

dPEG[®] Based Reagents for Peptide Modification

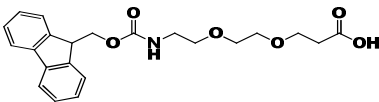
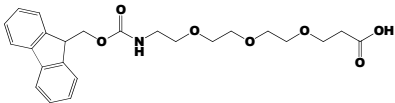
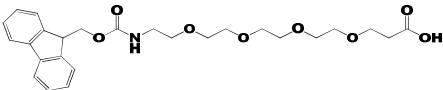
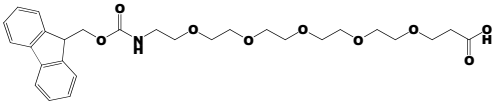
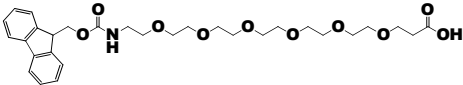
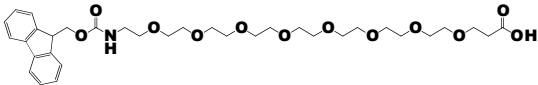
Add all the amazing properties of dPEG[®] to your peptide application with precision and control using a variety of functionality

Fmoc-N-amido-dPEG[®]_x-acid



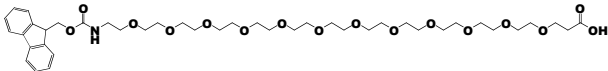
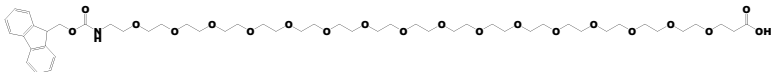
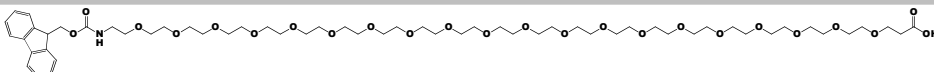
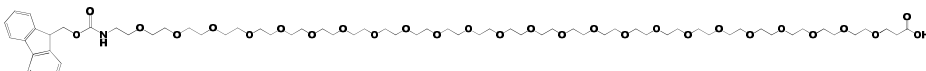
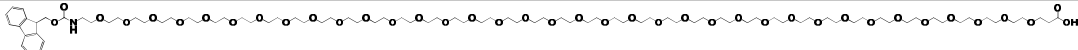
Product Features and Benefits:

- Linear; x = 2, 3, 4, 5, 6, 8, 12, 16, 20, 24 or 36
- Incorporate a dPEG[®] unit selectively using standard Fmoc chemistry
- Peptide pegylation reagent, Fmoc protected dPEG[®] amino acids
- Useful for incorporating all of the wonderful properties of a dPEG[®], either as a spacer in or terminating group of the peptide sequence
- Pegylation spacer incorporates water solubility, reduces or eliminates aggregation, and is inherently non-immunogenic and non-toxic
- Pricing issues, request bulk pricing. We would love to see this product in your specific and vital application

Product #	Description	100 mg	1000 mg	5000 mg
10243	Fmoc-N-amido-dPEG [®] ₂ -acid  Mol. Wt.: 399.44; single compound dPEG [®] Spacer is 10 atoms and 10.9 Å	NA	\$175	\$700
10033	Fmoc-N-amido-dPEG [®] ₃ -acid  Mol. Wt.: 443.49; single compound dPEG [®] Spacer is 13 atoms and 14.4 Å	NA	\$275	\$1100
10213	Fmoc-N-amido-dPEG [®] ₄ -acid  Mol. Wt.: 487.54; single compound dPEG [®] Spacer is 17 atoms and 18.1 Å	\$100	\$275	\$1100
10053	Fmoc-N-amido-dPEG [®] ₅ -acid  Mol. Wt.: 531.59; single compound dPEG [®] Spacer is 19 atoms and 21.6 Å	NA	\$400	\$1600
10063	Fmoc-N-amido-dPEG [®] ₆ -acid  Mol. Wt.: 575.65; single compound dPEG [®] Spacer is 22 atoms and 25.1 Å	\$125	\$400	\$1600
10273	Fmoc-N-amido-dPEG [®] ₈ -acid  Mol. Wt.: 663.75; single compound dPEG [®] Spacer is 28 atoms and 32.2 Å	\$150	\$600	NA

Fmoc-N-amido-dPEG[®]_x-acid (cont.)

