36
- Unique AZIDO containing dPEG[®]-pegylation reagent. The azide can potentially be reacted with an acetylene moiety (Click reaction) or an anylphosphite derivative, as part of several Staudinger ligation options (see references).
- Hydroxy functionality can be converted to a more reactive functional group.
- dPEG[®] pegylation arm or spacer is extremely hydrophilic and non-immunogenic/ non-antigenic
- HO-dPEG[®]₁₂ pegylation tail will reduce or eliminate problems with aggregation and immunogenicity --
- dPEG[®]₁₂ pegylation tail is one of several choices of spacer size we can make available, providing a range of size options for optimizing the properties of your particular application.

Applications:

Two very active areas of development using the azide functionality are a) "Click" chemistry, the particular example of the Cu(I) catalyzed reaction of the azide and a terminal acetylene; and b) the Staudinger ligation using functionalize daryl phosphines to couple the azide in a covalent fashion to form amides.

The tremendous attraction to the azide functionality is its very low reactivity and high stability under most conditions, especially where other conjugating functionality have to be used very cautiously due to their limited stability, or require careful control of variables like pH in order to insure high yielding reactions. However, under very specific conditions, the azide is very reactive and highly selective in its reactivity.

As is the case in the current very economically competitive environment, many of the applications of these chemistries may be protected intellectual property.

Protocols:

For particular protocols, please look in the references cited or more detailed application references contained within.

References:

Click Applications: a. "Click Chemistry: Diverse Chemical Function form a Few Good Reactions," H. C. Kolb, M.G. Finn, and K. Barry Sharpless, *Angew. Chem., Int. Eng. Ed.*, 40, 2004-2021 (2001); b. "The growing impact of click chemistry on drug discovery," H. C. Kolb and K. Barry Sharpless, *Drug Discovery Today*, 8(24), 128-1137 (2003); c. "Cu(I)-Catalyzed Alkyne-Azide "Click" Cycloadditions from a Mechanistic and Synthetic Perspective," V. C. Bock, H. Hiemstra and J. H. van Maarseveen, *Eur. J. Org. Chem.*, 51-68 (2006); d. "A3-Type Star Polymers via Click Chemistry," O. Altintas, B. Yankul, G Hizal and U. Tunca, *J. Poly. Sci.: Part A, Polymer Chem.*, 44, 6458-6465 (2006); e. "Preparation of alumina supported copper nanoparticles and their application in the synthesis of 1, 2, 3-triazoles," M. L. Kantam, et al., *J. Mol. Catal. A: Chem.*, 256, 273-277 (2006); f. "A Rapid and Versatile Method to Label Receptor Ligands Using "Click" Chemistry: Validation with the Muscarinic M1 Antagonist Pirenzepine," *Bioconjugate Chemistry*, 17, 1618-1623 (2006).

Staudinger ligations: a. "The Staudinger Ligation-A Gift to Chemical Biology," M. Kohn and R. Breinbauer, *Angew. Chem. Int. Ed.*, 43, 3106 (2004); b. "Traceless Staudinger Ligation of Glycosyl Azides with Triaryl Phosphines: Stereoselective Synthesis of Glycosyl Amides," A. Bianchi and A. Bernardi, *J. Org. Chem.*, 71, 4565-4577 (2006); c. "Reaction Mechanism and Kinetics of the Traceless Staudinger Ligation," M. Soelner, B. L. Nilsson and R. T. Raines, *J. Amer. Chem. Soc.*, 128 (27), 8820-8828 (2006). The first reference is an excellent and recent review in a very active area. Search engines for "Staudinger ligation" for many excellent and additional references.

Azido-dPEG[®]_x-alcohol (cont.)



| Product # | Description | 100 mg | 1000 mg |
|-----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|---------|
| 10541 | Azido-dPEG [®] ₄ -alcohol <chem>HOCCOCCOCCOCCN=[N+]=[N-]</chem> Mol. Wt.: 219.24; single compound dPEG [®] Spacers are 14 atoms and 15.3 Å approx. | \$150 | \$700 |
| 10542 | Azido-dPEG [®] ₈ -alcohol <chem>HOCCOCCOCCOCCOCCOCCOCCN=[N+]=[N-]</chem> Mol. Wt.: 395.45; single compound dPEG [®] Spacers are 24 atoms and 29.5 Å approx. | \$200 | \$800 |
| 10340 | Azido-dPEG [®] ₁₂ -alcohol <chem>HOCCOCCOCCOCCOCCOCCOCCOCCOCCOCCN=[N+]=[N-]</chem> Mol. Wt.: 571.66; single compound dPEG [®] Spacer is 37 atoms and 43.0 Å | \$225 | \$900 |
| 10543 | Azido-dPEG [®] ₂₄ -alcohol <chem>HOCCOCCOCCOCCOCCOCCOCCOCCOCCOCCOCCOCCOCCOCCOCCOCCOCCOCCOCCOCCOCCOCCN=[N+]=[N-]</chem> Mol. Wt.: 1100.29; single compound dPEG [®] Spacers are 72 atoms and 86.7 Å approx. | \$325 | \$1000 |
| 10544 | Azido-dPEG [®] ₃₆ -alcohol <chem>HOCCOCCOCCOCCOCCOCCOCCOCCOCCOCCOCCOCCOCCOCCOCCOCCOCCOCCOCCOCCOCCOCCOCCOCCOCCOCCOCCOCCOCCOCCOCCOCCOCCOCCOCCOCCOCCOCCN=[N+]=[N-]</chem> Mol. Wt.: 1628.92; single compound dPEG [®] Spacers are 108 atoms and 129.7 Å approx. | \$350 | \$1100 |