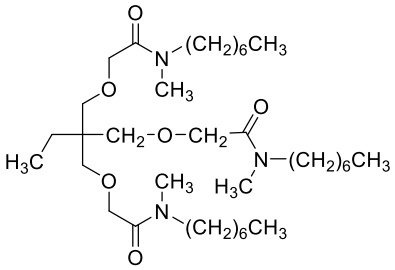
Product Information



71732 Sodium ionophore I

(ETH 227; *N,N′,N′′*-Triheptyl-N,N',N''-trimethyl-4,4',4''-propylidynetris(3- oxabutyramide))
Selectophore®, function tested

Electrochemical Transduction

Ion-Selective Electrodes

Application 1 and Sensor Type[1-4]

Assay of Na^+ activity in whole blood, plasma, serum, undiluted urine and aqueous solutions with solvent polymeric membrane electrodes based on Sodium Ionophore I.

Recommended Membrane Composition

1.00 wt%	Sodium Ionophore I (71732)
66.00 wt%	Bis(1-butylpentyl) decane-1,10-diyl diglutarate (ETH 469) (30585)[a)]
33.00 wt%	Poly(vinyl chloride) high molecular weight (81392)

[a)] The use of bis(1-butylpentyl) adipate (BBPA) or bis(2-ethylhexyl)sebacate (DOS) leads to membrane electrodes of similar performance.

Recommended Cell Assembly

Reference || sample solution || liquid membrane | 0.1 M NaCl | AgCl, Ag

Electrode Characteristics and Function

Selectivity coefficients $\log K_{Na,M}^{Pot}$ determined by the mixed solution method.

		Required[b)] for blood	Required[b)] for urine	Found
$\log K_{Na,H}^{Pot}$		<-4.4	<-1.4	0.1
$\log K_{Na,K}^{Pot}$		<-0.6	<-2.1	-1.5
$\log K_{Na,Mg}^{Pot}$		<-1.2	<-0.6	-3.2
$\log K_{Na,Ca}^{Pot}$		<-1.3	<-0.6	-1.8
Stability:	Drift [mV h^{-1}]			0.03
	Standard deviation [mV]	<-0.46		0.12
	Reproducibility [mV]			0.23
Lifetime:	log P_{TLC}[c)] ionophore	>8.4	>2.3	7.8
	log P_{TLC}[c)] plasticizer	>12.8	>4.1	10.8

[b)] 1% interference, worst case[5,6]
[c)] lipophilicity, determined by thin-layer chromatography[7]

Ion-Selective Field Effect Transistors

Application 1 and Sensor Type[8-11]

Determination of sodium activity with Na^+-selective field-effect transistor (ISFET). The gate membrane is based on „Urushi" matrix with good durability.

Cocktail Composition

5.00 wt%	Sodium Ionophore I (71732)
44.77 wt%	Bis(2-ethylhexyl)phthalate (80030)
0.23 wt%	Potassium tetrakis(4-chlorophenyl)borate (60591)
50.0 wt%	Urushi (polymer from lacquer tree)

Electrode Characteristics and Function

Selectivity coefficients $\log K^{Pot}_{Mg,M}$.

$\log K^{Pot}_{Na,K}$	-1.5	$\log K^{Pot}_{Na,Ca}$	0.0
$\log K^{Pot}_{Na,NH_4}$	-1.6	$\log K^{Pot}_{Na,Mg}$	-2.4

Slope of linear regression: 53 mV/dec ($3 \cdot 10^{-4}$ to 10^{-1} M Na^+)

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