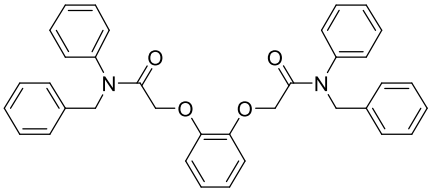
# Product Information



## 71733 Sodium ionophore II

(ETH 157; *N,N'*-Dibenzyl-*N,N'*-diphenyl-1,2-phenylenedioxydiacetamide)
Selectophore®, function tested

## Electrochemical Transduction

### Ion-Selective Electrodes

**Application 1 and Sensor Type[1-4]**
Determination of $Na^+$ in drinking water and environmental samples with solvent polymeric membrane electrodes based on Sodium Ionophore II.

**Recommended Membrane Composition**

| | |
|---|---|
| 1.0 wt% | Sodium Ionophore II (71733) |
| 0.1 wt% | Potassium tetrakis(*p*-chlorophenyl)borate (KT*p*ClPB) (60591) |
| 65.9 wt% | Bis(2-ethylhexal) sebacate (DOS) (84818) |
| 33.0 wt% | Poly(vinyl chloride) high molecular weight (81392) |

**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 separate solution method.

| | | | |
|---|---|---|---|
| $\log K_{Na,H}^{Pot}$ | -1.4 | $\log K_{Na,Ca}^{Pot}$ | -2.6 |
| $\log K_{Na,K}^{Pot}$ | -0.4 | $\log K_{Na,Mg}^{Pot}$ | -4.0 |

| | |
|---|---|
| Slope of linear regression: | 57.9 mV/dec |
| Resistance: | 2.2 MΩ |
| Response time: | 90% response time <2 min |
| Lifetime: | log $P_{TLC}$ ionophore[a)] 4.5 |

[a)] lipophilicity, determined by thin-layer chromatography[4]

### Other Electrochemical Sensor Types

**Application 1 and Sensor Type[5]**
Determination of sodium activity with disposable sodium sensor in double matrix membrane technology based on Sodium Ionophore II.

**Cocktail Composition**

| | |
|---|---|
| 1.00 wt% | Sodium Ionophore II (71733) |
| 66.00 wt% | Bis(1-butylpentyl) adipate (02150) |
| 33.00 wt% | Poly(vinyl chloride) high molecular weight (81392) |

**Electrode Characteristics and Function**

Selectivity coefficients $\log K_{Na,M}^{Pot}$ as obtained by the fixed interference method (0.01 M solutions for $Ca^{2+}$, $Li^{+}$, $Mg^{2+}$ and 0.005 M solution for $NH_4^{+}$, $K^{+}$).

| | | | |
|---|---|---|---|
| $\log K_{Na,K}^{Pot}$ | -1.0 | $\log K_{Na,Ca}^{Pot}$ | -2.9 |
| $\log K_{Na,NH_4}^{Pot}$ | -0.8 | $\log K_{Na,Mg}^{Pot}$ | -2.6 |
| $\log K_{Na,Li}^{Pot}$ | -1.7 | | |

| | |
|---|---|
| Slope of linear regression: | 55.4 mV ($3 \cdot 10^{-4}$ to $10^{-1}$ M $Na^{+}$) |
| Detection limit: | $10^{-4}$ M NaCl |


[1] Ion and Enzyme Electrodes in Biology and Medicine, ed. M. Kessler, L. C. Clark, Jr., D. W. Lübbers, I. A. Silver, W. Simon, Urban & Schwarzenberg, München, Berlin, Wien 22 (1976).
[2] Membrane Technology and Dynamic Response of Ion-Selective Liquid-Membrane Electrodes. M. Huser, P. M. Gehrig, W. E. Morf. W. Simon, E. Lindner, J. Jeney, K. Tóth, E. Pungor, Anal. Chem. 63, 1380 (1991).
[3] Photocured polymers in ion-selective electrode membranes. Part 5: Photopolymerised sodium sensitive ion-selective electrodes for flow injection potentiometry. J. R. Farrell, P. J. Iles, T. Dimitrakopoulos, Anal. Chim. Acta. 334, 133 (1996).
[4] 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).
[5] Disposable sodium electrodes. M. Borchardt, C. Diekmann, C. Dumschat, K. Cammann, M. Knoll, Talanta 41, 1025 (1994)