Technical Specifications for the Lead Ion-Selective Electrode
ELIT 8231

Introduction

The Lead Ion-Selective Electrode has a solid-state crystal membrane. The electrode is designed for the detection of lead ions **(Pb^{+2})** in aqueous solutions and is suitable for use in both field and laboratory applications.

The Lead Ion is a divalent cation .

One mole of (Pb^{+2}) has a mass of 207.200 grams; 1000ppm is 0.005M

Dissolve 1.599g anhydrous lead nitrate (Pb(NO3)2) in 1 litre water.

Physical Specifications

Length of body excl gold contacts	130 mm
Length of body incl. gold contacts	140 mm
Diameter of body	8 mm
DC resistance at 25°C	< 2.5 MOhm
Minimum feasible sample volume	5mls

Chemical / Operational Specifications

Preconditioning / Standard solution *(But see General Operating Instructions)*	Normally 1000ppm Pb^{+2} as $Pb(NO_3)_2$
Preconditioning time	5 minutes
Optimal pH range	pH 3 to pH 7
Temperature range	0 to 80° C
Recommended ISAB	5M NaNO3 (add 2% v/v)
Recommended reference electrode	Double junction **(ELIT 003)**
Reference electrode outer filling solution	0.1M CH3COOLi
Electrode slope at 25°C	26±4 mV/ decade
Concentration range	0.2 to 20,800 ppm (1x10-6 to 0.1 Molar)
Response time	< 10 seconds

(Defined as time to complete 90% of the change in potential after immersion in the new solution.)

Potential drift (*in 1000 ppm*)	< 3 mV/ day (8 hours)

*(*Measured at constant temperature and with ISE and Reference Electrode continually immersed*)*

Analytical Note: Best results obtained in stirred solutions.

Interference:

All poly-crystalline membranes contain Silver Sulphide and thus will not give reliable readings if Ag or S ions are present in the solution. Copper, Iron, (Fe2+ and Fe3+), Mercury all have very high interference and, ideally, should also be absent. Any Cadmium present (selectivity coefficient >1) will cause a significant positive error (>10%) if it has a concentration greater than one tenth of the Lead.

Note low pH range (3 to 7) for this electrode

For more information, see: www.nico2000.net.