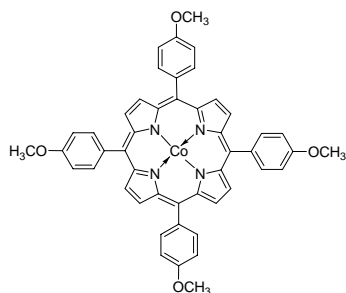

Molybdate



Molybdate ionophore I

(5,10,15,20-Tetrakis(4-methoxyphenyl)porphyrine cobalt(II) Complex; TMOPP-Co)
 $C_{48}H_{36}CoN_4O_4$ M_r 791.76 [28903-71-1]

[56186](#) **Selectophore®** 50 mg, 250 mg

Electrochemical Transduction

Ion-Selective Electrodes

Application and Sensor Type¹

Assay of MoO_4^{2-} activity in aqueous solution with solvent polymeric membrane electrode based on Molybdate ionophore I. The sensor can be used in non-aqueous medium with no significant change in the value of slope or working concentration range for the estimation of MoO_4^{2-} in solutions having up to 25% (v/v) non-aqueous fraction.

Recommended Membrane Composition

6.98	wt%	Molybdate ionophore I (96491)
34.88	wt%	Dibutyl phthalate (DBP) (80100)
58.14	wt%	Poly(vinyl chloride) high molecular weight (81392)

Recommended Cell Assembly

Reference || sample solution || liquid membrane | 0.1 M Na_2MoO_4 | AgCl, Ag

The membranes were equilibrated 5 days in a 1.0 M Na_2MoO_4 .

Electrode Characteristics and Function

Selectivity coefficients $\log K_{\text{MO}_4^-, X}^{\text{Pot}}$ as obtained by the fixed interference method (10^{-2} M of interfering ions).

$\log K_{\text{MO}_4^-, \text{Cl}}^{\text{Pot}}$	-0.74	$\log K_{\text{MO}_4^-, \text{IO}_4}^{\text{Pot}}$	-1.55
$\log K_{\text{MO}_4^-, \text{I}}^{\text{Pot}}$	-1.41	$\log K_{\text{MO}_4^-, \text{SCN}}^{\text{Pot}}$	-0.68
$\log K_{\text{MO}_4^-, \text{Br}}^{\text{Pot}}$	-1.25	$\log K_{\text{MO}_4^-, \text{SO}_4}^{\text{Pot}}$	-1.82
$\log K_{\text{MO}_4^-, \text{NO}_3}^{\text{Pot}}$	-2.00	$\log K_{\text{MO}_4^-, \text{C}_2\text{O}_4}^{\text{Pot}}$	-1.92
$\log K_{\text{MO}_4^-, \text{NO}_2}^{\text{Pot}}$	-1.77	$\log K_{\text{MO}_4^-, \text{PO}_4}^{\text{Pot}}$	-1.89
$\log K_{\text{MO}_4^-, \text{ClO}_4}^{\text{Pot}}$	-1.72		

Slope of linear regression: $32.0 \pm 1.0\text{mV}$ ($5 \cdot 10^{-5}$ to 10^{-1} M $\text{Zn}(\text{NO}_3)_2$)

Practical pH measuring range: 5.4-10.5

Response time: 18 s

Lifetime: >4 months

¹ V.K. Gupta, S. Chandra, D.K. Chauhan, R. Mangla, Membranes of 5,10,15,20-Tetrakis(4-Methoxyphenyl) Porphyrinatocobalt (TMOPP-Co) (I) as MoO_4^{2-} - Selective Sensors, **Sensors** **2**, 164 (2002).