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letters

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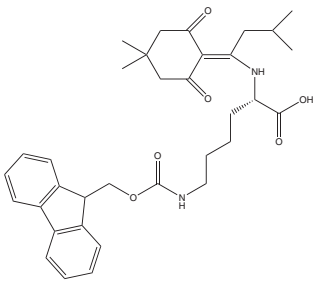
Novabiochem®
NEW • NEW • NEW

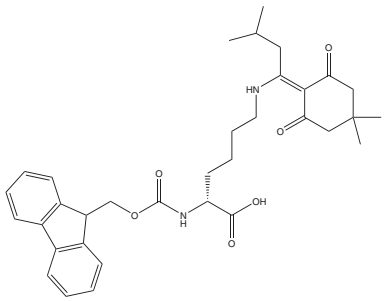
- Orthogonally protected lysine derivatives
- Pentafluorophenyl esters
- Pre-loaded 2-chlorotrityl resins

NEW Orthogonally protected lysine derivatives

ivDde-Lys(Fmoc)-OH



Fmoc-D-Lys(ivDde)-OH



Features & Benefits

- Ideal tools for on-resin synthesis of branched, side-modified, and cyclic peptides
- ivDde group is stable to piperidine and TFA but removed by 2% hydrazine in DMF, allowing on-resin modification of lysine residues without effecting standard side-chain protection
- ivDde-Lys(Fmoc)-OH facilitates side-chain modification of lysine immediately after its introduction
- Removal of ivDde group with 2% hydrazine in DMF can be monitored by UV

The amino-protecting group ivDde was introduced in 1998 as a result of a collaboration between Novabiochem® scientists and Prof. Bycroft, Dr Chan and Dr Chhabra of the University of Nottingham [1]. Since this time the Fmoc/ivDde strategy has become the standard approach for the synthesis of branched, cyclic and side-chain modified peptides by Fmoc SPPS [2]. There are now over 98 publications citing the use of the ivDde protecting group [3].

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The utility of ivDde stems from the fact that ivDde-protected primary amines are stable to 20% piperidine and TFA but are cleaved with 2% hydrazine in DMF. This allows the amino groups of ivDde-protected residues to be selectively unmasked on the solid phase without affecting the side-chain protecting groups of other residues, facilitating subsequent site-specific modification. The reaction can be monitored by spectrophotometry since the indazole cleavage product absorbs strongly at 290 nm (Figure 1).

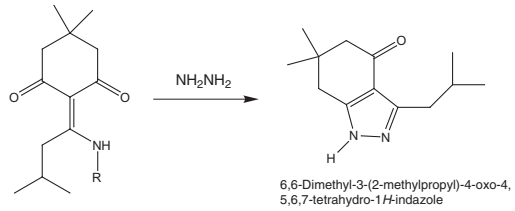


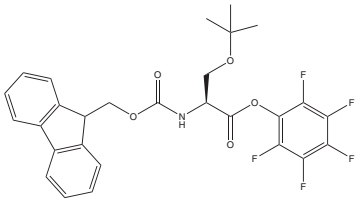
Figure 1: Cleavage of ivDde with hydrazine yields a chromophoric indazole.

ivDde-Lys(Fmoc)-OH and Fmoc-D-Lys(ivDde)-OH are the latest additions to our range of ivDde-protected amino acids. ivDde-Lys(Fmoc)-OH overcomes some of the limitations of Fmoc-Lys(ivDde)-OH. When using Fmoc-Lys(ivDde)-OH, the synthetic strategy must be designed such that the ivDde group is removed after the peptide has been fully assembled, owing to the instability of Fmoc protection to hydrazine. Frequently, particularly if the ivDde group is close to the C-terminus of the peptide or the peptide has aggregated, removal ivDde can be very sluggish and often incomplete. The use of ivDde-Lys(Fmoc)-OH avoids this problem as it enables the side-chain modification of lysine to be accomplished during chain extension. Following its incorporation into the peptide chain, the side-chain Fmoc group can be removed with piperidine and the side-chain amino group reacted with the desired carboxylic acid-functionalized moiety, before removal of the ivDde with hydrazine and chain extension in the usual manner.