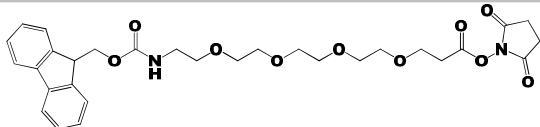
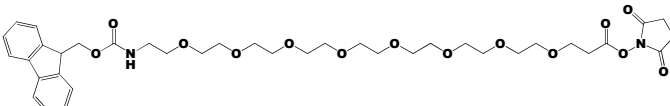
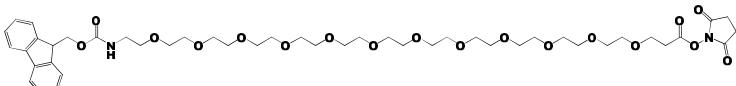


Product #	Description	100 mg	1000 mg	5000 mg
10283	Fmoc-N-amido-dPEG [®] ₁₂ -acid	\$150	\$700	NA
	 <p>Mol. Wt.: 839.96; single compound dPEG[®] Spacer is 40 atoms and 46.5 Å</p>			
10293	Fmoc-N-amido-dPEG [®] ₁₆ -acid	\$200	\$800	NA
	 <p>Mol. Wt.: 1016.17; single compound dPEG[®] Spacer is 51 atoms and 60.7 Å</p>			
10923	Fmoc-N-amido-dPEG [®] ₂₀ -acid	\$200	\$1000	NA
	 <p>Mol. Wt.: 1192.38; single compound dPEG[®] Spacer is 64 atoms and 75.2 Å</p>			
10313	Fmoc-N-amido-dPEG [®] ₂₄ -acid	\$250	\$1250	NA
	 <p>Mol. Wt.: 1368.59; single compound dPEG[®] Spacer is 76 atoms and 89 Å</p>			
10903	Fmoc-N-amido-dPEG [®] ₃₆ -acid	\$300	\$1400	NA
	 <p>Mol. Wt.: 1897.22; single compound dPEG[®] Spacer is 111 atoms and 132.7 Å</p>			



Product Features and Benefits:

- Linear; x = 4, 8, 12 as the preactivated NHS ester
- Preactivated Fmoc-amido-dPEG_x acids for added convenience and flexibility in application
- Others values of x can be made upon request
- Incorporate a dPEG[®] unit selectively using standard Fmoc chemistry
- Peptide pegylation reagent, Fmoc protected dPEG[®] amino acids, activated
- Useful for incorporating all of the wonderful properties of a dPEG[®], either as a spacer in or terminating group of the peptide sequence
- Pegylation spacer incorporates water solubility, reduces or eliminates aggregation, and is inherently non-immunogenic and non-toxic
- Pricing issues, request bulk pricing. We would love to see this product in your specific and vital application.
- Currently making the acids at kg scales, with processes available to go to a much higher scale.

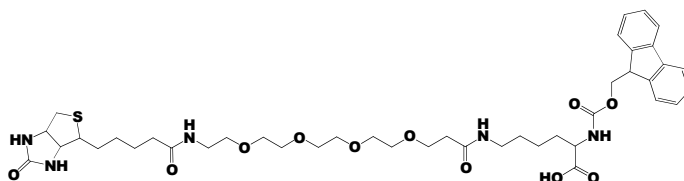
Product #	Description	100 mg	1000 mg
10994	Fmoc-N-amido-dPEG [®] ₄ -NHS ester	\$125	\$325
	 <p>Mol. Wt.: 584.24; single compound dPEG[®] Spacer is 17 atoms and 18.1 Å</p>		
10995	Fmoc-N-amido-dPEG [®] ₈ -NHS ester	\$175	\$675
	 <p>Mol. Wt.: 760.82; single compound dPEG[®] Spacer is 28 atoms and 32.2 Å</p>		
10996	Fmoc-N-amido-dPEG [®] ₁₂ -NHS ester	\$185	\$725
	 <p>Mol. Wt.: 937.03; single compound dPEG[®] Spacer is 40 atoms and 46.5 Å</p>		

