

# Product Information

## Ethidium Monoazide Bromide (Ethidium Bromide, Monoazide)

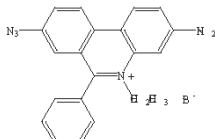
**Catalog Number:** 40015

**Unit Size:** 5 mg

**Molecular Information:**

C<sub>21</sub>H<sub>18</sub>BrN<sub>5</sub>

MWt: 420



**Properties:**

**Color & Form:** Orange solid

**Purity:** 95% by HPLC

**Solubility:** Soluble in DMF or EtOH

**Absorption:** 464 nm (pH 3)

**Excitation/Emission:** (after photocrosslinking to nucleic acid<sup>6</sup>): 510/600 nm

**Storage and Handling**

Store desiccated at 4°C or -20°C and protect from light. Product is stable for at least one year from date of receipt when stored as recommended.

**Solubility and Stock Solution Preparation**

EMA is soluble in DMF or EtOH. Stock solutions can be prepared at 5 mg/mL and stored for at least 6 months at 4°C, protected from light.

**Product Description**

Ethidium monoazide bromide is a non-fluorescent nucleic acid stain with a photoaffinity label. The dye, after photolysis, is converted to a fluorescent DNA stain covalently bound to DNA<sup>1</sup>. The dye has been used to “footprint” drug binding sites on DNA<sup>2</sup> to modify plasmid DNA<sup>3,4</sup> and to determine hematopoietic cell phenotype, function and position in the cell cycle.<sup>5</sup> A particularly useful application of the dye is to selectively and covalently label dead cells in the presence of live cells. Because ethidium monoazide bromide is relatively impermeant to live cells, it selectively labels DNA in dead cells in a mixed population of live and dead cells. Photolysis following the dye application renders the dead cell DNA covalently labeled with the dye. One can then wash and fix the cell preparation for analysis by microscopy, fluorescence plate reader or flow cytometry. The major advantage of this method is that researchers can avoid extensive manipulation of live pathogenic organisms.<sup>7</sup> Ethidium monoazide bromide also has been used to differentiate between viable and dead bacteria by 5'-nuclease PCR<sup>8</sup>.

Biotium also offers propidium monoazide iodide (PMA), catalog numbers 40013 (1 mg solid) and 40019 (20 mM in H<sub>2</sub>O, 100 uL), which is less membrane permeant and therefore more selective for dead cell labeling than EMA for qPCR quantitation of viable bacteria.<sup>9</sup>

For photoactivation of EMA or PMA dye, we recommend the use of Biotium's PMA-Lite LED Photolysis Device (E90002), which is designed to conduct photolysis under controlled conditions.

**References**

- 1) J. Mol. Biol. 92, 319 (1975);
- 2) Euro. J. Biochem. 182, 437 (1989);
- 3) J. Biol. Chem. 257, 13205 (1982);
- 4) J. Biol. Chem. 259, 11090 (1984);
- 5) Cytometry 11, 610 (1990);
- 6) Nucleic Acids Res. 5, 4891 (1978);
- 7) Cytometry, 12, 133 (1991);
- 8) Biotechniques, 34 (4), 804 (2003);
- 9) J. Microbio Meth. 67, 310 (2006).

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**Related products**

Product	Size	Cat. No.
PMA™ dye 20 mM in H <sub>2</sub> O	100 uL	40019
PMA-Lite™ LED Photolysis Device	1 device	E90002
EvaGreen® Dye, 20X in water (trial size)	1 mL	31000-T
Fast Plus EvaGreen® qPCR Master Mix (trial size)	100 rxn	31020-T
GelRed™ Nucleic Acid Gel Stain, 10,00X in H <sub>2</sub> O	0.5 mL	41003
GelGreen™ Nucleic Acid Gel Stain, 10,00X in H <sub>2</sub> O	0.5 mL	41005
Live Bacterial Gram Stain Kit	200 assays	32000-1
Bacterial Viability and Gram Stain Kit	200 assays	32001
Viability/Cytotoxicity Assay Kit for Bacterial Live and Dead Cells	100-1000 assays	30027

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