

Product Information

Cyanine Nucleic Acid Stains

Dye	Cat no.	Unit size	Ex/Em (nm) with DNA	MW (free acid form)
Oxazole Blue (PO-PRO™-1), 1 mM in DMSO	40091	1 mL	435/455	579
Oxazole Blue Homodimer (POPO™-1), 1 mM in DMSO	40093	100 uL	435/455	1170
Oxazole Yellow (YO-PRO®-1), 1 mM in DMSO	40089	1 mL	491/509	629
Oxazole Yellow Homodimer (YOYO®-1), 1 mM in DMSO	40090	100 uL	491/509	1271
Thiazole Green (SYBR® Green I), 10,000X in DMSO	40086-0.5mL	500 uL	497/520	545
	40086-1mL	1 mL		
TO Iodide (TO-PRO®-1), 1 mM in DMSO	40088	1 mL	515/531	645
Thiazole Orange Homodimer (TOTO®-1), 1 mM in DMSO	40079	200 uL	520/514	1303
Thiazole Red (TO-PRO®-3), 1 mM in DMSO	40087	1 mL	642/661	671
Thiazole Red Homodimer (TOTO®-3), 1mM in DMSO	40080	200 uL	642/660	1355

Storage and Handling

Store at 4°C or below, protected from light. Product is stable for at least 12 months from date of receipt when stored as recommended.

Product Description

Cyanine nucleic acid stains are highly sensitive fluorescent dyes for DNA and RNA. The dyes are essentially non-fluorescent in the absence of nucleic acids but exhibit strong fluorescence when bound to nucleic acids. Biotium offers both dimeric and monomeric forms of commonly used cyanine nucleic acid stains. With the exception of Thiazole Green (SYBR® Green I) which is membrane-permeant, all other dyes included in this product information sheet are membrane-impermeant and may be used for selective dead cell staining by microscopy or flow cytometry. In addition, the membrane-impermeant dyes are non-cytotoxic and may be used for long-term monitoring of viability in cell cultures.

Thiazole Green, also known as SYBR® Green I, is a widely-used nucleic acid stain for detecting double-stranded DNA (dsDNA), in agarose, polyacrylamide gels, and qPCR. Thiazole Green can also be used to detect ssDNA and RNA in denaturing agarose/formaldehyde and polyacrylamide/urea gels without any prewashing steps, although the sensitivity is lower. As a membrane-permeant dye, Thiazole Green may also be used to stain all cells in live cultures.

For nuclear specific counterstains for live cultures in the green and far-red channels please see our NucSpot® Live 488, NucSpot® Live 650, and RedDot™ 1. Biotium also offers nuclear specific NucSpot® 470, NucSpot® Far-Red, and RedDot™ 2, which are suitable for fixed cells and selectively stains dead cells in live cultures (see Related Products).

Dye Properties

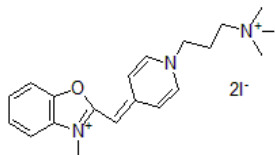
Dye	Chemical Formula	Color and Form	Cell Permeability
Oxazole Blue	C ₂₀ H ₂₇ I ₂ N ₃ O	Yellow liquid	Impermeant
Oxazole Blue Homodimer	C ₄₁ H ₅₄ I ₄ N ₆ O ₂	Yellow liquid	Impermeant
Oxazole Yellow	C ₂₄ H ₂₉ I ₂ N ₃ O	Orange liquid	Impermeant
Oxazole Yellow Homodimer	C ₄₉ H ₅₈ I ₄ N ₆ O ₂	Yellow liquid	Impermeant
Thiazole Green	C ₃₂ H ₃₇ ClN ₄ S	Orange liquid	Permeant
TO Iodide	C ₂₄ H ₂₉ I ₂ N ₃ S	Orange liquid	Impermeant
Thiazole Orange Homodimer	C ₄₉ H ₅₈ I ₄ N ₆ S ₂	Orange liquid	Impermeant
Thiazole Red	C ₂₆ H ₃₁ I ₂ N ₃ S	Blue liquid	Impermeant
Thiazole Red Homodimer	C ₅₃ H ₆₂ I ₄ N ₆ S ₂	Blue liquid	Impermeant

Experimental Protocols

Selective staining of dead cells

- Dilute the cyanine nucleic acid dye to a final concentration of 1-5 nM in complete cell culture medium or buffer of your choice.