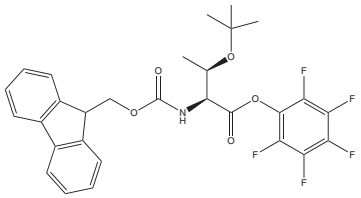
Cat.No.	Product	Contents	Price EUR
852370	ivDde-Lys(Fmoc)-OH	1 g	170.00
NEW		5 g	680.00
852369	Fmoc-D-Lys(ivDde)-OH	1 g	145.00
NEW		5 g	580.00
	Other orthogonally protected lysine derivatives		
852057	Fmoc-Lys(Dde)-OH	1 g	135.00
		5 g	540.00
852147	Fmoc-D-Lys(Dde)-OH	1 g	185.00
		5 g	740.00
854000	Dde-Lys(Fmoc)-OH	1 g	170.00
		5 g	680.00
852082	Fmoc-Lys(ivDde)-OH	1 g	140.00
		5 g	560.00
852124	Fmoc-Lys(Alloc)-OH	5 g	86.00
		25 g	330.00
852094	Fmoc-Lys(Mmt)-OH	1 g	68.00
		5 g	272.00
852065	Fmoc-Lys(Mtt)-OH	1 g	40.00
		5 g	149.00
		25 g	520.00
852040	Fmoc-Lys(Tfa)-OH	5 g	94.00
		25 g	375.00

NEW Pentafluorophenyl esters

Fmoc-Ser(tBu)-OPfp



Fmoc-Thr(tBu)-OPfp



Features & Benefits

- Pre-activated building blocks for Fmoc SPPS
- Mediate coupling with low racemization, even for sensitive amino-acids like cysteine
- Good solution stability so ideal for long, slow couplings
- Real-time monitoring of coupling possible by addition of bromophenol blue

In many ways pentafluorophenyl (OPfp) esters of Fmoc-protected amino acids are the ideal building blocks for Fmoc SPPS. To use, simply dissolve in DMF in the presence of an equivalent of HOBt or Oxyma Pure and add directly to the resin to initiate coupling. As there is no added base in the reaction, epimerization during peptide bond formation is almost neglible. For introduction of Cys, the use of Fmoc-Cys(Trt)-OPfp is particularly recommended, as activation methods that use base, such as HBTU/DIPEA, have been reported to cause as much as enantiomerization of cysteine [4].

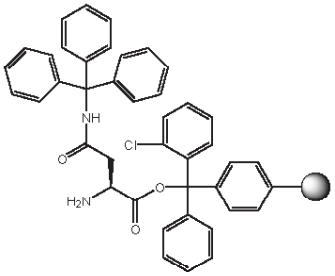
OPfp ester cause little or no side reactions and their solutions in DMF have good stability. OPfp are, therefore, ideal for situations where a long, slow coupling is required. In many cases cleaner peptides can be obtained than when faster more highly activated coupling methods are used. Furthermore, the reactions of OPfps are very selective towards amines, so their use does not cause acylation of unprotected hydroxyl groups, ideal for synthesising peptides involving post-synthetic modification of Ser or Thr residues.

Addition of bromophenol blue to OPfp mediated coupling reactions allows real-time monitoring of amide bond formation [5]. The dye forms a blue ion-pair with the basic free amines on the solid support. As the reaction proceeds, the color fades to pale yellow as the dye is released into the acidic coupling medium. This property makes OPfp esters ideal for SPOT synthesis, enabling simultaneous monitoring of all coupling reactions on the array.

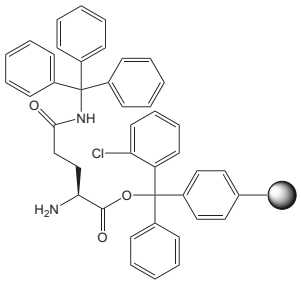
Cat.No.	Product	Contents	Price EUR
852365	Fmoc-Ser(tBu)-OPfp	5 g	192.00
NEW			
852366	Fmoc-Thr(tBu)-OPfp	5 g	192.00
NEW			
Other OPfp esters			
852222	Fmoc-Ala-OPfp	5 g	79.00
852134	Fmoc-Arg(Pbf)-OPfp	5 g	330.00
852132	Fmoc-Asn(Trt)-OPfp	5 g	178.00
852125	Fmoc-Asp(OtBu)-OPfp	5 g	178.00
852126	Fmoc-Cys(Trt)-OPfp	5 g	178.00
852127	Fmoc-Glu(OtBu)-OPfp	5 g	178.00
852133	Fmoc-Gln(Trt)-OPfp	5 g	178.00
852128	Fmoc-Gly-OPfp	5 g	79.00
852223	Fmoc-Ile-OPfp	5 g	79.00
852224	Fmoc-Leu-OPfp	5 g	79.00
852129	Fmoc-Lys(Boc)-OPfp	5 g	155.00
852225	Fmoc-Met-OPfp	5 g	79.00
852226	Fmoc-Phe-OPfp	5 g	79.00
852227	Fmoc-Pro-OPfp	5 g	79.00
852131	Fmoc-Trp(Boc)-OPfp	5 g	298.00
852130	Fmoc-Tyr(tBu)-OPfp	5 g	178.00
852228	Fmoc-Val-OPfp	5 g	79.00

