

14397 Atto Rho14 maleimide

Application

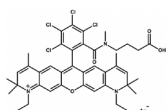
Atto Rho14 is a new rhodamine featuring, a functionality for coupling to biomolecules such as DNA, RNA or proteins. The label shows strong absorption, and extraordinarily high fluorescence quantum yield. In fact Atto Rho14 is the brightest label available in this wavelength range. In addition the dye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

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

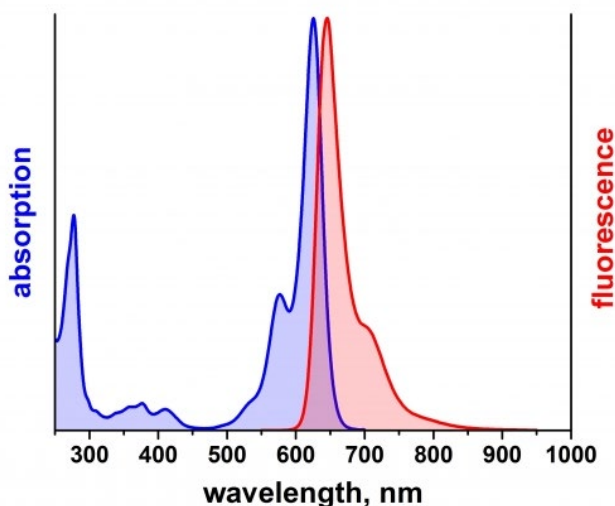
Absorption and fluorescence are pH-independent in the range of pH 2 to 11, used in typical applications. The dye is moderately hydrophilic.

Product Description

MW	1020 g/mol
λ_{abs}	626 nm
ϵ_{max}	$1.4 \times 10^5 \text{ M}^{-1} \text{ cm}^{-1}$
λ_{fl}	646 nm
η_{fl}	80 %
τ_{fl}	3.7 ns
CF ₂₆₀	0.26
CF ₂₈₀	0.47



Optical data of the carboxy derivative (in aqueous solution)



Storage: store at $\leq -20^{\circ}\text{C}$. Protect from long-term exposure to moisture and light.



General procedure for labelling proteins with maleimides

- 1)** Dissolve the protein at 50–100 μM in a suitable buffer at pH 7.0–7.5 at room temperature. Common buffers include 10–100 mM phosphate, Tris, HEPES. Under those conditions, the protein thiol groups are sufficiently nucleophilic so that they react almost exclusively with the reagent. Other protein amines mostly remain protonated and relatively unreactive.
- 2)** Reduce disulfide bonds in the protein. A 10-fold molar excess of a reducing agent such as DTT (43817) or TCEP (93284) is usually sufficient. If DTT is used, then dialysis is required to remove the excess DTT prior to introducing the reactive dye. This is not necessary for TCEP.
- 3)** As thiols can be oxidized to disulfides, It may be advisable to carry out thiol modifications in an oxygen-free environment. This is particularly important if the protein has been treated with a reagent such as dithiothreitol prior to thiol modification. In this case, all buffers should be deoxygenated and the reactions carried out under an inert atmosphere to prevent reformation of disulfides.
- 4)** Prepare a 10–20 mM stock solution of the reactive dye in a suitable solvent immediately prior to use (DMSO is the most common choice). Protect all stock solutions from light as much as possible by wrapping containers in aluminum foil.
- 5)** Add sufficient protein-modification reagent from a stock solution to achieve an 10–20 molar excess compared to protein. Add the reagent dropwise to the protein solution as it is stirring.
- 6)** Let the reaction proceed for 2 hours at room temperature or overnight at 4°C. In both cases reaction should take place in the dark.
- 7)** Upon completion of the reaction with the protein, an excess soluble low molecular weight thiol (e.g. glutathione, mercaptoethanol) can be added to consume excess thiol-reactive reagent, thus ensuring that no reactive species are present during the purification step.
- 8)** Separate the conjugate on a gel filtration column, such as a Sephadex G-25 column or equivalent matrix, or by extensive dialysis at 4°C in an appropriate buffer.

Sephadex is a registered trademark of GE Healthcare

Precautions and Disclaimer

This product is for R&D use only, not for drug, household, or other uses. Please consult the Material Safety Data Sheet for information regarding hazards and safe handling practices.

The vibrant M and Sigma-Aldrich are trademarks of Merck KGaA, Darmstadt, Germany or its affiliates. Detailed information on trademarks is available via publicly accessible resources.
© 2018 Merck KGaA, Darmstadt, Germany and/or its affiliates. All Rights Reserved.

The life science business of Merck KGaA, Darmstadt, Germany operates as MilliporeSigma in the US and Canada.



The vibrant M and Sigma-Aldrich are trademarks of Merck KGaA, Darmstadt, Germany or its affiliates.
Detailed information on trademarks is available via publicly accessible resources.
© 2018 Merck KGaA, Darmstadt, Germany and/or its affiliates. All Rights Reserved.

The life science business of Merck KGaA, Darmstadt, Germany
operates as MilliporeSigma in the US and Canada.

