

## Product Information

### 99357 Sodium ionophore II – Cocktail A

(Sodium-selective membrane solution for microelectrodes)

Selectophore®

### Electrochemical Transduction

#### Microelectrodes

#### Application 1 and Sensor Type<sup>1-5</sup>

Assay of Na<sup>+</sup> activity in extracellular liquids with Na<sup>+</sup> microelectrodes based on Sodium Ionophore II.

Sodium Ionophore II - Cocktail A ([99357](#))

#### Cocktail Composition

- 10.0 wt% Sodium Ionophore II ([71733](#))
- 89.5 wt% 2-Nitrophenyl octyl ether (o-NPOE) ([73732](#))
- 0.5 wt% Sodium tetraphenylborate ([72018](#))

#### Electrode Characteristics and Function

Selectivity coefficients  $\log K_{Na,M}^{Pot}$  as obtained by the separate solution method (0.1 M solutions of the chlorides).

|                        |      |                                   |      |
|------------------------|------|-----------------------------------|------|
| $\log K_{Na,Li}^{Pot}$ | -1.7 | $\log K_{Na,Ca}^{Pot}$            | -1.3 |
| $\log K_{Na,K}^{Pot}$  | -0.4 | $\log K_{Na,Acetylcholine}^{Pot}$ | -1.6 |
| $\log K_{Na,Mg}^{Pot}$ | -3.4 |                                   |      |

Nernstian electrode response

Detection limit (NaCl, extracellular ion background of 4 mM K<sup>+</sup>, 0.6 mM Mg<sup>2+</sup>, 1.1 mM Ca<sup>2+</sup>):

Electrical resistance, tip diameter ~0.7 μm:

Response time:

$\log a_{Na} \sim -2.7$

$\sim 3 \cdot 10^{10} \Omega$

90% response time  $\leq 3$  s

<sup>1</sup> Neutral carrier sodium ion-selective microelectrode for extracellular studies. D. Ammann, P. Anker, Neurosci. Lett. 57, 267 (1985).

<sup>2</sup> Mechanism of hydrogen ion transport in the diluting segment of frog kidney H. Oberleithner, F. Lang, G. Messner, W. Wang. Pflügers Arch. 402, 272 (1984).

<sup>3</sup> Changes in sodium activity during light stimulation in photoreceptors, glia and extracellular space in drone retina. J. A. Coles, R. K. Orkand, J. Physiol. 362, 415 (1985)-

<sup>4</sup> Light-induced changes in extracellular volume in the retina of the drone, Apis mellifera. R. K. Orkand, I. Dietzel, J. A. Coles, Neurosci. Lett. 45, 273 (1984).

<sup>5</sup> Preparation and use of micro- and macroelectrodes for measurement of transmembrane potentials and ion activities. D. Ammann, P. Caroni, Methods in Enzymol. 172, 136 (1989).