Fmoc-N-Lys-(dPEG[®]_x-biotin)-OH-(acid)

Product Features and Benefits:

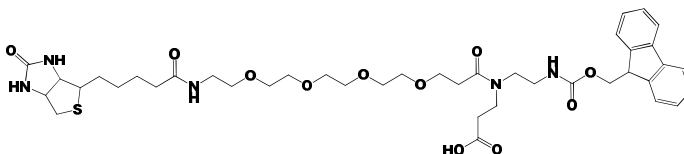
- Linear; x = 4 or 12
- Incorporated a dPEG[®] linked biotin for added availability and solubility using standard Fmoc chemistry
- NEW biotinylation reagent in peptide synthesis, with built-in pegylation spacer arm for optimal Streptavidin binding
- An Fmoc-N protected hydrophilic, non-immunogenic biotinylation pegylation reagent for peptide synthesis
- Useful for incorporating our powerful dPEG[®]₄-biotin DIRECTLY into the peptide synthesis, without having to label a side chain or label the N-terminus, AND the...
- Incorporation of the dPEG[®]₄ spacer with the biotin will increase water solubility and reduce or eliminate aggregation, while having the length in the spacer to optimize the interaction with the avidin conjugate of your choice.

Product #	Description	50 mg	100 mg	1000 mg
10613	Fmoc-N-Lys-(dPEG [®] ₄ -biotin)-OH-(acid)	NA	\$200	\$1000



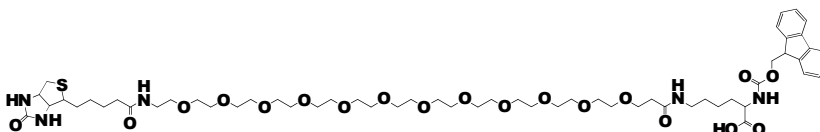
Mol. Wt.: 842.01; single compound
dPEG[®] Spacer is 19.1 atoms and 16 Å

10602	Fmoc-N-amido-(dPEG [®] ₄ -biotin)-acid	\$150	\$250	\$1250
-------	--	-------	-------	--------



Mol. Wt.: 827.98; single compound
dPEG[®] Spacer is 19.1 atoms and 16 Å

10615	Fmoc-N-Lys-(dPEG [®] ₁₂ -biotin)-OH-(acid)	NA	\$300	\$1350
-------	--	----	-------	--------



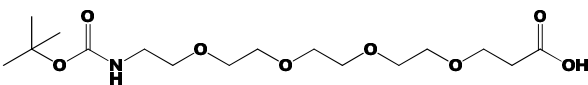
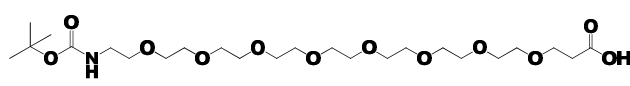
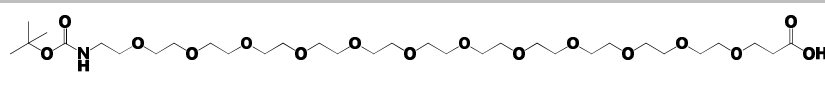
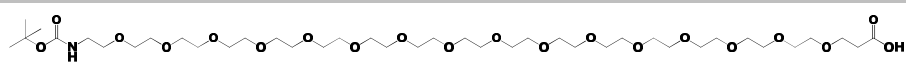
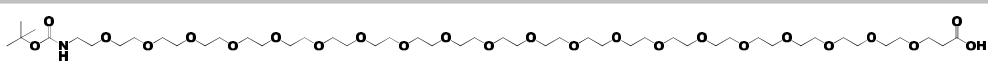
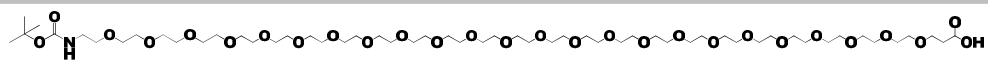
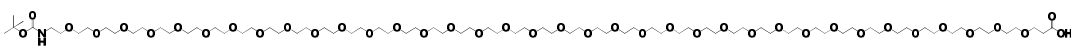
Mol. Wt.: 1194.43; single compound
dPEG[®] Spacer is 60 atoms and 57.9 Å

t-boc-N-amido-dPEG[®]_x-acid



Product Features and Benefits:

