

Product Information

95291 Hydrogen ionophore I – Cocktail A

(H⁺-selective membrane solution for microelectrodes)

Selectophore®

Electrochemical Transduction

Microelectrodes

Application 1 and Sensor Type¹⁻⁵

Assay of H⁺ activity in extra- and intracellular (single-cell) liquids with H⁺ microelectrodes based on Hydrogen ionophore I. This cocktail must be equilibrated in a 100% CO₂ atmosphere for ~16 hours (overnight).

Hydrogen ionophore I - -Cocktail A ([95291](#))

Cocktail Composition

10.00 wt%	Hydrogen ionophore I (95292)
0.70 wt%	Sodium tetraphenylborate (72018)
89.30 wt%	2-Nitrophenyl octyl ether (73732)

equilibration with carbon dioxide

Recommended Cell Assembly

Reference || sample solution || cocktail | buffer solution, pH 7 | AgCl, Ag

Electrode Characteristics and Function

Selectivity coefficients $\log K_{H,M}^{Pot}$ as obtained by the fixed interference solution method on pH-buffered solutions.

$\log K_{H,Li}^{Pot}$	<-10.8	$\log K_{H,K}^{Pot}$	-9.8
$\log K_{H,Na}^{Pot}$	<-10.4	$\log K_{H,Ca}^{Pot}$	<-11.1

Slope of linear regression:	58.0±0.4 mV/dec (pH 5.5-12.0)
Practical pH measuring range (pH buffered solutions, ion background of 69 mM Na ⁺ , 11.4 mM borate, 10 mM phosphate, 6.7 mM citrate):	5.5-12.0
Electrical resistance, tip diameter ~1 µm	~10 ¹¹ Ω
Response time:	90% response time: ≤5 s

¹ A hydrogen ion-selective liquid-membrane electrode based on tri-n-dodecylamine as neutral carrier. P. Schulthess, Y. Shijo, H. V. Pham, E. Pretsch, D. Ammann, W. Simon, Anal. Chim. Acta 131, 111 (1981).

² Neutral carrier based hydrogen ion selective microelectrode for extra- and intracellular studies. D. Ammann, F. Lanter, R. A. Steiner, P. Schulthess, Y. Shijo, W. Simon, Anal. Chem. 53, 2267 (1981).

³ Alkaline and acid transients in cerebellar microenvironment. R. P. Kraig, C. R. Ferreira-Filho, C. Nicholson, J. Neurophysiol. 49, 831 (1983).

⁴ A Novel Combinational pH-P(CO₂) Microelectrode. X. Rao, Y. Ma, Anal. Biochem. 212, 43 (1993).

⁵ 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).

