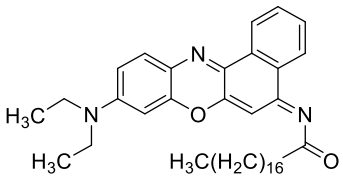
Product Information



27086 Chromoionophore I

(ETH 5294; 9-(Diethylamino)-5-(octadecanoylimino)-5H-benzo[*a*]phenoxazine; N-Octadecanoyl-Nile blue)
Selectophore®

Electrochemical Transduction

Ion-Selective Electrodes

Application 1 and Sensor Type[1]
Assay of H^+ activity with solvent polymeric membrane electrodes based on Chromoionophore I.

Recommended Membrane Composition

1.00 wt%	Chromoionophore I (27086)
0.60 wt%	Potassium tetrakis(4-chlorophenyl)borate (60591)
66.00 wt%	2-Nitrophenyl octyl ether (73732)
32.40 wt%	Poly(vinyl chloride) high molecular weight (81392)

Recommended Cell Assembly

Reference || sample solution ||ion-selective electrode | buffer solution at various pH | AgCl, Ag

Electrode Characteristics and Function

Selectivity coefficients $\log K_{H,M}^{Pot}$ as obtained by a method similar to the separate solution method.

$\log K_{H,Li}^{Pot}$	-10.8	$\log K_{H,K}^{Pot}$	-10.5
$\log K_{H,Na}^{Pot}$	-10.9	$\log K_{H,Ca}^{Pot}$	-11.2

Slope of linear regression:	58.2±0.3 mV/dec (pH 4-12)
Practical pH measuring range (pH-buffered solutions, ion background of 60 mM Li^+, 0.6 mM citric acid, 11.4 mM boric acid, 60 mM LiOH:	4-12; in Britton-Robinson buffer: pH 2.5
Stability:	Standard deviation <0.1 mV/h at pH 6.06 in stirred solutions
Response time: response time for on pH unit change in the range of pH 6-7:	<10 s

Optical Transduction

Application 1 and Sensor Type[2]

Assay of penicillin activity with polymer membrane optode based on Tridodecylmethylammonium chloride and Chromoionophore I.

Recommended Membrane Composition

6.52	wt%	Chromoionophore I (27086)
65.22	wt%	Bis(3-dodecanoyloxy-2-hydroxypropyl)adipate (WM-3) (95385)
26.09	wt%	Poly(vinyl chloride) high molecular weight (81392)
2.17	wt%	Tridodecylmethylammonium chloride (91661)

Recommended Cell Assembly

50 mM sodium citrate / 50 mM sodium tartrate, pH 5.5

Electrode Characteristics

Selectivity coefficients $\log K^{Opt}_{Pen,X}$ as obtained by a method similar to the separate solution method.

$\log K^{Opt}_{Pen,Salicylate}$	0.30	$\log K^{Opt}_{Pen,Cl}$	-1.83
$\log K^{Opt}_{Pen,NO_2}$	0.20	$\log K^{Opt}_{Pen,AcO}$	-2.53
$\log K^{Opt}_{Pen,Ascorbate}$	0.15	$\log K^{Opt}_{Pen,I}$	-1.08
$\log K^{Opt}_{Pen,Benzoate}$	-0.45	$\log K^{Opt}_{Pen,Glycinate}$	-2.80
$\log K^{Opt}_{Pen,Oxalate/Phenylalaninate}$	-2.70		
$\log K^{Opt}_{Pen,Glutamate/Amoxilinlactose/Glucose/SO_4/CO_3/H_3PO_4}$	<-3.00		

Dynamic measuring range at 20°C:	0.01-10 mM (penicillin V) and 0.03-10 mM (penicillin G)
Membrane thickness:	0-1.5 µm on glass plates (12x50 mm)
Fluorescence maxima:	λ_{ex} 565 nm and λ_{em} 670 nm
Response time:	~5 min

Application 2 and Sensor Type[3,4,5]

Assay of K^+ activity in aqueous pH buffered solutions and in diluted blood plasma with solvent polymeric optode membranes based on Chromoionophore I (ETH 5294) and Potassium ionophore I.