- Linear; x = 4, 8, 12, 16, 20, 24 or 36
- Incorporate a dPEG[®] unit selectively using standard boc chemistry
- t-boc-N protected dPEG[®] amino acid pegylation reagents for peptide synthesis
- Useful for incorporating all of the wonderful properties of a dPEG[®], either as a spacer in or terminating group of the peptide sequence
- Pegylation spacer incorporates water solubility, reduces or eliminates aggregation, and is inherently non-immunogenic and non-toxic
- Pricing issues, request bulk pricing. We would love to see this product in your specific application.

Product #	Description	100 mg	1000 mg	5000 mg
10220	t-boc-N-amido-dPEG [®] ₄ -acid	\$100	\$275	\$950
	 <p>Mol. Wt.: 365.42; single compound dPEG[®] Spacer is 17 atoms and 19.2 Å</p>			
10760	t-boc-N-amido-dPEG [®] ₈ -acid	\$150	\$650	upon request
	 <p>Mol. Wt.: 541.63; single compound dPEG[®] Spacer is 28 atoms and 32.2 Å</p>			
10761	t-boc-N-amido-dPEG [®] ₁₂ -acid	\$175	\$750	upon request
	 <p>Mol. Wt.: 717.84; single compound dPEG[®] Spacer is 40 atoms and 46.4 Å</p>			
10292	t-boc-N-amido-dPEG [®] ₁₆ -acid	\$200	\$850	upon request
	 <p>Mol. Wt.: 894.05; single compound dPEG[®] Spacer is 51 atoms and 60.7 Å</p>			
10922	t-boc-N-amido-dPEG [®] ₂₀ -acid	\$225	\$1000	upon request
	 <p>Mol. Wt.: 1070.26; single compound dPEG[®] Spacer is 75.2 atoms and 64 Å</p>			
10763	t-boc-N-amido-dPEG [®] ₂₄ -acid	\$250	\$1250	upon request
	 <p>Mol. Wt.: 1246.47; single compound dPEG[®] Spacer is 76 atoms and 89.0 Å</p>			
10902	t-boc-N-amido-dPEG [®] ₃₆ -acid	\$300	\$1400	upon request
	 <p>Mol. Wt.: 1775.10; single compound dPEG[®] Spacer is 111 atoms and 132.7 Å</p>			

Methoxytrityl-N-dPEG[®]_x-acid

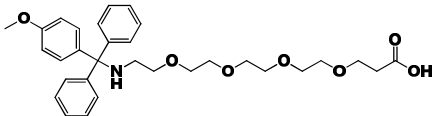
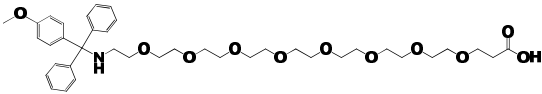
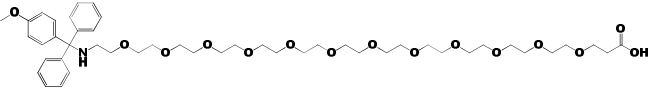
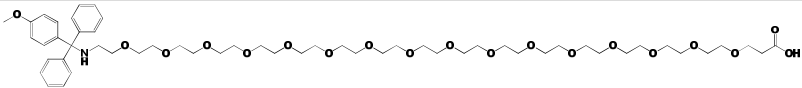
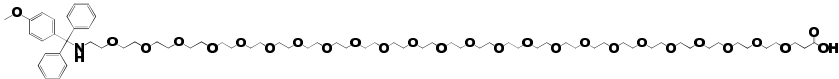


Product Features and Benefits:

