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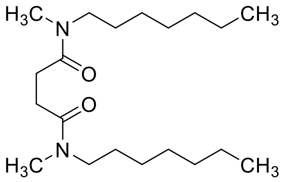
Product Information



63082 Magnesium ionophore I

(ETH 1117; N,N´-Diheptyl-N,N´-dimethyl-1,4-butanediamide)
Selectophore®, function tested

Electrochemical Transduction

Ion-Selective Electrodes

Application 1 and Sensor Type[1]
Assay of Mg^{2+} activity with solvent polymeric membrane electrodes based on Magnesium Ionophore I.

Recommended Membrane Composition

1.40 wt%	Magnesium Ionophore I (63082)
1.00 wt%	Potassium tetrakis(4-chlorophenyl)borate (60591)
64.50 wt%	2-Nitrophenyl octyl ether (NPOE) (73732)
33.10 wt%	Poly(vinyl chloride) high molecular weight (81392)

Recommended Cell Assembly

Reference || sample solution || ion-selective membrane | 0.1 M $MgCl_2$ + 0.025 M $Na_2B_4O_7$ | AgCl, Ag

Electrode Characteristics and Function

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

$\log K^{Pot}_{Mg,Li}$	-1.4	$\log K^{Pot}_{Mg,NH_4}$	-1.2
$\log K^{Pot}_{Mg,Na}$	-2.1	$\log K^{Pot}_{Mg,Ca}$	-1.3
$\log K^{Pot}_{Mg,K}$	-1.1		

Detection limit ($MgCl_2$ solution without interfering ions): $\log a_{Mg}$ ~-5.0

Microelectrodes

Application 1 and Sensor Type[2-8]
Assay of Mg^{2+} activity in intracellular (single cell) liquids with Mg^{2+}-microelectrodes based on Magnesium ionophore I. with solvent polymeric membrane electrodes based on Magnesium ionophore I.

Recommended Membrane Composition

20.0 wt%	Magnesium Ionophore I (63082)
1.0 wt%	Sodium tetraphenylborate (72018)
79.0 wt%	Propylene carbonate (82227)

Electrode Characteristics and Function

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

$\log K^{Pot}_{Mg,Na}$	-1.1	$\log K^{Pot}_{Mg,Ca}$	-1.1
$\log K^{Pot}_{Mg,K}$	-1.4		
$\log K^{Pot}_{Mg,K}$	-1.1		

Slope of linear regression:	28.0±0.7 mV/dec (10^{-5} to 10^{-1} M $MgCl_2$)
Detection limit ($MgCl_2$, ion background of 10 mM Na^+, 100 mM K^+, 0.001 mM Ca^{2+}):	log a_{Mg} ~-3.5
Electrical resistance, tip diameter ~1 mm:	~$3 \cdot 10^{10}$ Ω
Response time:	90% response time: <5 s

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[6] Free intracellular magnesium concentration in ferret ventricular muscle measured with ion selective micro-electrodes. L. A. Blatter, J. A. S. McGuigan, Quart. J. Exp. Physiol. 71, 467 (1986).
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