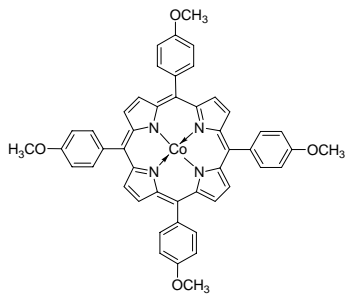


## Molybdate



### Molybdate ionophore I

(Arsenite 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]

[30236](#)    **Selectophore®**    50 mg

# Electrochemical Transduction

## Ion-Selective Electrodes

### Application and Sensor Type<sup>1</sup>

Assay of  $\text{MoO}_4^{2-}$  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  $\text{MoO}_4^{2-}$  in solutions having up to 25% (v/v) non-aqueous fraction.

### Recommended Membrane Composition

6.98	wt%	Molybdate ionophore I ( <a href="#">96491</a> )
34.88	wt%	Dibutyl phthalate (DBP) ( <a href="#">80100</a> )
58.14	wt%	Poly(vinyl chloride) high molecular weight ( <a href="#">81392</a> )

### Recommended Cell Assembly

Reference || sample solution || liquid membrane | 0.1 M  $\text{Na}_2\text{MoO}_4$  | AgCl, Ag

The membranes were equilibrated 5 days in a 1.0 M  $\text{Na}_2\text{MoO}_4$ .

### Electrode Characteristics and Function

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

$\log K_{\text{MO}_4^{2-}, \text{Cl}}^{\text{Pot}}$	-0.74	$\log K_{\text{MO}_4^{2-}, \text{IO}_4}^{\text{Pot}}$	-1.55
$\log K_{\text{MO}_4^{2-}, \text{I}}^{\text{Pot}}$	-1.41	$\log K_{\text{MO}_4^{2-}, \text{SCN}}^{\text{Pot}}$	-0.68
$\log K_{\text{MO}_4^{2-}, \text{Br}}^{\text{Pot}}$	-1.25	$\log K_{\text{MO}_4^{2-}, \text{SO}_4}^{\text{Pot}}$	-1.82
$\log K_{\text{MO}_4^{2-}, \text{NO}_3}^{\text{Pot}}$	-2.00	$\log K_{\text{MO}_4^{2-}, \text{C}_2\text{O}_4}^{\text{Pot}}$	-1.92
$\log K_{\text{MO}_4^{2-}, \text{NO}_2}^{\text{Pot}}$	-1.77	$\log K_{\text{MO}_4^{2-}, \text{PO}_4}^{\text{Pot}}$	-1.89
$\log K_{\text{MO}_4^{2-}, \text{ClO}_4}^{\text{Pot}}$	-1.72		

Slope of linear regression:  $32.0 \pm 1.0 \text{ mV/dec}$  ( $5 \cdot 10^{-5}$  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

<sup>1</sup> V.K. Gupta, S. Chandra, D.K. Chauhan, R. Mangla, Membranes of 5,10,15,20-Tetrakis(4-Methoxyphenyl) Porphyrinatocobalt (TMOPP-Co) (I) as  $\text{MoO}_4^{2-}$  - Selective Sensors, **Sensors** **2**, 164 (2002).