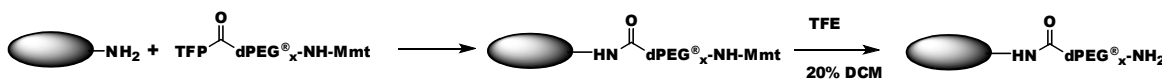
- Linear; x = 4, 8, 12, 16 or 24
- Incorporate a dPEG[®] unit selectively using an orthogonal amino protecting group
- Useful for incorporating the a protected amine whose protecting group is orthogonal to the Fmoc or t-boc protecting groups. AND it contains the very powerfully useful dPEG[®] containing pegylation spacer chain. In this case it contains 4 dPEG[®] units.
- The dPEG[®] pegylation spacer has all the powerful properties of the dPEG[®], including its high water solubility, non-immunogenicity, and non-aggregating properties
- Mmt can be removed under a number of conditions, but we find that using 20% TFE (trifluoroethanal) in methylene chloride is most effective.
- Needs to be activated to the active ester with e.g. EDC or DCC NHS, HOBt or PFP.

References:

Some references to the use of the Mmt as an amino protection groups with amino acids: a) G.M. Dubowchik and S. Rakia, Tetrahedron Letters, 38(30), 5257-5260 (1997); b) S. Matysiak, et al., *ibid.*, 39, 1733-1734 (1998); c) D. W. Will, et al., Tetrahedron, 51 (44), 12069-12082 (1995); d) A. Aletras, et al., *Int. J. Peptide Protein Res.*, 45,488-496 (1995)

Product #	Description	100 mg	1000 mg
10358	Methoxytrityl-N-dPEG [®] ₄ -acid  Mol. Wt.: 537.64; single compound dPEG [®] Spacer is 16 atoms and 18.3 Å	\$125	\$300
10393	Methoxytrityl-N-dPEG [®] ₈ -acid  Mol. Wt.: 713.85; single compound dPEG [®] Spacer is 28 atoms and 32.2 Å	\$175	\$650
10394	Methoxytrityl-N-dPEG [®] ₁₂ -acid  Mol. Wt.: 890.06; single compound dPEG [®] Spacer is 40 atoms and 46.5Å	\$200	\$750
10395	Methoxytrityl-N-dPEG [®] ₁₆ -acid  Mol. Wt.: 1066.27; single compound dPEG [®] Spacer is 52 atoms and 60.4 Å	\$225	\$900
10396	Methoxytrityl-N-dPEG [®] ₂₄ -acid  Mol. Wt.: 1418.70; single compound dPEG [®] Spacer is 76 atoms and 89 Å	\$275	\$1250

Methoxytrityl-N-dPEG[®]_x-TFP ester

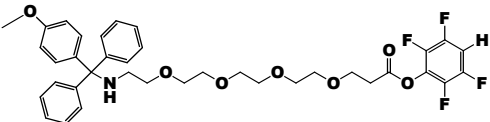
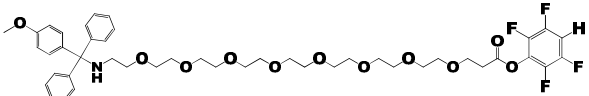
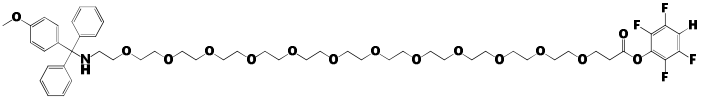
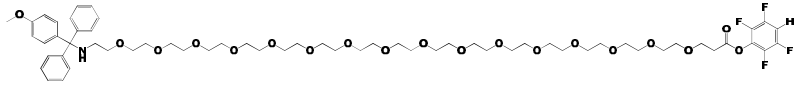


Product Features and Benefits:

- Linear; x = 4, 8, 12, 16, 20, 24 or 36
- Do so as the active ester
- Useful for incorporating the a protected amine whose protecting group is orthogonal to the Fmoc or t-boc protecting groups. AND is contains the very powerfully useful dPEG[®] containing pegylation spacer chain. In this case it contains 4 dPEG[®] units.
- The dPEG[®] pegylation spacer has all the powerful properties of the dPEG[®], including its high water solubility, non-immunogenicity, and non-aggregating properties
- Mmt can be removed under a number of conditions, but we find that using 20% TFE (trifluoroethanal) in methylene choride is most effective.

