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Revised: 2022-10-27

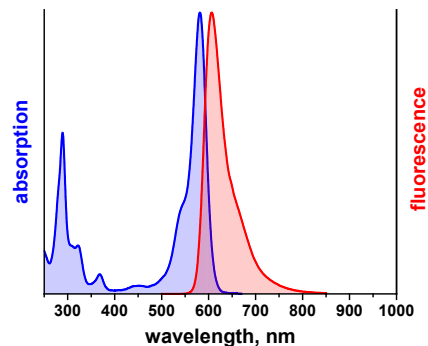
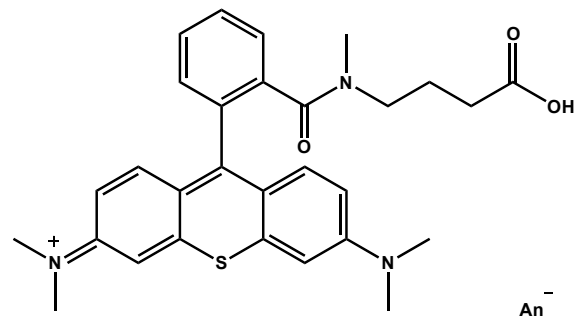
Product Information: ATTO Thio12

ATTO Thio12 is a new label closely related to the well-known rhodamines. The dye can be used for labeling of DNA, RNA or proteins. The characteristic feature of the label is **high yield of triplet formation**.

The dye is moderately hydrophilic. **ATTO Thio12** is a cationic dye. After coupling to a substrate the dye carries a net electrical charge of +1. For details of coupling see our recommended labeling procedure at www.atto-tec.com - Support - Downloads - [General Procedures](#).

Optical data of the carboxy derivative (in PBS, pH 7.4):

λ_{abs}	=	582 nm
ϵ_{max}	=	$1.1 \times 10^5 \text{ M}^{-1} \text{ cm}^{-1}$
λ_{fl}	=	607 nm
η_{fl}	=	15 %
η_{t}	=	20 %
τ_{fl}	=	2.0 ns
CF_{260}	=	0.11
CF_{280}	=	0.37



Spectra available in digitized form (excel file) on <http://www.atto-tec.com>

Modification	MW, g/mol	M ⁺ , g/mol	Order Code	
			Unit (1 mg)	Unit (5 mg)
carboxy	602	502	AD Thio12-21	AD Thio12-25
NHS-ester	699	599	AD Thio12-31	AD Thio12-35
maleimide	724	624	AD Thio12-41	AD Thio12-45
biotin	926	812	AD Thio12-71	AD Thio12-75
phalloidin	1386	1271	AD Thio12-81*	AD Thio12-82**
azide	802	702	AD Thio12-101	AD Thio12-105

* 10 nmol **20 nmol

General Information

Storage: The product is shipped solvent-free at ambient temperature. Upon receipt store at -20 °C. To avoid moisture condensation onto the product, vial must be equilibrated to room temperature before opening. When stored properly, protected from moisture and light, ATTO-TEC products are stable for at least three years.

Risk and safety: A material safety data sheet (MSDS) of each derivative can be downloaded from our website at www.atto-tec.com.

Solutions: The product is soluble in polar solvents, e.g. dimethylformamide (DMF), dimethylsulfoxide (DMSO), or acetonitrile. However, due to their inherent reactivity, NHS-esters and maleimides must be well protected from OH-containing solvents like ethanol and, in particular, water. Prepare labeling solutions of NHS-esters and maleimides immediately before use by dissolving the vial content in anhydrous and amine-free DMF or DMSO. Depending on the quality of the solvent used, such solutions may be of limited stability.

Dye with **free carboxy group (COOH)** may be used for any kind of spectroscopy. Due to the high extinction coefficient and its high quantum yield of fluorescence this product is suitable for high-sensitivity detection including single-molecule work. The dye can be activated at the carboxy group for coupling purposes.

The **NHS-ester** of the dye reacts easily with amino-groups of proteins and other bio-molecules. Since the amino-group must be non-protonated to be reactive, the pH of the reaction solution has to be adjusted sufficiently high. As with all NHS-esters unavoidable hydrolysis takes place at high pH and competes with the desired labeling reaction. Therefore the solution has to be buffered carefully. For details see the Labeling Protocol on www.atto-tec.com.

The **maleimide** is suitable for labeling sulfhydryl (thiol) groups of proteins, in particular cystein residues. See Labeling Protocol on www.atto-tec.com.

Phalloidin, a bicyclic heptapeptide, is a very strong binding reagent to actin. Fluorescent labeled phalloidin has become a useful tool to investigate the distribution of F-actin within the cytoskeleton of cells by fluorescence microscopy. To prepare a stock solution of the phalloidin-conjugate it is recommended dissolving the sample in 1 ml of methanol.

The **biotin** derivative can be used as reagent for binding to proteins like avidin and streptavidin.

The **azide** or **alkyne** modification is used in the Huisgen reaction (“Click Chemistry”).

Further Notes:

- ATTO-TEC products are high-quality reagents intended for research purposes only.
- The use of ATTO-TEC products must be supervised by technically qualified personnel experienced in handling potentially hazardous chemicals. For safety instructions please read the corresponding Material Safety Data Sheet.
- Most ATTO-TEC products and product applications are covered by European and foreign patents.
- Commercial use of ATTO-TEC products is not permitted without written agreement by ATTO-TEC GmbH. Inquiries for licensing may be directed to info@atto-tec.com.