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**Product Information: ATTO 740**

**ATTO 740** belongs to a new generation of fluorescent labels for the near infrared spectral region. The dye is designed for application in the area of life science, e.g. labeling of DNA, RNA or proteins. Characteristic features of the dye are strong absorption and good fluorescence as well as excellent thermal and photo-stability. **ATTO 740** is a cationic dye. After coupling to a substrate the dye carries a net electrical charge of +1.

**ATTO 740** is a pH sensitive product. While practically stable up to pH 7.4 (PBS-buffer), it slowly degrades at higher pH. If exposed to higher pH for coupling purposes, we recommend reducing the pH immediately after completion of the reaction. For details of coupling see our recommended labeling procedure at [www.atto-tec.com](http://www.atto-tec.com) - Support - Downloads - [General Procedures](#).

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

$$\lambda_{\text{abs}} = 743 \text{ nm}$$

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

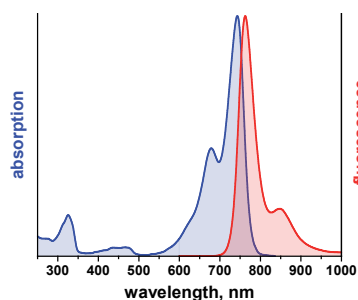
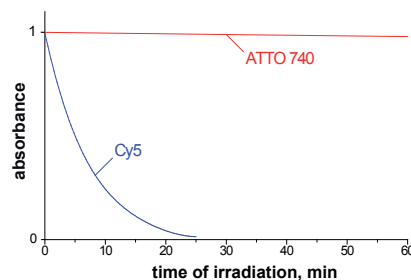
$$\lambda_{\text{fl}} = 763 \text{ nm}$$

$$\eta_{\text{fl}} = 10 \%$$

$$\tau_{\text{fl}} = 0.6 \text{ ns}$$

$$\text{CF}_{260} = 0.07$$

$$\text{CF}_{280} = 0.07$$



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

Modification	MW, g/mol	M <sup>+</sup> , g/mol	Order Code	
			Unit (1 mg)	Unit (5 mg)
carboxy	568	468	AD 740-21	AD 740-25
NHS-ester	665	565	AD 740-31	AD 740-35
maleimide	690	590	AD 740-41	AD 740-45
streptavidin			AD 740-61	AD 740-65
biotin	879	778	AD 740-71	AD 740-75
phalloidin	1352	1237	AD 740-81*	AD 740-82**
azide	782	668	AD 740-101	AD 740-105

\* 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](http://www.atto-tec.com).

**Solutions:** The product is soluble in polar solvents, e.g. acetonitrile, dimethylformamide (DMF), or dimethylsulfoxide (DMSO). However, solvents like DMF and DMSO are never free of nucleophilic and/or basic impurities. Such compounds will react with NHS-esters and maleimides and consequently reduce coupling efficiency. In addition they may react with the chromophore of the dye resulting in dye degradation. Prepare labeling solutions of NHS-esters and maleimides immediately before use by dissolving the vial content in anhydrous acetonitrile. 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](http://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](http://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 **azide** modification is suitable for reactions with alkyne 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.
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