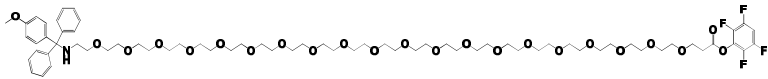
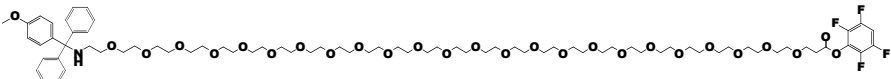
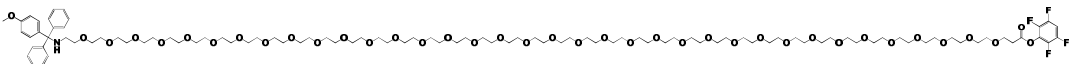
References:

Some references to the use of the Mmt as an amino protection groups with amino acids: a) G.M. Dubowchik and S. Rakia, Tetrahedron Letters, 38(30), 5257-5260 (1997); b) S. Matysiak, et al., *ibid.*, 39, 1733-1734 (1998); c) D. W. Will, et al., Tetrahedron, 51 (44), 12069-12082 (1995); d) A. Aletras, et al., *Int. J. Peptide Prtein Res.*, 45,488-496 (1995)

Product #	Description	100 mg	1000 mg
10751	Methoxytrityl-N-dPEG [®] ₄ -TFP ester	\$150	\$350
	 <p>Mol. Wt.: 685.70; single compound dPEG[®] Spacer is 16 atoms and 18.1 Å</p>		
10752	Methoxytrityl-N-dPEG [®] ₈ -TFP ester	\$200	\$700
	 <p>Mol. Wt.: 879.90; single compound dPEG[®] Spacer is 28 atoms and 31.4 Å</p>		
10753	Methoxytrityl-N-dPEG [®] ₁₂ -TFP ester	\$225	\$850
	 <p>Mol. Wt.: 1056.11; single compound dPEG[®] Spacer is 40 atoms and 46.4 Å</p>		
10754	Methoxytrityl-N-dPEG [®] ₁₆ -TFP ester	\$250	\$1000
	 <p>Mol. Wt.: 1214.33; single compound dPEG[®] Spacer is 52 atoms and 61.5 Å</p>		

Methoxytrityl-N-dPEG[®]_x-TFP ester (cont.)



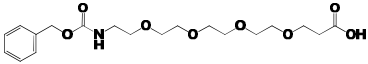
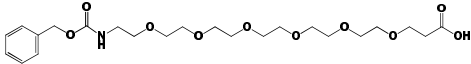
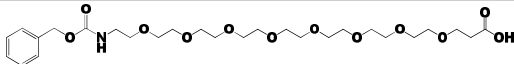
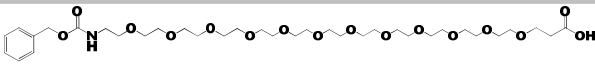
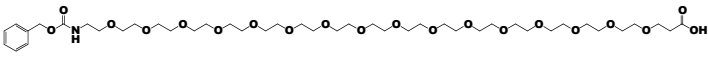
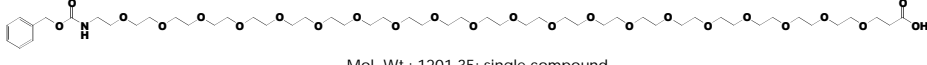
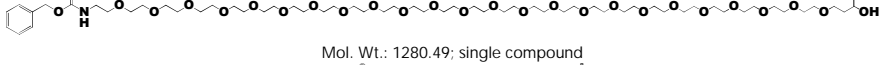
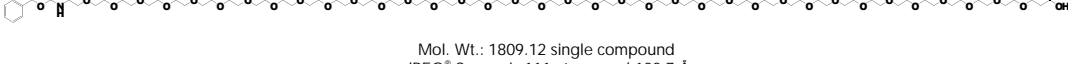
Product #	Description	100 mg	1000 mg
10843	Methoxytrityl-N-dPEG [®] ₂₀ -TFP ester	\$275	\$1150
 <p>Mol. Wt.: 1390.54; single compound dPEG[®] Spacer is 64 atoms and 75.2 Å</p>			
10755	Methoxytrityl-N-dPEG [®] ₂₄ -TFP ester	\$300	\$1350
 <p>Mol. Wt.: 1584.74; single compound dPEG[®] Spacer is 76 atoms and 88.8 Å</p>			
10845	Methoxytrityl-N-dPEG [®] ₃₆ -TFP ester	\$350	\$1400
 <p>Mol. Wt.: 2095.38; single compound dPEG[®] Spacer is 111 atoms and 132.7 Å</p>			

