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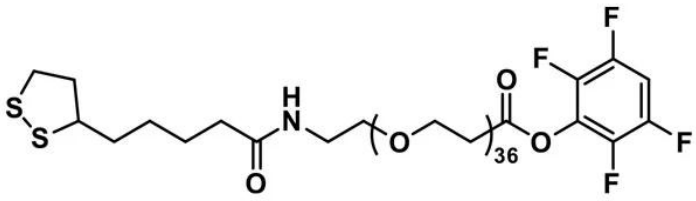
# LIPOAMIDO-DPEG®36-TFP ESTER

**SKU:** QBD-10644



## DESCRIPTION

Lipoamido-dPEG®36-TFP ester, product number QBD-10644, is a single molecular weight, discrete PEG (dPEG®) modification reagent. The product consists of alpha-lipoic acid and a 2,3,5,6-tetrafluorophenyl (TFP) ester on opposite ends of a long (120 atoms) dPEG® spacer. The lipoic acid group forms two (2) coordinate covalent bonds (dative bonds) with metal, especially gold and silver. The TFP ester reacts with free amines to form amide bonds. Applications for this product include peptide or protein immobilization on metal surfaces, the formation of self-assembled monolayers (SAMs) on metal surfaces, and sensor development.

Lipoic acid, also known as α-lipoic acid and thioctic acid, is a naturally occurring antioxidant that functions as a cofactor in several enzyme systems. It consists of a dithiolane ring (a five-membered ring containing a disulfide) attached to a pentanoic acid group. As a bidentate thiol ligand, lipoic acid forms two stable dative bonds per lipoic acid group with gold, silver, and other metals. These dative bonds form with oxidized lipoic acid or reduced dihydrolipoic acid (DHLA). Because it forms two dative bonds on metal surfaces, lipoic acid is more stable than PEGylation reagents containing a single thiol. This increased stability prevents lipoic-acid-functionalized dPEG® products from being oxidized off the metal surface.

When using this product, it is typical to begin with the conjugation of the carboxyl end of the dPEG® to an amino group to form an amide bond. As documented in the scientific literature, TFP esters react more readily with amines and possess better hydrolytic stability than N-hydroxysuccinimidyl (NHS) esters. TFP esters optimally react with amines at pH 7.5 – 8.0.

After reacting the TFP ester end of the molecule, the lipoic acid end of the dPEG® linker can be

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reacted with metals such as gold or silver. The lipoic acid group forms dative bonds with metals with or without reduction to DHLA. If reduction to DHLA is preferred, Tris(2-carboxyethyl)phosphine (TCEP) will reduce lipoic acid to DHLA rapidly.

Lipoamido-dPEG®36-TFP ester dissolves in water or aqueous buffer and organic solvents. Stock solutions in water or aqueous buffer do not have long-term stability and should be used immediately. For stock solutions with long-term stability, we recommend dry (over 3 Å molecular sieves) water-miscible solvents such as N,N-dimethylacetamide (DMAC) or acetonitrile. Unused stock solutions in dry organic solvents should be stored at -20°C or colder.

# SPECIFICATIONS

| | |
|---|---|
| **CAS Number** | N/A |
| **Molecular Weight** | 2011.35; single compound |
| **Chemical Formula** | $C_{89}H_{163}F_4NO_{39}S_2$ |
| **Purity** | > 98% |
| **Unit Size** | 100mg, 1000mg |
| **Solubility** | Methylene Chloride, Methanol, Acetonitrile or DMSO. |
| **Spacers** | dPEG® Spacer is 120 atoms and 136.1 Å |
| **Storage Instructions** | -20°C; Always let come to room temperature before opening; be careful to limit exposure to moisture and restore under an inert atmosphere; stock solutions can be prepared with dry solvent and kept for several days (freeze when not in use). dPEG® pegylation compounds are generally hygroscopic and should be treated as such. This will be less noticeable with liquids, but the solids will become tacky and difficult to manipulate, if care is not taken to minimize air exposure. |
| **Shipping Instructions** | Ambient |

# DOCUMENTS

- Safety Data Sheet
- Datasheet

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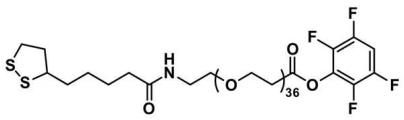
# GALLERY IMAGES



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