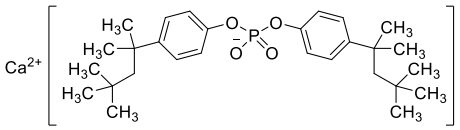
Product Information



15180 hemi-Calcium bis[4-(1,1,3,3-tetramethylbutyl)phenyl] phosphate

(Bis[4-(1,1,3,3-tetramethylbutyl)phenyl]phosphate Calcium salt)
Selectophore®, function tested

Electrochemical Transduction

Ion-Selective Electrodes

Application 1 and Sensor Type[1]

Assay of Ca^{2+} activity with solvent polymeric membrane electrodes based on the liquid ion-exchanger Bis[4-(1,1,3,3-tetramethylbutyl)phenyl]phosphate Calcium salt.

Recommended Membrane Composition

7.00 wt%	Bis[4-(1,1,3,3-tetramethylbutyl)phenyl]phosphate Calcium salt (15180)
29.86 wt%	Poly(vinyl chloride) high molecular weight (81392)
63.14 wt%	Di-n-octylphenylphosphonate (12584)

Recommended Cell Assembly

Reference || sample solution || ion-selective electrode | 0.1 M $CaCl_2$ | 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).

$\log K_{Ca,Na}^{Pot}$	-4.4
$\log K_{Ca,K}^{Pot}$	-4.5
$\log K_{Ca,Mg}^{Pot}$	-4.9

Slope of linear regression:	30.5 at 25°C (10^{-5} to 10^{-0} Ca^{2+})
Detection limit:	$3.2 \cdot 10^{-6}$ M Ca^{2+}
pH range for 10^{-3} M $CaCl_2$:	4.8 to 8.8
Response time:	<10 s
Operational lifetime:	3 months
Membrane resistance:	3 MΩ

Application 2 and Sensor Type[2]

Assay of Ca^{2+} activity with solvent polymeric membrane electrodes based on the liquid ion-exchanger Bis[4-(1,1,3,3-tetramethylbutyl)phenyl]phosphate Calcium salt.

Recommended Membrane Composition

0.10 wt%	Bis[4-(1,1,3,3-tetramethylbutyl)phenyl]phosphate Calcium salt (15180)
33.43 wt%	Poly(vinyl chloride) high molecular weight (81392)
66.43 wt%	Bis(2-ethylhexyl)sebacate (84818)

Recommended Cell Assembly

Reference || sample solution || ion-selective electrode | 0.1 M $CaCl_2$ | 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).

$\log K_{Ca,NH_4}^{Pot}$	-3.3	$\log K_{Ca,H}^{Pot}$	-2.4
$\log K_{Ca,Li}^{Pot}$	-4.1	$\log K_{Ca,Mg}^{Pot}$	-6.2
$\log K_{Ca,Na}^{Pot}$	-4.0	$\log K_{Ca,Ba}^{Pot}$	-3.0
$\log K_{Ca,K}^{Pot}$	-3.0		

Slope of linear regression:	31.9±2.3 mV (10^{-4} to 10^{-1} $CaCl_2$)
Membrane resistance:	9.9±1.0 MΩ

[1] The role of polymeric materials in the fabrication of ion-selective electrodes and biosensors. G.J. Moody, Polym. Mat. Sci. Eng. 64, 362, (1991) and ref. cited therein.
[2] Carrier mechanism of acidic ionophores in solvent polymeric membrane ion-selective electrodes. U. Schaller, E. Bakker, E. Pretsch, Anal. Chem. 67, 3123 (1995).