CBZ-N-amido-dPEG[®]_x-acid



Product Features and Benefits:

- Linear; x = 4, 6, 8, 12, 16, 20, 24 or 36
- Incorporate a dPEG[®] unit selectively using standard and clean Cbz- chemistry
- CBZ-N protected dPEG[®] amino acid pegylation reagents for peptide synthesis
- CBZ-N is especially suited for solution synthesis for the simple and clean removal of the CBZ protecting group using catalytic Pd/C and hydrogen
- Useful for incorporating all of the wonderful properties of a dPEG[®], either as a spacer or terminating group in the peptide sequence
- Pegylation spacer incorporates water solubility, reduces or eliminates aggregation, and is inherently non-immunogenic and non-toxic
- Pricing issues, request bulk pricing. We would love to see this product in your special application

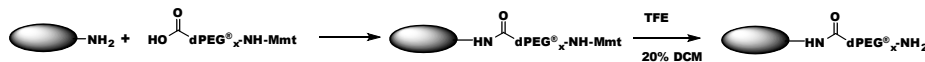
Product #	Description	100 mg	1000 mg
10268	CBZ-N-amido-dPEG [®] ₄ -acid  Mol. Wt.: 399.44; single compound dPEG [®] Spacer is 17 atoms and 19.2 Å	\$125	\$300
10066	CBZ-N-amido-dPEG [®] ₆ -acid  Mol. Wt.: 487.54; single compound dPEG [®] Spacer is 22 atoms and 25.1 Å	\$150	\$600
10276	CBZ-N-amido-dPEG [®] ₈ -acid  Mol. Wt.: 575.65; single compound dPEG [®] Spacer is 28 atoms and 32.2 Å	\$150	\$600
10286	CBZ-N-amido-dPEG [®] ₁₂ -acid  Mol. Wt.: 751.86; single compound dPEG [®] Spacer is 40 atoms and 46.5 Å	\$150	\$700
10296	CBZ-N-amido-dPEG [®] ₁₆ -acid  Mol. Wt.: 928.07; single compound dPEG [®] Spacer is 51 atoms and 60.7 Å	\$200	\$850
10926	CBZ-N-amido-dPEG [®] ₂₀ -acid  Mol. Wt.: 1201.35; single compound dPEG [®] Spacer is 64 atoms and 75.2 Å	\$225	\$1050
10316	CBZ-N-amido-dPEG [®] ₂₄ -acid  Mol. Wt.: 1280.49; single compound dPEG [®] Spacer is 76 atoms and 88.5 Å	\$250	\$1250
10906	CBZ-N-amido-dPEG [®] ₃₆ -acid  Mol. Wt.: 1809.12 single compound dPEG [®] Spacer is 111 atoms and 132.7 Å	\$300	\$1400