Recommended Membrane Composition

0.48	wt%	Chromoionophore I (27086)
1.00	wt%	Potassium ionophore I (60403)
0.44	wt%	Potassium tetrakis(4-chlorophenyl)borate (60591)
66.05	wt%	Bis(1-ethylhexyl)sebacate (84818)
32.03	wt%	Poly(vinyl chloride) high molecular weight (81392)

Recommended pH Buffer

0.16 M sodium acetate, adjusted with acetic acid to pH 5.1 for recording the calibration curve to pH 5.5 for diluting blood plasma samples.[6]

Optode Characteristics and Function

Selectivity coefficients $\log K^{Opt}_{K,M}$ as obtained by the fixed interference method in pH buffered solutions.

$\log K^{Opt}_{K,Na}$	-3.5	$\log K^{Opt}_{K,Ca}$	-3.7
$\log K^{Opt}_{K,Mg}$	-4.0	$\log K^{Opt}_{K,Li}$	-3.7

Application 3 and Sensor Type[7]

Assay of K^+ activity in aqueous pH buffered solutions with solvent polymeric fluorescent optode membranes based on Chromoionophore I (ETH 5294) and Potassium ionophore I. LEDs or diode lasers may be used as light sources.

Recommended Membrane Composition

2.98 wt%	Chromoionophore I (27086)
13.43 wt%	Potassium ionophore I (60403)
2.98 wt%	Potassium tetrakis(4-chlorophenyl)borate (60591)
44.78 wt%	Bis(2-ethylhexyl)sebacate (84818)
17.91 wt%	WM-3 plasticizer
17.92 wt%	Poly(vinyl chloride) high molecular weight (81392)

Recommended pH Buffer

0.1 M TRIS at pH 7.38

Optode Characteristics

Membrane range:	5 10^{-6} to 10^{-1} K^+
Membrane thickness:	~2 µm
Detection limit:	~5 10^{-6} M K^+
Response time:	~1 to 3 min

Application 4 and Sensor Type[8]

Assay of K^+ activity in aqueous pH buffered solution and in human blood plasma with solvent polymeric optode membranes based on Chromoionophore I (ETH 5294) and Potassium ionophore III.

Recommended Membrane Composition

0.52 wt%	Chromoionophore I (27086)
1.04 wt%	Potassium ionophore III (60397)
0.48 wt%	Potassium tetrakis(4-chlorophenyl)borate (60591)
65.97 wt%	Bis(2-ethylhexyl)sebacate (84818)
31.99 wt%	Poly(vinyl chloride) high molecular weight (81392)

Recommended pH Buffer

Citrate buffer of pH 6.5 (0.002 M citric acid adjusted with 0.1 M NaOH)

Optode Characteristics and Function

Selectivity coefficients $\log K_{K,M}^{Opt}$ as obtained by the separate solution method.

$\log K_{K,Na}^{Opt}$	-3.8	$\log K_{K,Cs}^{Opt}$	-2.0
$\log K_{K,Rb}^{Opt}$	-3.2		

Application 5 and Sensor Type[9]

Assay of Na^+ activity in aqueous solutions with solvent polymeric optode membranes based on Chromo-ionophore I (ETH 5294) and Sodium Ionophore X.

Recommended Membrane Composition

0.47 wt%	Chromoionophore I (27086)
4.20 wt%	Sodium Ionophore X (71747)
1.45 wt%	Sodium tetraphenylborate (72018)
62.60 wt%	Bis(2-ethylhexyl) phthalate (80030)
31.30 wt%	Poly(vinyl chloride) high molecular weight (81392)

Recommended pH Buffer

0.1 M Tris-HCl buffer

Absorbance Maxima of Chromoionophore I in Polymeric Optode Membranes

$\lambda^{max}_{deprot.}$: 545 nm $\lambda^{max}_{prot.}$: 660 nm, 614 nm

Optode Characteristics and Function

Selectivity coefficients $\log K^{Opt}_{Na,M}$ as obtained by the separate solution method (Tris-HCl buffer pH 8.0).

$\log K^{Opt}_{Na,Li}$	-3.1	$\log K^{Opt}_{Na,Ca}$	-2.3
$\log K^{Opt}_{Na,K}$	-2.1	$\log K^{Opt}_{Na,Mg}$	-2.9

Slope of linear regression: $3 \cdot 10^{-5}$ to $3 \cdot 10^{-2}$ M NaCl (pH 9.0 Tris buffer)

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