

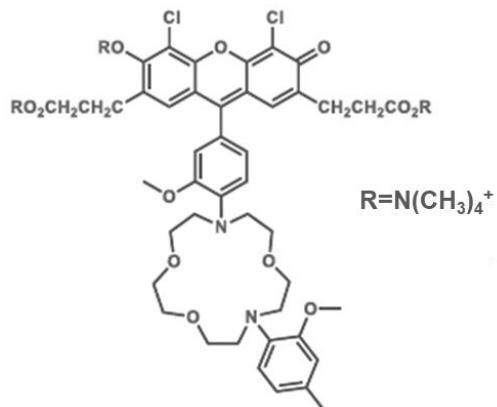
# ING-2 TMA<sup>+</sup> Salt

05/21

**ALTERNATE NAMES:** Sodium (Na<sup>+</sup>) indicator; ING-2 membrane impermeable; ING-2 tetramethylammonium (TMA<sup>+</sup>) salt; Fluorescent Sodium Na<sup>+</sup> indicator

**CATALOG #:** B3138-5PK 5 x 50 µg  
B3138-500 500 µg

**STRUCTURE:**



**MOLECULAR FORMULA:** C<sub>56</sub>H<sub>81</sub>Cl<sub>2</sub>N<sub>5</sub>O<sub>12</sub>

**MOLECULAR WEIGHT:** 1087

**APPEARANCE:** Orange powder

**PURITY:** ≥ 90%

**SOLUBILITY:** Soluble in water

**DESCRIPTION:** ING-2 is a yellow-green fluorescent intracellular sodium Na<sup>+</sup> indicator. It is a small, synthetic fluorochrome fused with a Na<sup>+</sup>-binding moiety. When Na<sup>+</sup> binds to ING-2, the quenching is relieved, and the fluorescence dramatically increases. The spectral properties (Ex/Em: 525 nm/545 nm) and large dynamic range make ING-2 the best Na<sup>+</sup> indicator for high-throughput screening applications targeting Na<sup>+</sup> channels, and non-selective monovalent cation channels. ING-2 has a more physiologically relevant affinity (K<sub>d</sub> = 20 mM) than ING-1 (K<sub>d</sub> = 92 mM).

ING-2 TMA<sup>+</sup> Salt is the water soluble, membrane impermeable form of the sodium indicator. It can be used in lipid membrane-free systems, in liposomes or can be introduced into cells by electroporation, microinjection or other methods.

**STORAGE TEMPERATURE:** -20 °C. Store in the dark. Product is light sensitive. Protect from air. Store under desiccating conditions.

**HANDLING:** Do not take internally. Wear gloves and mask when handling the product! Avoid contact by all modes of exposure.

**PROTOCOL:**

**Titration protocol for measuring sodium concentrations in solution:**

1. Calibrate ING-2 salt by dissolving the dye in TRIS or HEPES buffer with various concentrations of NaCl. Use a concentration of ~2.5 µM ING-2 and a concentration range between 0-150 mM NaCl. For calibration, use a buffer formulation that is similar to the experimental conditions, as the performance of the dye can be impacted by other salts and/or proteins.
2. There will be an increase in the fluorescence of the solution, when the amount of NaCl in the solution increases.
3. Read the fluorescence using a plate reader or fluorimeter (Excitation/Emission: 525 nm/545 nm).

**REFERENCES**

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2. Yao, L., Fan, P., Jiang, Z., et al. Nav1.5-dependent persistent Na<sup>+</sup> influx activates CaMKII in rat ventricular myocytes and N1325S mice. *Am J Physiol Cell Physiol.* 301(3):C577-86 (2011).

3. Yurinskaya, V.E., Aksenov, N.D., Moshkov, A.V., et al. Fluorometric Na<sup>+</sup> Evaluation in Single Cells Using Flow Cytometry: Comparison with Flame Emission Assay. *Cell Physiol Biochem.* 29;54(4):556-566 (2020).
4. Tay, B., Stewart, T.A., Davis, F.M., et al Development of a high-throughput fluorescent no-wash sodium influx assay (2019). *PLOS ONE* 14(3): e0213751.  
<https://doi.org/10.1371/journal.pone.0213751>.
5. Naumann, G., Lippmann, K, Eilers, J., et al. Photophysical properties of Na<sup>+</sup>-indicator dyes suitable for quantitative two-photon fluorescence-lifetime measurements. *Journal of Microscopy* 272 (2) 136-144 (2018).
6. Aliotta, A., Calderara, D.B., Alberio, L. Flow Cytometric Monitoring of Dynamic Cytosolic Calcium, Sodium, and Potassium Fluxes Following Platelet Activation. *Cytometry*, 97: 933-944 (2020).

**RELATED PRODUCTS:**

FURA-4F/AM (Cat. No. 9550)  
BAPTA AM (Cat. No. 2242)  
FURA-5F/AM (Cat. No. 9551)  
FURA-2 Am (Cat. No. 2243)  
ING-2 AM (Cat. No. B3137)

**DISCLAIMER:**

**FOR RESEARCH USE ONLY! Not to be used on humans.**