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Product Information: ATTO 700

ATTO 700 belongs to a new generation of fluorescent labels. The dye is designed for application in the area of life science, e.g. labeling of DNA, RNA or proteins. Characteristic features of the label are strong absorption, high fluorescence quantum yield, excellent thermal and photo-stability, very good water solubility and very little triplet formation. **ATTO 700** is a zwitterionic dye with a net electrical charge of zero. The fluorescence is efficiently quenched by electron donors like guanine, tryptophan, etc. For details of coupling see our recommended labeling procedure at www.atto-tec.com - Support - [User Guides & Protocols](#).

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

$$\lambda_{\text{abs}} = 700 \text{ nm}$$

$$\epsilon_{\text{max}} = 1.2 \times 10^5 \text{ M}^{-1} \text{ cm}^{-1}$$

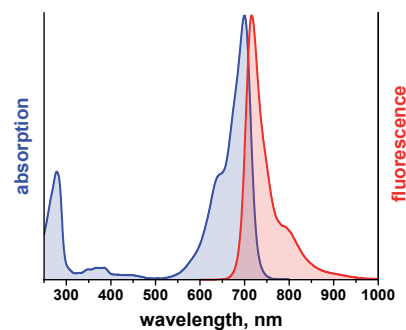
$$\lambda_{\text{fl}} = 716 \text{ nm}$$

$$\eta_{\text{fl}} = 25 \%$$

$$\tau_{\text{fl}} = 1.6 \text{ ns}$$

$$\text{CF}_{260} = 0.26$$

$$\text{CF}_{280} = 0.41$$



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	679	566	AD 700-21	AD 700-25
NHS-ester	837	663	AD 700-31	AD 700-35
maleimide	971	688	AD 700-41	AD 700-45
biotin	973	876	AD 700-71	AD 700-75
phalloidin	1450	1335	AD 700-81*	AD 700-82**
amine	836	608	AD 700-91	AD 700-95
Peg(3)-azide	880	766	AD 700-101	AD 700-105
alkyne	717	603	AD 700-141	AD 700-145
cadaverine	878	650	AD 700-231	AD 700-235
Peg(4)-DBCO <i>new</i>	1071	1072	AD 700-291	AD 700-295

* 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.

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

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 **amine** derivative may be used for reactions with activated carboxy-groups like NHS-esters, TFP-esters etc.

The **azide** or **alkyne** and **DBCO** modification are “click-reagents“ and used in the Huisgen reaction and in case of DBCO in a “strain-promoted“ azide-alkyne cycloaddition (“click-chemistry“).

The **cadaverine** derivative can be used as a fluorescent amine donor substrate for transglutaminases.

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.