Technical Specifications for the Cadmium Ion-Selective Electrode
ELIT 8241

Introduction

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

The Cadmium Ion is a divalent cation .

One mole of (Cd^{+2}) has a mass of 112.411 grams; 1000ppm is 0.009M

Dissolve 2.744g Cadmium Nitrate tetra hydrate (Cd(NO3)2.4H2O) in 1 Litre water.

Physical Specification

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 Cd^{+2} as $Cd(No_3)_2$
Preconditioning time	5 minutes
Optimal pH range	pH 3 to pH 7
Temperature range	0 to 80° C
Recommended ISAB	5M $NaNO_3$ (add 2% v/v)
Recommended reference electrode	double junction **(ELIT 003)**
Reference electrode outer filling solution	CH3COOLi
Electrode slope at 25°C	26±3 mV/ decade
Concentration range	0.1 to 11,000 ppm (9x10-7 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)

Interference:

NB: All poly-crystalline membranes contain Silver Sulphide and thus will not give reliable readings if Ag or S ions are present in the solution. Furthermore, this electrode cannot be used in the presence of significant concentrations of Copper or Mercury, and any Iron or Lead ions in a concentration greater than one hundredth of that of the Cadmium will lead to spuriously high values – Selectivity coefficients for Iron and Lead are approximately 10.

Note low pH range for this electrode.

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