

Product Information

99311 Potassium ionophore I - Cocktail A

(Potassium-selective membrane solution for microelectrodes (high impedance))

Selectophore®, function tested

Electrochemical Transduction

Microelectrodes

Application 1 and Sensor Type¹⁻⁶

Assay of K⁺ activity in extra- and intracellular (single cell) liquids with K⁺ microelectrodes based on Potassium ionophore I. Potassium ionophore I – Cocktail A shows high impedance and differs from Potassium ionophore I – Cocktail B in its selectivity coefficients.

Potassium ionophore I – Cocktail A ([99311](#))

Cocktail Composition:

- 5.0 wt% Potassium ionophore I ([60403](#))
- 25.0 wt% 1,2-Dimethyl-3-nitrobenzene ([40870](#))
- 68.0 wt% Dibutyl sebacate ([84838](#))
- 2.0 wt% Potassium tetrakis(4-chlorophenyl)borate ([60591](#))

Recommended Cell Assembly

Reference || sample solution || cocktail | 0.01 M KCl | AgCl, Ag

Electrode Characteristics and Function

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

$\log K_{K,Li}^{Pot}$	-4.0	$\log K_{K,Ca}^{Pot}$	-4.5
$\log K_{K,Na}^{Pot}$	-3.2	$\log K_{K,Acetylcholine}^{Pot}$	-2.5
$\log K_{K,Mg}^{Pot}$	-5.0		

Slope of linear regression: 57.6±0.7 mV/dec (10⁻³ to 10⁻¹ KCl)
 Response time: 90% response time 30 s
 Electrical resistance, tip diameter ~1.5 µm: ~10¹¹Ω

¹ Microelectrode for potassium ions based on a neutral carrier and comparison of its characteristics with a cation exchanger sensor. M. Oehme, W. Simon, Anal. Chim. Acta 86, 21 (1976).

² Change in nuclear potassium electrochemical activity and puffing of potassium-sensitive salivary chromosome regions during Chironomus development. P. Wuhrmann, H. Ineichen, U. Riesen-Willi, M. Lezzi, Proc. Natl. Acad. Sci. 76, 806 (1979).

³ Modification of potassium movement through the retina of the drone (Apis mellifera male) by glial uptake. J. A. Coles, R. K. Orkand, J. Physiol. 340, 157 (1983).

⁴ Low-calcium field burst discharges of CA1 pyramidal neurones in rat hippocampal slices. H. L. Haas, J. G. R. Jefferys J. Physiol. 354, 185 (1984).

⁵ Cell puncturing with a step motor driven manipulator with simultaneous measurement of displacement. U. Sonnhof, R. Förderer, W. Schneider, H. Kettenmann, Pflügers Arch. 392, 295 (1982).

⁶ 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).