Methoxytrityl-S-dPEG[®]x acid



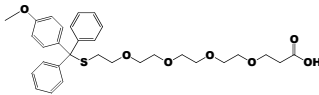
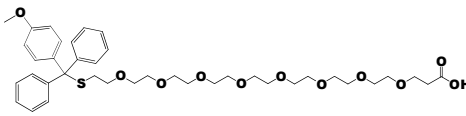
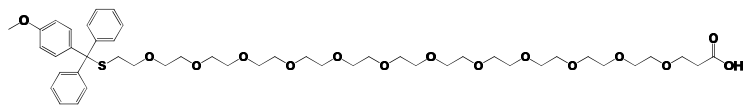
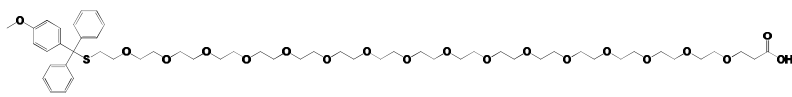
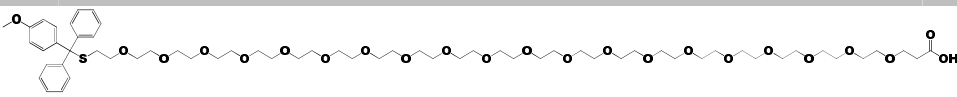
1. Peptide synthesis: Protecting group orthogonal to Fmoc and t-boc... removable with very mild acid with no effect on Fmoc or t-boc!

2. Extend NH₂ with a dPEG[®] and gain great properties of dPEG[®] with amine extended and available!



Product Features and Benefits:

- Linear; x = 4, 8, 12, 16 or 20
- Add a thiol terminally or post synthetically with a dPEG[®] spacer
- Methoxy trityl is easily removed with TFA... more so than the standard trityl
- Useful pegylation reagents for incorporating the sulfhydryl moiety into a peptide, that contains the dPEG[®] pegylation unit
- Potentially a significant alternative to cysteine for incorporating the sulfhydryl into peptides
- Useful for incorporating all of the wonderful properties of a dPEG[®], either as a spacer or terminating group in the peptide sequence
- Pegylation spacer incorporates water solubility, reduces or eliminates aggregation, and is inherently non-immunogenic and non-toxic
- Pricing issues, request bulk pricing. We would love to see this product in your special application
- Mmt can be removed with <5% TFA in the presence of TIS (triisopropyl silane).

Product #	Description	100 mg	1000 mg
10301	Methoxytrityl-S-dPEG [®] ₄ -acid  Mol. Wt.: 554.70; single compound dPEG [®] Spacer is 16 atoms and 18.3 Å	\$150	\$550
10166	Methoxytrityl-S-dPEG [®] ₈ -acid  Mol. Wt.: 730.91; single compound dPEG [®] Spacer is 28 atoms and 32.5 Å	\$200	\$900
10846	Methoxytrityl-S-dPEG [®] ₁₂ -acid  Mol. Wt.: 907.11; single compound dPEG [®] Spacer is 39 atoms and 46.8 Å	\$250	\$1050
10847	Methoxytrityl-S-dPEG [®] ₁₆ -acid  Mol. Wt.: 1083.32; single compound dPEG [®] Spacer is 51 atoms and 61.0 Å	\$350	\$1200
10848	Methoxytrityl-S-dPEG [®] ₂₀ -acid  Mol. Wt.: 1259.54; single compound dPEG [®] Spacer is 63 atoms and 75.5 Å	\$400	\$1300

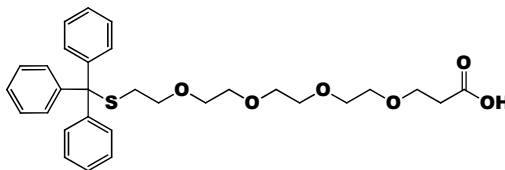
Trityl-S-dPEG[®]₄-acid



Product Features and Benefits:

- Useful pegylation reagent for incorporating the sulfhydryl moiety and dPEG[®] unit into a peptide.
- Potentially a significant alternative to cysteine for incorporating the sulfhydryl into peptides
- Useful for incorporating all of the wonderful properties of the dPEG[®], either as a spacer or terminating group in the peptide sequence
- Pegylation spacer incorporated water solubility, reduces or eliminates aggregation, and is inherently non-immunogenic and non-toxic
- Pricing issues, request bulk pricing. We would love to see this product in your special application
- Pegylation reagent incorporates a dPEG[®] chain of 16 atoms and 18.3 Å in length,
- Trityl is removed using 25-50% TFA with 5% TIS (triisopropyl silane)

Product #	Description	100 mg	1000 mg
10300	Trityl-S-dPEG [®] ₄ -acid	\$150	\$600



Mol. Wt.: 524.67; single compound
dPEG[®] Spacer is 16 atoms and 18.3 Å