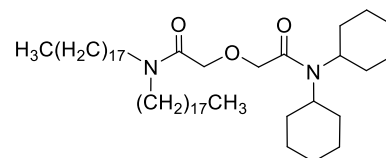


Product Information



21198 Calcium ionophore IV

(ETH 5234; *N,N*-Dicyclohexyl-*N',N'*-dioctadecyl-diglycolic diamide; *N,N*-Dicyclohexyl-*N',N'*- dioctadecyl-3-oxapentanediamide)

Selectophore®, function tested

Electrochemical Transduction

Ion-Selective Electrodes

Application 1 and Sensor Type¹

Assay of Ca²⁺ activity with solvent polymeric membrane electrodes based on the highly lipophilic Calcium ionophore IV.

Recommended Membrane Composition

- 1.00 wt% Calcium ionophore IV ([21198](#))
- 0.28 wt% Potassium tetrakis(4-chlorophenyl)borate ([60591](#))
- 65.82 wt% 2-Nitrophenyl octyl ether ([73732](#))
- 32.90 wt% Poly(vinyl chloride) high molecular weight ([81392](#))

Recommended Cell Assembly

Reference || sample solution || ion-selective electrode | 0.01 M CaCl₂ | AgCl, Ag

Electrode Characteristics and Function

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

$\log K_{Ca,H}^{Pot}$	-3.1	$\log K_{Ca,K}^{Pot}$	-7.5
$\log K_{Ca,Li}^{Pot}$	-5.8	$\log K_{Ca,Mg}^{Pot}$	-4.4
$\log K_{Ca,Na}^{Pot}$	-5.9		

Slope of linear regression:

Detection limit (CaCl₂ ion background of 125 mM KCl):

Lifetime:

Response time:

29.7±1.7 mV/dec (10⁻⁸ to 10⁻¹ M CaCl₂)

$\log a_{Ca} \sim -9.7$

$\log P_{TLC}$ ionophore: 22.6±3.7^{a)}

90% response time 1.2 s (10⁻⁴ to 10⁻³ M CaCl₂)

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



Ion-Selective Field Effect Transistors

Application 1 and Sensor Type³

Determination of Ca^{2+} with an ion-selective field effect transistor based on a photo-curable polysiloxane membrane containing Calcium ionophore IV.

Recommended Membrane Composition:

0.99 wt%	Calcium ionophore IV (21198)
0.55 wt%	Potassium tetrakis[3.5-bis(trifluoromethyl)phenyl]borate (60588)
0.88 wt%	2,2-Dimethoxy-2-phenylacetophenone (38781)
0.88 wt%	Dibutyltin dilaurate (34930)
8.79 wt%	3-(Trimethoxysilyl)propyl methacrylate (64210)
87.9 wt%	10-12% (3-Cyanopropyl)methyl/88-90% (Dimethylsiloxane) copolymer

Electrode Characteristics and Function

Selectivity coefficients $\log K_{Ca,M}^{Pot}$.

$\log K_{Ca,Na}^{Pot}$	<-3.5
$\log K_{Ca,K}^{Pot}$	<-3.5
$\log K_{Ca,Mg}^{Pot}$	<-4.0

Slope of linear regression: Nernstian behavior (10^{-5} to 10^{-1} M CaCl_2)

Ion-Selective Conductometric Microsensors

Application 1 and Sensor Type³

Assay of Ca^{2+} activity with ion-selective conductometric microsensors (ISCOM). Detection is accomplished by measurement of the bulk conductance of the solvent polymeric membrane based on Calcium ionophore IV.

Recommended Membrane Composition

5.0 wt%	Calcium ionophore IV (21198)
30.0 wt%	Poly(vinyl chloride) high molecular weight (81392)
65.0 wt%	2-Nitrophenyl octyl ether (73732)

Electrode Characteristics and Function

Detection limit: $\sim 10^{-7}$ M Ca^{2+} (measurements in 1 M NaNO_3)

Response time: ~ 2 s

¹ Very lipophilic calcium ion-selective ionophore for chemical sensors of high life-time. P. Gehrig, B. Rusterholz, W. Simon, Chimia 43, 377 (1989).

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 Ion-selective conductometric microsensors based on the phenomenon of specific salt extraction. A.A. Shul'ga, B. Ahlers, K. Cammann, J. Electroanal. Chem. 395, 305 (1995).

