

Technical Specifications for the Cupric Ion-Selective Electrode ELIT 8227

Introduction

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

The Cupric Ion is a divalent cation .

One mole of (Cu^{+2}) has a mass of 63.546 grams; 1000 ppm is 0.016M

Dissolve 3.929g copper sulphate penta hydrate ($\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$) in 1 litre water.

Physical Specifications

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

Chemical / Operational Specifications

Preconditioning / Standard solution Normally 1000 ppm Cu^{+2} as CuSO_4
(But see General Operating Instructions)

Preconditioning time 5 minutes

Optimal pH range pH 2 to pH 7

Temperature range 0 to 80° C

Recommended ISAB 5M NaNO_3 (add 2% v/v)

NB:For best results ISAB should always be added to all standards and samples.

Recommended reference electrode Double junction (ELIT 003)

Reference electrode outer filling solution 0.1M CH_3COOLi

Electrode slope at 25° C 26 ± 3 mV/ decade

Concentration range 0.006 to 6,400 ppm (9×10^{-8} 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. Mercury also has very high interference and, ideally, should also be absent. Bromide and Chloride ions both have Selectivity Coefficients (SC) of >1 and will cause a significant negative error if they are present in concentrations greater than one tenth of that of the Copper.

For more information see: www.nico2000.net.