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**Product Information: ATTO Rho14**

**ATTO Rho14** is a new rhodamine featuring a functionality for coupling to biomolecules such as DNA, RNA or proteins. The label shows strong absorption, and extraordinarily high fluorescence quantum yield. In fact **ATTO Rho14** is the brightest label available in this wavelength range. In addition the dye exhibits an exceptionally high photostability.

After coupling to a substrate **ATTO Rho14** carries a net electrical charge of +1.

Absorption and fluorescence are pH-independent in the range of pH 2 to 11, used in typical applications. The dye is moderately hydrophilic. For details of coupling see our recommended labeling procedure at [www.atto-tec.com](http://www.atto-tec.com) - Support - [User Guides & Protocols](#).

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

$$\lambda_{\text{abs}} = 626 \text{ nm}$$

$$\epsilon_{\text{max}} = 1.4 \times 10^5 \text{ M}^{-1} \text{ cm}^{-1}$$

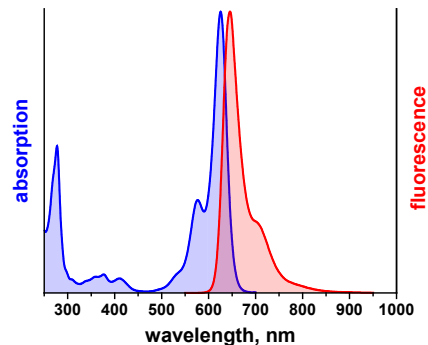
$$\lambda_{\text{fl}} = 646 \text{ nm}$$

$$\eta_{\text{fl}} = 80 \%$$

$$\tau_{\text{fl}} = 3.7 \text{ ns}$$

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

$$\text{CF}_{280} = 0.47$$



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	884	784	AD Rho14-21	AD Rho14-25
NHS-ester	981	881	AD Rho14-31	AD Rho14-35
maleimide	1020	906	AD Rho14-41	AD Rho14-45
biotin	1208	1094	AD Rho14-71	AD Rho14-75
phalloidin	1668	1552	AD Rho14-81*	AD Rho14-82**

\* 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. 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](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).

**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.

### **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](mailto:info@atto-tec.com).