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ATTO-TEC

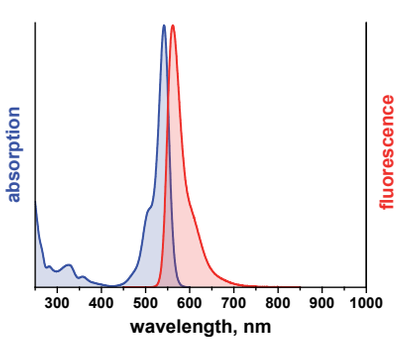
Revised: 2024-02-01

Product Information: ATTO 542

ATTO 542 is a new fluorescent label related to ATTO 532. The new dye is very hydrophilic and shows excellent water solubility. Characteristic features of the dye are strong absorption, high photostability, and very little triplet formation. The dye shows a very high fluorescence quantum yield even after conjugation to a bio-molecule like proteins etc. **ATTO 542** is very suitable for oligonucleotide labeling, single-molecule detection applications and high-resolution microscopy (PALM, dSTORM, STED etc.). Additionally the dye highly qualifies to be applied in flow cytometry (FACS), fluorescence in-situ hybridization (FISH) and many more. **ATTO 542** is an anionic dye (charge - 3). 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):

λ_{abs}	=	542 nm
ε_{max}	=	1.2 x 10^5 M^{-1} cm^{-1}
λ_{fl}	=	562 nm
η_{fl}	=	93 %
τ_{fl}	=	3.7 ns
CF_{260}	=	0.18
CF_{280}	=	0.08



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)	Order Code Unit (5 mg)
carboxy	1028	914	AD 542-21	AD 542-25
NHS-ester	1125	1011	AD 542-31	AD 542-35
maleimide	1150	1036	AD 542-41	AD 542-45
biotin	1339	1224	AD 542-71	AD 542-75
phalloidin	1798	1683	AD 542-81*	AD 542-82**
Peg(3)-azide	1228	1114	AD 542-101	AD 542-105
Peg(4)-DBCO *new*	1534	1420	AD 542-291	AD 542-295

* 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). 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. Stock solutions can be prepared with water or aqueous buffer. 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 **azide** or **DBCO** modification are “click-reagents“ used in a “strain-promoted“ azide-alkyne cycloaddition (“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.