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ATTO-TEC

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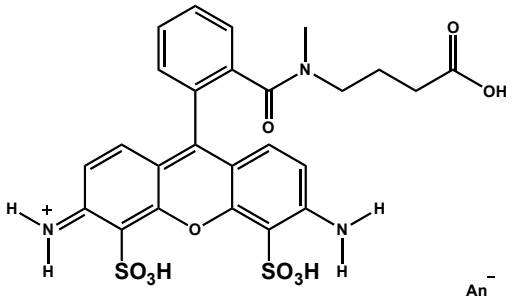
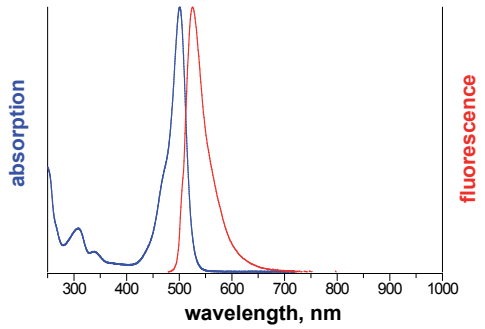
Product Information: ATTO 488

ATTO 488 is a new hydrophilic fluorescent label with excellent water solubility. The dye exhibits strong absorption, high fluorescence quantum yield and exceptional thermal and photo-stability. Thus **ATTO 488** is highly suitable for single-molecule detection applications and high-resolution microscopy such as PALM, dSTORM, STED etc. Additionally the dye highly qualifies to be applied in flow cytometry (FACS), fluorescence in-situ hybridization (FISH) and many more. The fluorescence is excited most efficiently in the range 480 - 515 nm. A suitable source of excitation is the 488 nm line of the Argon-Ion laser. 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 water)*:

λ_{abs}	=	501 nm
ε_{max}	=	9.0 x 10^4 M^{-1} cm^{-1}
λ_{fl}	=	523 nm
η_{fl}	=	80 %
τ_{fl}	=	4.1 ns
CF_{260}	=	0.25
CF_{280}	=	0.10





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)
with free COOH	804	590	AD 488-21	AD 488-25
NHS-ester	981	687	AD 488-31	AD 488-35
maleimide	1067	712	AD 488-41	AD 488-45
biotin	1191	900	AD 488-71	AD 488-75
phalloidin	1472	1359	AD 488-81*	AD 488-82**
amine	858	632	AD 488-91	AD 488-95
azide	903	790	AD 488-101	AD 488-105
iodoacetamide	913	800	AD 488-111	AD 488-115
hydrazide	717	604	AD 488-121	AD 488-125
alkyne	740	627	AD 488-141	AD 488-145

* 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 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. 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** modification is used in the Huisgen reaction (“Click Chemistry“).

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 **hydrazide** derivative is used to modify aldehydes and ketones.

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.