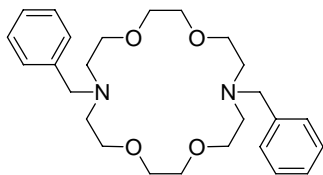


## Thallium



### Mercury ionophore I

(1,10-Dibenzyl-1,10-diaza-18-crown-6; Thallium ionophore I)  
 $C_{26}H_{38}N_2O_4$   $M_r$  442.59 [69703-25-9]

[39075](#)

**Selectophore®**

50 mg, 250 mg

## Electrochemical Transduction

### Ion-Selective Electrodes

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

Assay of Tl<sup>+</sup> activity in aqueous solution with solvent polymeric membrane electrode based on Mercury ionophore I.

#### Recommended Membrane Composition

3.2	wt%	Mercury ionophore I ( <a href="#">39075</a> )
0.8	wt%	2-Nitrophenyl octyl ether ( <a href="#">73732</a> )
64.0	wt%	Sodium tetraphenylborate (NaTPB) ( <a href="#">72018</a> )
32.0	wt%	Poly(vinyl chloride) high molecular weight ( <a href="#">81392</a> )

#### Recommended Cell Assembly

Reference || sample solution || liquid membrane | 0.1 M TlNO<sub>3</sub> | AgCl, Ag

#### Electrode Characteristics and Function

Selectivity coefficients  $\log K_{\text{TI, M}}^{\text{Pot}}$  as obtained by the separate solution method (0.1 M solutions of nitrate). Optimum conditioning time for the membrane sensor in a 0.1 M TlNO<sub>3</sub> solution is 24 h.

$\log K_{\text{TI, H}}^{\text{Pot}}$	-2.12	$\log K_{\text{TI, Ba}}^{\text{Pot}}$	-2.66
$\log K_{\text{TI, Li}}^{\text{Pot}}$	-2.08	$\log K_{\text{TI, Fe}}^{\text{Pot}}$	-2.37
$\log K_{\text{TI, Na}}^{\text{Pot}}$	-3.10	$\log K_{\text{TI, Co}}^{\text{Pot}}$	-1.11
$\log K_{\text{TI, K}}^{\text{Pot}}$	-1.31	$\log K_{\text{TI, Ni}}^{\text{Pot}}$	-2.54
$\log K_{\text{TI, Cs}}^{\text{Pot}}$	-2.20	$\log K_{\text{TI, Cu}}^{\text{Pot}}$	-2.57
$\log K_{\text{TI, Ag}}^{\text{Pot}}$	-1.36	$\log K_{\text{TI, Zn}}^{\text{Pot}}$	-1.55
$\log K_{\text{TI, NH}_4}^{\text{Pot}}$	-1.10	$\log K_{\text{TI, Cd}}^{\text{Pot}}$	-0.92
$\log K_{\text{TI, Mg}}^{\text{Pot}}$	-2.50	$\log K_{\text{TI, Hg}}^{\text{Pot}}$	-0.08
$\log K_{\text{TI, Ca}}^{\text{Pot}}$	-2.82	$\log K_{\text{TI, Pb}}^{\text{Pot}}$	-3.34
$\log K_{\text{TI, Sr}}^{\text{Pot}}$	-2.10		

Slope of linear regression: 56.9 mV/dec (1.0•10<sup>-5</sup> to 1.0•10<sup>-1</sup> M TlNO<sub>3</sub>)

Practical pH measuring range: 4.0-11.0

Detection limit: 5.6•10<sup>-6</sup> M Tl<sup>+</sup>

Response time: 95% response time: 10 s (10<sup>-2</sup> M Tl<sup>+</sup>)

Lifetime: 3 months

<sup>1</sup> G. Khayatian, S. Shariati, A. Salimi, Thallium(I)-Selective Membrane Potentiometric Sensor Based on Dibenzylidiazia-18-Crown-6. **Bull. Korean. Chem. Soc.** **24(4)**, 421 (2003).