

Miniature Ion Selective Electrodes

Type: Mini *-ISE.L60.C*

Description

This datasheet describes ion selective electrodes for potentiometric measurements of Chloride ions, Sodium ions, Calcium and Potassium ions concentration in aqueous solutions when used together with a reference electrode (following prior calibration).

Specifically, these applications may include analyses for agricultural purposes, online monitoring of the representation of selected ions in water management, certain industrial areas or agriculture (hydroponic cultivation of plants) etc.



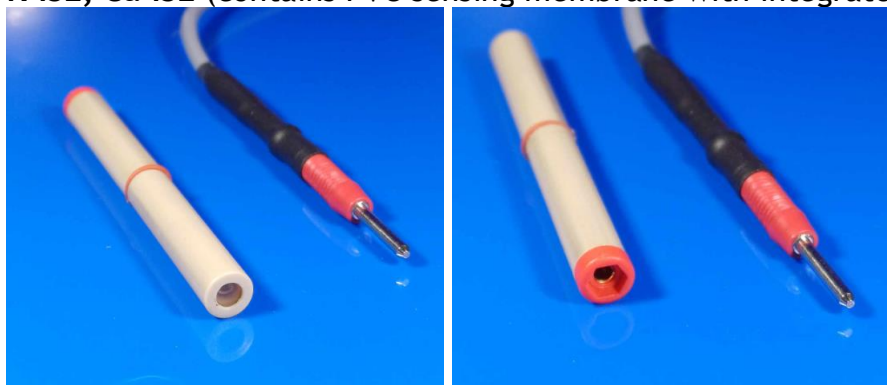
Electrodes are applicable to all commonly used measuring apparatus, with input resistance of at least $10^{12} \Omega$. The work with ion selective electrodes is time effective, requires an only small amount of chemicals, and a friendly price of measuring equipment (potentiostat with measuring method potentiometry).

Physical Parameters

Weight of ISE with cable: approx. 17 gms
Diameter: 6 mm
Standard Length: 60 mm
Socket: 2 mm banana plug
Standard electrical connecting cable: 1 m
The min. measurable sample volume: 5 ml for standard immersion of ISEs

Types of Mini *-ISE.L60.C*

K-ISE, Ca-ISE (contains PVC sensing membrane with integrated ionophore)



2 mm banana plug input to ISE

Cl-ISE (contains composite sensing membrane)



Integrated cable input to ISE

Na-ISE (contains glass sensing membrane)



2 mm banana plug input to ISE

Cable output from ISE to potentiostat



C1 - BNC connector or C2 - 2 mm banana plug

Miniature Ion Selective Electrodes Materials are defined by:

Mini *-ISE.L60.C*

The asterisk is replaced by the appropriate number or letter.

Mini = miniature	
*-ISE = ion selective electrode	L60 = length 60 mm
Cl - chloride (Cl⁻)	C - cable output to potentiostat
Na - sodium (Na⁺)	1 - BNC connector
Ca - calcium (Ca²⁺)	2 - 2 mm banana plug
K - potassium (K⁺)	

Device advantages

- Due to the miniature dimensions of the ISEs, it is possible to use smaller amounts of solutions and chemicals
- Possibility of integration with a flow cell for single ISE with integrated stirring - possible automation and continuous measurement

Additional accessory equipment

Mini RCE.GEL.L60.C1	Miniature argentochloride gel reference electrode, TMS
FC.1ISE.1REF	Flow cell for single ion selective electrode with integrated stirring
MPH 472	Universal potentiostat, Monokrystal
PP10.M*.T*	Peristaltic pump
2PP.T*	Dual Channel Peristaltic Pump

Detailed electrode specification and working instructions to be sent on request.

