# Product Information

**Name:** TMRE  
Tetramethylrhodamine Ethyl Ester, perchlorate  
**Catalog Number:** FP-41391A, 25 mg  
**Structure:** C\textsubscript{26}H\textsubscript{27}ClN\textsubscript{2}O\textsubscript{7}  
**Molecular Weight:** MW = 514.96  
**Solubility:** Soluble in DMSO, EtOH  
**Absorption / Emission:** λ\textsubscript{exc}/λ\textsubscript{em} (MeOH) = 549/574 nm  
**EC (M\textsuperscript{-1} cm\textsuperscript{-1})**: 109 000  

**Name:** TMRM  
Tetramethylrhodamine Methyl Ester, perchlorate  
**Catalog Number:** FP-21089A, 25 mg  
**Structure:** C\textsubscript{25}H\textsubscript{25}ClN\textsubscript{2}O\textsubscript{7}  
**Molecular Weight:** MW = 500.93  
**Solubility:** Soluble in DMSO, MeOH  
**Absorption / Emission:** λ\textsubscript{exc}/λ\textsubscript{em} (MeOH) = 548/574 nm  
**EC (M\textsuperscript{-1} cm\textsuperscript{-1})**: 115 000  

**Storage:** –20°C  
Protect from light and moisture

## Introduction

TMRM and TMRE, the methyl and ethyl esters of tetramethylrhodamine, are preferred as rapid membrane potential sensors for quantitative measurements using Nernst equation. They pass through the plasmatic membrane better than related rhodamine 123, and accumulate in mitochondria where fluorescence self quenches. The transmembrane distribution is directly related to the membrane potential, because they do not form aggregates in cell membranes or interact with membrane proteins. They are used to obtain unbiased images of potential-dependent dye distribution. Highly selective, potential-dependent staining of mitochondria is obtained by setting the extracellular K\textsuperscript{+} concentration close to intracellular values (~137 mM), thereby depolarizing the plasmatic membrane.

Their high fluorescence allows to work with a low concentration (avoid aggregation in cell membranes).
FT-41391A

Absorbance and emission spectra of TMR in pH7 buffer

Directions for use

Handling and Storage

TMRM, TMRE, were dissolved in methanol or ethanol and used directly. The final concentrations of methanol or ethanol were kept to <0.5% (v/v) in all incubations of mitochondria.

Some datas about use of TMRE/TMRA:

<table>
<thead>
<tr>
<th>Cells</th>
<th>Source</th>
<th>Concentration</th>
<th>Temperature</th>
<th>Time</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rat hippocampi</td>
<td>Bindokas 1998</td>
<td>1µM TMR/TMRM</td>
<td>+23°C</td>
<td>Maintained in dye sol. 100nM</td>
<td>Microfluorometer</td>
</tr>
<tr>
<td>Rat cardiomyocytes</td>
<td>Duchen 1998</td>
<td>3µM TMRE</td>
<td>Room temperature</td>
<td>20 min</td>
<td>Epifluorescence</td>
</tr>
<tr>
<td>NIH 3T3 fibroblast</td>
<td>Fink 1998</td>
<td>100 nM TMRE</td>
<td>+37°C</td>
<td>10 min</td>
<td>Confocal microscopy</td>
</tr>
</tbody>
</table>

Other protocol may be found in literature.

Related products

- JC-1, FP-52314A
- JC-10, superior alternative to JC-1, FP-CL0440
- Dihydrorhodamine 123, FP-AM352A
- Valinomycin, FP-09246H
- CCCP, 091640

References

FluoProbes®

FT-41391A

Ordering information

Catalog size quantities and prices may be found at http://www.fluoprobes.com
Please inquire for higher quantities (availability, shipment conditions).

For any information, please ask : Fluoprobes / Interchim; Hotline : +33(0)4 70 03 73 06

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