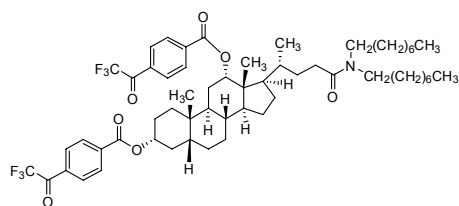


Carbonate



Carbonate ionophore VII

(*N,N*-dioctyl-3 α ,12 α -bis(4-trifluoroacetylbenzoxy)-5 β -cholan-24-amide, deoxy-3,12-bis(TFAB)CA)

C₅H₇₉F₆NO₇ Mr 1015.57

[93206](#) **Selectophore[®], function tested** 50 mg

not available in the US

Electrochemical Transduction

- Ion-Selective Electrodes

Electrochemical Transduction

Ion-Selective Electrodes

Application 1 and Sensor Type^{1,2}

Determination of oceanic carbon dioxide using a carbonate ion-selective electrode based on Carbonate ionophore VII. There is no sample pretreatment and any extra reagents other than the standard calibration solutions required for the measurement.

Recommended Membrane Composition

5.1	wt%	Carbonate ionophore VII (93206)
1.2	wt%	Methyltridodecylammonium chloride (TDMACl) (91661)
56.8	wt%	Bis(2-ethylhexyl) adipate (02138)
36.9	wt%	Poly(vinyl chloride) high molecular weight (81392)

dissolved in ethyl acetate and THF (3:5 V/V)

Recommended Cell Assembly

Reference || sample solution || liquid membrane | 0.1 M NaH₂PO₄, 0.1 M Na₂HPO₄, 0.01 M NaCl | AgCl, Ag

Electrode Characteristics

Selectivity coefficients $\log K_{\text{CO}_3^-, X}^{\text{Pot}}$ as obtained by the matched potential method at pH 8.0 (0.1 M Tris-H₂SO₄).

$\log K_{\text{CO}_3^-, \text{Cl}}^{\text{Pot}}$	-6.8	$\log K_{\text{CO}_3^-, \text{NO}_2}^{\text{Pot}}$	-4.8
$\log K_{\text{CO}_3^-, \text{Br}}^{\text{Pot}}$	-6.7	$\log K_{\text{CO}_3^-, \text{SCN}}^{\text{Pot}}$	-2.8
$\log K_{\text{CO}_3^-, \text{ClO}_4}^{\text{Pot}}$	-2.0	$\log K_{\text{CO}_3^-, \text{Salicylate}}^{\text{Pot}}$	-1.3
$\log K_{\text{CO}_3^-, \text{NO}_3}^{\text{Pot}}$	-4.5		

Slope: -26.0 mV/dec
 Detection level: $5.8 \cdot 10^{-7}$ mol/L CO₃²⁻

¹ Y.S. Choi, L. Lvova, J.H. Shin, S.H. Oh, C.S. Lee, B.H. Kim, G.S. Cha, H. Nam, Determination of Oceanic Carbon Dioxide Using a Carbonate-Selective Electrode. **Anal. Chem.** **74**, 2435 (2002).

² D. de Beer, A. Bissett, R. de Wit, H. Jonkers, S. Köhler-Rink, H. Nam, B.H. Kim, G. Eickert, M. Grinstain, A microsensor for carbonate ions suitable for microprofiling in freshwater and saline environments. **Limnol. Oceanogr.: Methods** **6**, 532 (2008).