

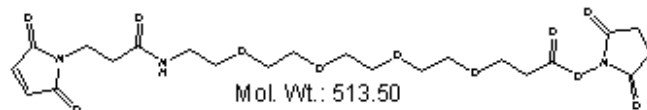
FT-AL6580

MAL-PEO_x-NHS

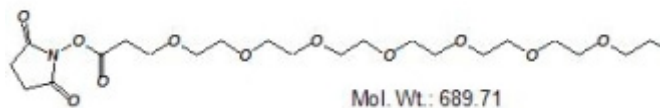
Description

Unique heterobifunctional crosslinkers, joining NH₂ and SH reactivities with great PEO spacer !

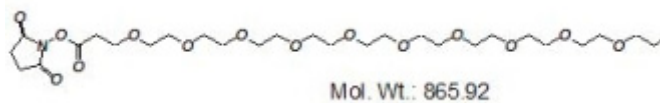
Catalog #: [AL6580](#), 100mg
Name: **MAL-PEO₄-NHS**
 Maleimide-dPEG₄-succinimidyl
 C₂₂H₃₁N₃O₁₁
 MW : 513.51
 Spacer 24.8 Å (22 atoms)



Catalog #: [BH9851](#), 100mg
Name: **MAL-PEO₈-NHS**
 Maleimide-dPEG₈-succinimidyl
 MW : 689.71
 Spacer 39.2 Å (34 atoms)



Catalog #: [BH9861](#), 100mg
Name: **MAL-PEO₁₂-NHS**
 Maleimide-dPEG₁₂-succinimidyl
 MW : 865.92
 Spacer 53.3 Å (46 atoms)



Storage: +4°C (L)

- amine and sulfhydryl reactive heterobifunctional crosslinker
- extended PEO spacer confer better hydrophilicity to the final conjugate

Applications:

- preparation of protein-protein conjugates:
- .antibody-enzyme for immunoassays
- .hapten-carrier for immunization and screening (r)

Directions for use

Protocole 1: coupling a protein to a protein

MAL-PEO-NHS crosslinkers are expected to behave chemical reactivity like conventional sulfo-SMCC, sulfo-EMCS, etc. So they can be used in a similar way *, but with the benefit of their more hydrophilic properties.

* See the technical sheet FT-UP17412, or the literature:

Hermanson, Greg T, "Bioconjugate Techniques", Academic Press, Inc., San Diego, CA, 1996 (ISBN 0-12-342335-X). Use protocol on pages 228-248, and specifically, the sample protocol for sulfo-SMCC on pages 236-237. For the present product, it is probably still best to use an organic solvent like DMAC, DMF, or DMSO to ensure complete

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FT-AL6580

solubilization of the crosslinker. If water or buffer is preferred, use the standard precautions related to the stabilities of both NHS ester and maleimide.

Technical and Scientific Information

- **Purity:** We provide products with highest available purity. The material has however a small percentage of ethyl acetate (about 10%). Being as viscous as the product is, this allows the material to be handled as a "liquid." We assume density of 1.0 (this should be close enough to reality taking in consideration this material is going to be used in excess (sure, we don't determine densities routinely, especially for something with the properties of the MAL-dPEG NHS ester).
- **Dissolution :** The material (PEO4) is moderately water soluble, so we recommend for convenient working concentration to dissolve the maleimide-PEO-NHS, with dimethylacetamide (DMAC), or alternatively DMF or DMSO.
- The chemical group **N-hydroxysuccinimydyl (NHS)** reacts in aqueous phase on primary ($-NH_2$) and secondary amines ($=NH$) (in fact on its deprotonated form), optimally at neutral pH or higher : amines present in proteins (Lys aminoacid) and in a lower proportion on NH_2 located in terminal peptidic chains. The reaction competes with hydrolysis, that increases with pH, and with the high dilutions of the molecule that should be derivatized.
- The **sulfonyl moiety** ($NaSO_3$) introduces a hydrophilic group that allows the product not to cross biological membranes. This is particularly useful to modify, in situ on cells, proteins presented outside membranes, and if one wants to avoid the modification of intracellular proteins that may affect further analysis. An other interest of the sulfonyl group is to permit the solubilization of the product directly in aqueous buffers, up to 10mM, avoiding the use of organic solvents like DMSO or DMF, that are possibly nocive to cells or applications.
- The **spacer arm** of the different cross-linkers from this technical sheet are all based on PEO (PEG) structure that confers hydrophilicity to the agent and to the formed conjugate. Different lengths are available, increasing the hydrophilicity, and the flexibility of the spacer. The spacer-mediated hydrophilicity is a superior alternative to sulfonyl moiety derivatives of NHS that do not confer hydrophilicity to the final conjugate (SO_4 not included).
- The **maleimide** group reacts very specifically with sulfhydryls $-SH$ at neutral pH 6.5-7.5, in comparison to iodoacetamides that react also with tyr, his, met. The reaction is rapid (a few minutes for cysteine), but in the absence of $-SH$, maleimide stay well stable. In usual conditions, one should start with a ratio of 10-20 moles of maleimide per mole of protein. With SH-peptides, a molar 1:1 incubation ratio allows almost 1:1 coupling. note: Hydrolysis forming maleimic acid may compete significantly when pH go up 8.0, where the reactivity with amines begins to be possible. Then pH higher than 8.5 could affect conjugate stability, or a nucleophilic reaction with an adjacent amine can ring-open to yield crosslinked products.

Literature

Hermanson, Greg T, "Bioconjugate Techniques", Academic Press, Inc., San Diego, CA, 1996 (ISBN 0-12-342335-X).

Other Information

Related / associated products

Other corsslinkers (SMCC UP17412...)

Desalting tools (desalting columns...)

For in vitro R&D use only

Please contact Uptima – Interchim for any other information

Rev.F03E

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