TMR C6 Maleimides, Superior Replacements to Tetramethylrhodamine Maleimides and Iodoacetamides

Ordering Information	*Storage Conditions*
Product Numbers: 423, 424 and 425	Store at -20 °C and desiccated. Expiration date is 12 months from the date of receipt.

Introduction

Although tetramethylrhodamine (TMR) maleimides and iodoacetamides are popular thiol-reactive labeling reagents, they are quite unstable in water, and the commercial tetramethylrhodamine maleimides and iodoacetamides often have lower purities than other tetramethylrhodamine labeling reagents (such as TAMRA SE reagents) due to their synthetic difficulties. In addition, the labeling efficiency of tetramethylrhodamine maleimides and iodoacetamides is often lower compared to that of other tetramethylrhodamine labeling dyes. TMR C6 maleimides are proven to be superior replacements to tetramethylrhodamine maleimides and iodoacetamides. These new reagents react with thiol compounds, such as amino acids, peptides and proteins, to give bright red fluorescent conjugates that are extremely stable. Compared to tetramethylrhodamine maleimides and iodoacetamides, TMR C6 maleimides have higher labeling efficiency, and more importantly, the resulting conjugate is often more fluorescent than the corresponding Texas Red conjugate. The conjugates of TMR C6 maleimides have the identical excitation and emission wavelengths to those of tetramethylrhodamine maleimides or iodoacetamides.

Features and Benefits

- TMR C6 maleimides have the spectral properties identical to those of tetramethylrhodamine maleimides or iodoacetamides.
- The protein conjugates of TMR C6 maleimides are often brighter than those of tetramethylrhodamine maleimides or iodoacetamides.
- TMR C6 maleimides have higher labeling efficiency than tetramethylrhodamine maleimides or iodoacetamides do in some cases.
- TMR C6 conjugation is more reproducible than those of tetramethylrhodamine maleimides or iodoacetamides.

Physical and Spectral Properties

- Maximum Absorption: 545 nm
- Maximum Emission: 575 nm
- Recommended Filter: TRITC Filter
- Stock Solvent: dimethylsulfoxide (DMSO)
- Reaction Buffer: TMR C6 maleimide reagents react with the thiol group on amino acids, peptides, proteins and amino-modified oligonucleotides. In order to maintain this thiol group, the conjugation must take place in a buffer with slightly acidic pH to avoid thiol oxidation. pH 5.5-6.5 is recommended for optimal results.
  Note: It is important to avoid buffers that contain thiol (such as DTT) or primary amines (such as Tris) as these buffers will compete for conjugation with the thiol-reactive compound.

Biological Applications

The TMR C6 maleimide reagent emits at the similar wavelength of Cy3, TRITC or Lissamine rhodamine, making TMR conjugates among the most commonly used long-wavelength "second labels" in fluorescence microscopy. The fluorescence quantum yields of TMR C6 maleimide conjugates are usually high. When the correct optical filter sets are used, TMR C6 maleimide conjugates are brighter and have lower background than conjugates of the blue or green fluorescent dyes.

References

1. HermansonG.T., *Bioconjugate Techniques*, Academic Press, New York (1995).
2. Sambrook J., Fritsch E.F., and Maniatis, T., *Molecular Cloning: A Laboratory Manual, Second Edition*, Cold spring Harbor Laboratory (1989).

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