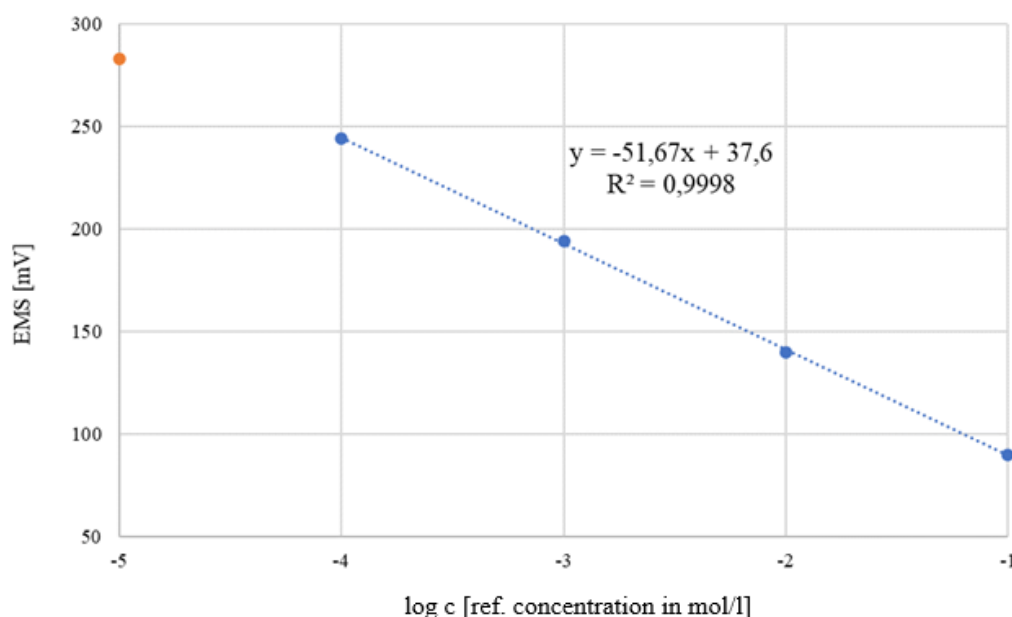
Type	Indicated concentrations field	Limit of detection	Temperature range of usability	pH range for direct potentiometry	¹ Interfering ion $K_{i,j}^{pot}$
Cl-ISE	10^{-1} to 10^{-4} mol/l Cl^-	10^{-5} mol/l Cl^-	0 to 60 °C	2 to 12	$Br^- 10^3$ $J^- 10^5$ $S_2O_3^{2-} 10$ $CN^- 10^2$ S^{2-} must not be present
Na-ISE	10^{-1} to 10^{-5} mol/l Na^+	10^{-6} mol/l Na^+	0 to 60 °C	pH > pNa + 3	$K^+ 1 \cdot 10^{-3}$ $Rb^+ 5.2 \cdot 10^{-6}$ $Cs^+ 7.1 \cdot 10^{-6}$ $NH_4^+ 5.0 \cdot 10^{-5}$
Ca-ISE	10^{-1} to 10^{-5} mol/l Ca^{2+}	10^{-6} mol/l Ca^{2+}	0 to 40 °C	6 to 9	$Na^+ 5 \cdot 10^{-5}$ $K^+ \sim 10^{-6}$ $Sr^{2+} 1.4 \cdot 10^{-3}$ $Ba^{2+} \sim 10^{-5}$ $Mg^{2+} 5 \cdot 10^{-5}$ $Li^+ 5 \cdot 10^{-3}$
K-ISE	10^{-1} to 10^{-5} mol/l K^+	10^{-6} mol/l K^+	0 to 40 °C	4-10	$Na^+ 1.1 \cdot 10^{-4}$ $NH_4^+ 1.3 \cdot 10^{-2}$ $Li^+ 7.6 \cdot 10^{-5}$ $Rb^+ 2.1$ $Cs^+ 9.2 \cdot 10^{-2}$ $H^+ 3.9 \cdot 10^{-4}$

The life of the ISE electrodes depends on the conditions of use. In normal use of ISE by classic immersion, the lifetime is about 6 months. Electrode lifetime is reduced by thermal stress and measurement in continuous/flow mode. The use of organic solvents rapidly reduces the lifetime of the ISE due to the leaching of the ionophore from the ISE membrane.

¹ Only measured interferences are in the table. However, there may be other interferences.

Example of measurement

An example of a calibration graph for Mini Cl-ISE.L60.C1 (linear calibration range: 10^{-1} to 10^{-4} mol/l) with a Mini RCE.GEL.L60.C1 with a diameter of 6 mm and a length of 60 mm.



A 15-channel potentiostat from the monokrystaly company was used for potentiometric measurement. KCl samples with a concentration of 10^{-1} to 10^{-5} mol/l were diluted with distilled water)

Ordering Information

- The order is specified by whole product code
- Minimum order quantity - 1 electrode
- Delivery time for standard electrode is 4-6 weeks from receipt of order
- Delivery time for non-standard electrode depends on final technical specification of order

Example of Order

- 5 pieces - Mini Cl-ISE.L60.C1
- 5 pieces - Mini K-ISE.L60.C2

References

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