Arsenite ionophore I
(Molybdate ionophore I; 5,10,15,20-Tetrakis(4-methoxyphenyl)porphyrine cobalt(II) Complex; TMOPP-Co)
C₄₈H₃₆CoN₄O₄ M. 791.76 [28903-71-1]

30236  Selectophore®, function tested  50 mg

Electrochemical Transduction
- Ion-Selective Electrodes
Electrochemical Transduction
Ion-Selective Electrodes

Application and Sensor Type
Method for the determination of arsenite by direct determination at pH 6.0-10.5.

Recommended Membrane Composition
1.6 wt% Arsenite ionophore I (30236)
49.2 wt% Dibutyl(butyl) phosphonate (DBBP) (38479)
49.2 wt% Poly(vinyl chloride) high molecular weight (81392)

Equilibration of Membranes and Potential measurements
Membranes were equilibrated by dipping them in 1.0 M AsO$_2^-$ solution for 7 days. Potentials were measured by direct
potentiometry at 25 ± 0.1°C with the help of provided reference electrode and the cell set up as reported. 1.0 × 10$^{-1}$ M sodium
arsenite was taken as inner reference solution.

Preparation of the membrane
The membranes incorporating ionophore (I) (Arsenite ionophore I) and plasticizer (DBBP) in definite composition in
PVC matrix were fabricated by dissolving them in a minimum amount of THF. The solutions thus obtained, after complete
dissolution of various components, were poured into glass ring placed on a smooth glass and allowed to evaporate at room
temperature. After 24 hours, transparent membranes of 0.5 mm thickness were obtained which were then cut to size and
attached to the provided electrode body.

Preparation and procedure
The membrane having composition 5:150:150 (I:PVC:DBBP) was prepared by the method as given above and dipped
in 1.0 M AsO$_2^-$ solution for 7 days. Potentials were recorded and plotted against the –log$c$ AsO$_2^-$.  

Recommended Cell Assembly
Reference $|$ sample solution $|$ liquid membrane $|$ 0.1 M NaAsO$_2$ $|$ AgCl, Ag

Electrode Characteristics and Function
Selectivity coefficients $\log K_{\text{Pot}}^\text{AsO}_2^-\cdot X$ as obtained by the separate solution method (0.01 M solutions of the sodium salts).

$\log K_{\text{Pot}}^\text{AsO}_2^-\cdot \text{Cl} = 0.4$  
$\log K_{\text{Pot}}^\text{AsO}_2^-\cdot \text{IO}_3 = 0.1$

$\log K_{\text{Pot}}^\text{AsO}_2^-\cdot \text{NO}_2 = 0.4$  
$\log K_{\text{Pot}}^\text{AsO}_2^-\cdot \text{SCN} = -0.7$

$\log K_{\text{Pot}}^\text{AsO}_2^-\cdot \text{NO}_3 = 0.4$  
$\log K_{\text{Pot}}^\text{AsO}_2^-\cdot \text{SO}_4 = 0.8$

Slope of linear regression: -46.8 mV/dec (7.9×10$^{-5}$ to 1.0×10$^{-1}$ M NaAsO$_2$)
Detection limit: 2.4×10$^{-5}$ M NaAsO$_2$

---

1 V.K. Gupta, S. Agarwal, PVC based 5,10,15,20-tetrakis (4-methoxyphenyl) porphyrinatocobalt(II) membrane potentiometric