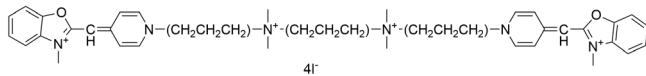
Note: Optimal staining concentration may vary for different cell types or applications.
- Incubate cells with the dye solution for 15 minutes or longer at room temperature or 37°C.
- Analyze cells by microscopy or flow cytometry in the appropriate channel (see excitation and emission values in the product table).



Oxazole Blue (PO-PRO™-1)

Full chemical name: Benzoxazolium, 3-methyl-2-[[1-[3-(trimethylammonio)propyl]-4(1H)-pyridinylidene]methyl]-, diiodide.

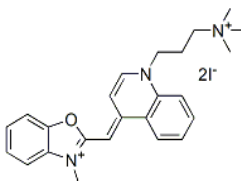
CAS number: 157199-56-9



Oxazole Blue Homodimer (POPO™-1)

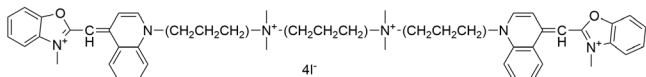
Full chemical name: Benzoxazolium, 2,2'-[1,3-propanediylbis((dimethyliminio)-3,1-propanediyl-1(4H)-pyridinyl-4-ylidenemethylidene)]bis[3-methyl]-, tetraiodide

CAS number: 169454-15-3



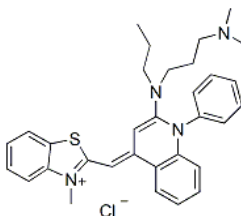
Oxazole Yellow (YO-PRO®-1)

CAS number: NA



Oxazole Yellow Homodimer (YOYO®-1)

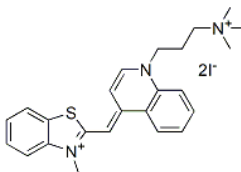
CAS number: NA



Thiazole Green (SYBR® Green I)

Full chemical name: N',N'-dimethyl-N-[4-[(E)-(3-methyl-1,3-benzothiazol-2-ylidene)methyl]-1-phenylquinolin-1-ium-2-yl]-N-propylpropane-1,3-diamine

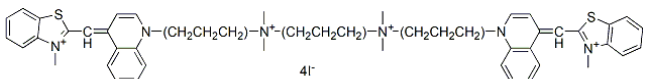
CAS number: 163795-75-3



TO Iodide (TO-PRO®-1)

Full chemical name: Quinolinium, 4-[(3-methyl-2(3H)-benzothiazolylidene)methyl]-1-[3-(trimethylammonio)propyl]-, diiodide

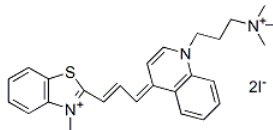
CAS number: 157199-59-2



Thiazole Orange Homodimer (TOTO®-1)

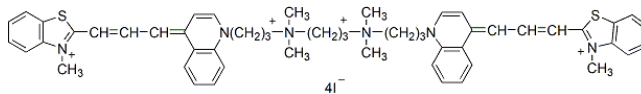
Full chemical name: Quinolinium, 1-1'-[1,3-propanediylbis((dimethyliminio)-3,1-propanediyl)]bis[4-[(3-methyl-2(3H)-benzothiazolylidene)methyl]]-, tetraiodide

CAS number: 143413-84-7



Thiazole Red (TO-PRO®-3)

CAS number: NA



Thiazole Red Homodimer (TOTO®-3)

CAS number: NA

Related Products

Catalog number	Product
40083	NucSpot® 470 Nuclear Stain for dead or fixed cells
40085	NucSpot® Far-Red dead cell stain for flow cytometry
40081	NucSpot® Live 488 Nuclear Stain for live or fixed cells
40082	NucSpot® Live 650 Nuclear Stain for live or fixed cells
40060	RedDot™ 1 Far-Red Nuclear Stain for live cells
40061	RedDot™ 2 Far-Red Nuclear Stain for dead or fixed cells
23002	EverBrite™ Mounting Medium with DAPI
23004	EverBrite™ Hardset Mounting Medium with DAPI
40037	7-AAD, 1 mg
40084	7-AAD, 1 mg/mL solution
40014	Ethidium Homodimer I, 2 mM in DMSO
40051	Ethidium Homodimer III, 1 mM in DMSO
40048	Propidium Iodide, 50 ug/mL in Buffer

Please visit our website at www.biotium.com for information on our life science research products, including organelle stains, Live-or-Dye™ Fixable Viability Staining Kits, and other viability dyes.

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