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Product Information

SYTO 16 Green Nucleic Acid Stain

Catalog Number	Packaging Size
C083	250 µL

Storage upon receipt:
- -20°C
- Protect from light

Ex/Em: RNA 494/525 nm; DNA 488/518 nm

Product Description

SYTO 16 Green Nucleic Acid Stain is a cell-permeant nucleic acid stain that shows a large fluorescence enhancement upon binding nucleic acids. The SYTO 16 dye can be used to stain RNA and DNA in both live and dead eukaryotic cells, as well as in Gram-positive and Gram-negative bacteria. Eukaryotic cells incubated with SYTO 16 dye generally show cytoplasmic or mitochondrial staining, as well as nuclear staining. This dye is provided as 5 mM solution in DMSO.

Features:

• Permeability to virtually all cell membranes, including mammalian cells and bacteria.

• High molar absorptivity, with extinction coefficients >60,000 cm^{-1} M^{-1} at visible absorption maxima.

• Extremely low intrinsic fluorescence, with quantum yields typically <0.01 when not bound to nucleic acids.

• Quantum yields that are typically >0.4 when bound to nucleic acids.

Experimental Guidelines

We suggest broad ranges of staining concentrations, based on our laboratory experience or published methods, to provide a starting point for experiments. These conditions require adjustment for each cell type and experimental system.

Use plastic tubes when diluting the SYTO Green stain, because the diluted stain adheres to glass.

In general, the best results are obtained in buffers that do not contain phosphate. When preparing other solutions, note that residual detergent on plastic or glassware may also affect real or apparent staining of many cells or organisms, causing brightly stained material to appear in solutions with or without cells present. Wash all labware in mild detergent and rinse with hot tap water followed by several rinses with deionized water.

Adherent cells in culture may be stained *in situ* on coverslips. Pellet cells in suspension by centrifugation and resuspend in buffered salt solution or water. Add the SYTO Green stain using the concentrations listed in Table 1 as a guide. In initial experiments, it may be best to try several dye concentrations over the entire suggested range to determine the concentration that yields optimal staining. Be aware that growth medium, cell density, the presence of other cell types, and other factors may influence staining. Stained eukaryotic cells generally show diffuse cytoplasmic staining as well as nuclear staining. Particularly intense staining of intranuclear bodies is frequently observed. Because the SYTO Green stain is cell permeant and contain a net positive charge at neutral pH, they may also stain mitochondria. Staining of live yeast is primarily mitochondrial.

The SYTO Green stain has proven to be useful for staining DNA on microarrays for quality control purposes.

Table 1. Recommended conditions for staining cells with the SYTO Green stain.

Application	Dye Concentration	Staining Conditions
Bacteria	50 nM-20 µM	Incubate for 1-30 minutes.
Eukaryotic cells	10 nM-5 µM	Incubate for 10-120 minutes
Microarrays	50 nM in TE buffer	Incubate for 5 minutes, rinse and then dry.