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Product Information: ATTO 390

ATTO 390 is a novel fluorescent label with a coumarin structure. The dye is intended for application in the area of life science, e.g. labeling of DNA, RNA or proteins. Characteristic features of the label are high fluorescence quantum yield, large Stokes-shift, good photostability and low molecular weight. 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):

$$\lambda_{\text{abs}} = 390 \text{ nm}$$

$$\epsilon_{\text{max}} = 2.4 \times 10^4 \text{ M}^{-1} \text{ cm}^{-1}$$

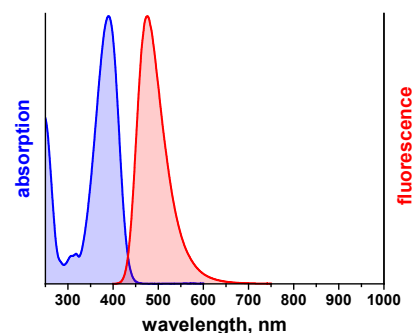
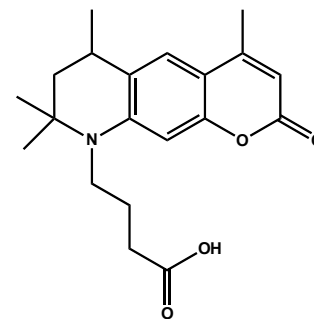
$$\lambda_{\text{fl}} = 476 \text{ nm}$$

$$\eta_{\text{fl}} = 90 \%$$

$$\tau_{\text{fl}} = 5.0 \text{ ns}$$

$$\text{CF}_{260} = 0.46$$

$$\text{CF}_{280} = 0.09$$



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

Modification	MW, g/mol	MH ⁺ , g/mol	Order Code	
			Unit (1 mg)	Unit (5 mg)
carboxy	343	344	AD 390-21	AD 390-25
NHS-ester	440	441	AD 390-31	AD 390-35
maleimide	466	466	AD 390-41	AD 390-45
biotin	654	654	AD 390-71	AD 390-75
phalloidin	1113	1113	AD 390-81*	AD 390-82**
amine	500	386	AD 390-91	AD 390-95
azide	544	544	AD 390-101	AD 390-105
iodoacetamide	553	554	AD 390-111	AD 390-115
alkyne	380	381	AD 390-141	AD 390-145

* 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 **iodoacetamide** derivative reacts, like the maleimide, with a sulfhydryl group forming a thioether bond. It is predominantly used for tagging cystein residues of proteins.

The **alkyne** modification is suitable for reactions with azide groups (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.