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ATTO-TEC

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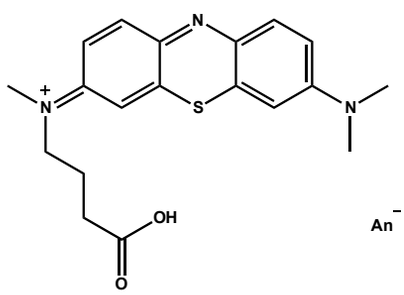
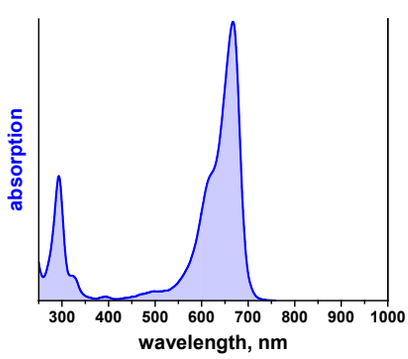
Product Information: ATTO MB2

ATTO MB2 is a derivative of the well-known redox dye Methylene Blue. The dye can be reversibly reduced to the colorless leuko form. Upon oxidation (e.g. with oxygen) the dye recovers, and the absorption is fully restored.
The dye is suitable for labeling of DNA, RNA, proteins etc. In common with most **ATTO**-labels the dye shows a high extinction coefficient.
ATTO MB2 is moderately hydrophilic. 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):

λ_{abs}	=	668 nm
ε_{max}	=	1.0 x 10^5 M^{-1} cm^{-1}
CF_{260}	=	0.08
CF_{280}	=	0.24





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	392	356	AD MB2-21	AD MB2-25
NHS-ester	553	453	AD MB2-31	AD MB2-35
maleimide	591	478	AD MB2-41	AD MB2-45
biotin	779	666	AD MB2-71	AD MB2-75
phalloidin	1239	1125	AD MB2-81*	AD MB2-82**
amine	626	400	AD MB2-91	AD MB2-95
azide	670	556	AD MB2-101	AD MB2-105
alkyne	507	393	AD MB2-141	AD MB2-145

* 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. 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.

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 **biotin** derivative can be used as reagent for binding to proteins like avidin and streptavidin.

The **azide** or **alkyne** modification is used in the 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.