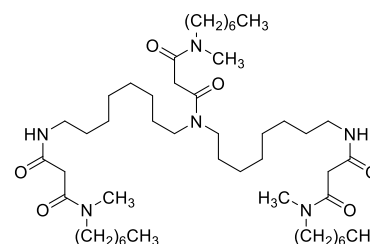


Product Information



63088 Magnesium ionophore IV

(ETH 7025; N-Heptyl-N',N'-bis{8-[[3-(heptylmethylamino)-1,3-dioxopropyl]amino]octyl}-N-methyl-propanediamide; N,N',N''-Tris[3-(heptylmethylamino)-3-oxopropionyl]-8,8'-imino-dioctylamine)

Selectophore®, function tested

Electrochemical Transduction

Ion-Selective Electrodes

Application 1 and Sensor Type¹

Assay of Mg²⁺ activity in blood serum with solvent polymeric membrane electrodes based on Magnesium Ionophore IV.

Recommended Membrane Composition

- 1.00 wt% Magnesium Ionophore IV ([63088](#))
- 0.90 wt% Potassium tetrakis(4-chlorophenyl)borate ([60591](#))
- 3.00 wt% Tetradodecylammonium tetrakis(4-chlorophenyl)borate ([87255](#))
- 65.07 wt% 2-Nitrophenyl octyl ether ([73732](#))
- 32.79 wt% Poly(vinyl chloride) high molecular weight ([81392](#))

Recommended Cell Assembly

Reference || sample solution || liquid membrane | 0.1 M MgCl₂ or 0.0071 M MgCl₂ + 0.00122 M CaCl₂ + 0.004 M KCl + 0.14 M NaCl | AgCl, Ag

Electrode Characteristics and Function

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

$\log K_{Mg,H}^{Pot}$	1.0	$\log K_{Mg,K}^{Pot}$	-2.9
$\log K_{Mg,Na}^{Pot}$	-4.7	$\log K_{Mg,Ca}^{Pot}$	-1.2

Slope of linear regression:	29.5±0.3 mV (10 ⁻⁴ to 10 ⁻¹ M MgCl ₂)
Detection limit (MgCl ₂ , no ion background):	$\log a_{Mg}$, ~-5.0
Electrical resistance:	10 ⁵ to 10 ⁶ Ω
Response time:	90% response time ≤30 s
Lifetime: $\log p_{TLC}^{a)}$ ionophore:	6.9±0.6

^{a)} lipophilicity, determined by thin-layer chromatography²



Application 2 and Sensor Type³

Assay of Mg^{2+} activity in blood serum with solvent polymeric membrane electrode based on Magnesium Ionophore IV with chemometrical correction for Ca^{2+} .

Recommended Membrane Composition

1.00 wt%	Magnesium Ionophore IV (63088)
1.24 wt%	Potassium tetrakis(4-chlorophenyl)borate (60591)
33.00 wt%	Poly(vinyl chloride) high molecular weight (81392)
67.76 wt%	[12-(4-Ethylphenyl)dodecyl-2-nitrophenyl ether (46092)

Recommended Cell Assembly

Reference || sample solution || ion-selective electrode | 0.1 M $MgCl_2$ | AgCl, Ag

Electrode Characteristics and Function

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

	Required ^{b)}	Found
$\log K_{Mg,Ca}^{Pot}$	-2.3	-1.3
$\log K_{Mg,Na}^{Pot}$	-3.7	-4.5
$\log K_{Mg,K}^{Pot}$	-1.0	-3.3

^{b)} for measurement in human blood serum

Lifetime:	$\log P_{TLC}$ ionophore	6.9 ± 0.6^2
	$\log P_{TLC}$ plasticizer	12.8 ± 2.0^2

¹ Na^+ -Selective Electrode for Application in Blood Serum. T. Maruizumi, D. Wegmann, G. Suter, D. Ammann, W. Simon, Mikrochim. Acta 88, 331 (1986).

² Lifetime of neutral-carrier-based liquid membranes in aqueous samples and blood and the lipophilicity of membrane components. O. Dinten, U.E. Spichiger, N. Chaniotakis, P. Gehrig, B. Rusterholz, W.E. Morf, W. Simon, Anal. Chem. 63, 596 (1991).

³ Plasticizers for liquid polymeric membranes of ion-selective chemical sensors. R. Eugster, T. Rosatzin, B. Rusterholz, B. Aebersold, U. Pedrazza, D. Rüegg, A. Schmid, U. E. Spichiger, W. Simon, Anal. Chim. Acta 289, 1 (1994).