New Pre-loaded 2-chlorotrityl resins

H-Asn(Trt)-2-ClTrt resin



H-Gln(Trt)-2-ClTrt resin



Features & Benefits

- Ideal for synthesis of protect peptide fragments
- Protected peptide released with 1% TFA in DCM or 20% TFE in DCM
- Cys and His resins produce C-terminal peptide acids free from epimerization of C-terminal residue
- Pro resin avoids problems with DKP formation

2-Chlorotrityl resin is the support of choice for the synthesis of protected peptide acids for use in fragment condensation reactions and for the synthesis of cyclic peptides because cleavage from the resin can be effected under extremely mild conditions with either TFE/DCM [6] or HFIP/DCM [7] without affecting the standard protecting groups used in Fmoc SPPS. It is also the preferred support for the synthesis of peptide acids containing *C*-terminal proline and cysteine residues as the bulky trityl linker inhibits, respectively, diketopiperazine formation [8] and racemization [9] of these residues.

With the introduction of H-Asn(Trt)-2-ClTrt resin and H-Gln(Trt)-ClTrt resin, we are pleased to complete our portfolio of 200 - 400 mesh pre-loaded 2-chlorotrityl resins. We have also reduced our prices!

Cat.No.	Product	Contents	Price EUR
856195	H-Asn(Trt)-2-ClTrt resin	1 g	55.00
NEW		5 g	110.00
856194	H-Gln(Trt)-2-ClTrt resin	1 g	55.00
NEW		5 g	110.00
Other pre-loaded 2-chlorotrityl resins			
856055	H-Ala-2-ClTrt resin	1 g	30.00
		5 g	60.00
856142	H-β-Ala-2-ClTrt resin	1 g	30.00
		5 g	60.00
856067	H-Arg(Pbf)-2-ClTrt resin	1 g	55.00
		5 g	110.00
856065	H-Asp(OtBu)-2-ClTrt resin	1 g	55.00
		5 g	110.00
856143	H-Cys(Acm)-2-ClTrt resin	1 g	55.00
		5 g	110.00
856061	H-Cys(Trt)-2-ClTrt resin	1 g	55.00
		5 g	110.00
856063	H-Glu(OtBu)-2-ClTrt resin	1 g	55.00
		5 g	110.00

856053	H-Gly-2-ClTrt resin	1 g	30.00
		5 g	60.00
856056	H-His(Trt)-2-ClTrt resin	1 g	55.00
		5 g	110.00
856136	H-Ile-2-ClTrt resin	1 g	30.00
		5 g	60.00
856060	H-Leu-2-ClTrt resin	1 g	30.00
		5 g	60.00
856054	H-Lys(Boc)-2-ClTrt resin	1 g	55.00
		5 g	110.00
856138	H-Met-2-ClTrt resin	1 g	30.00
		5 g	60.00
856059	H-Phe-2-ClTrt resin	1 g	30.00
		5 g	60.00
856057	H-Pro-2-ClTrt resin	1 g	30.00
		5 g	60.00
856064	H-Ser(tBu)-2-ClTrt resin	1 g	55.00
		5 g	110.00
856062	H-Thr(tBu)-2-ClTrt resin	1 g	55.00
		5 g	110.00
856141	H-Trp(Boc)-2-ClTrt resin	1 g	55.00
		5 g	110.00
856066	H-Tyr(tBu)-2-ClTrt resin	1 g	55.00
		5 g	110.00
856058	H-Val-2-ClTrt resin	1 g	30.00
		5 g	60.00

References

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