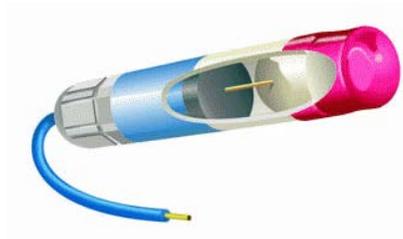


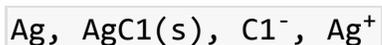
LD15 Reference Electrode Datasheet



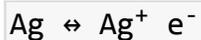
- Reference Electrode: Silver / Silver Chloride
- Model: LD15

General Description

The LD15 is a long life silver/silver chloride reference electrode with a stable reference potential specifically for permanent installation in reinforced concrete structures. The essential components are silver metal, silver chloride, soluble silver ions and chloride ions.



A sparingly soluble salt, silver chloride, is in equilibrium with a saturated solution of this salt which precipitates in the course of electrolysis. The reversible electrode reaction consists of silver ions going into solution and then combining with the chloride ions to form silver chloride. Thus its potential is determined by the following reactions:



The potential is dependent on temperature and the concentration of chloride ions in accordance with the following equation:

$$E = E_0 - (RT/F) \ln[\text{Cl}^-]$$

Where E_0 , R , F and T are the standard potential, gas constant, Faraday Constant and temperature respectively. The reaction has been proved to obey these equations in solutions with pH's of between 0 and 13.5. The potential is however very sensitive to traces of bromide ions which make it more negative.

The electrode element has been prepared by electrolytic precipitation of silver chloride onto silver metal. This has then been embedded in a mortar containing a known concentration of chloride ions and an anti-drying agent. The housing consists of a white nylon barrel, white nylon inserts, and a cable gland rated at IP68.

Specification

Element Type:

Ag, AgCl(s), Cl⁻, Ag⁺

Typical 1.2g silver per electrode

Potential:

-15mV +/-10mV versus the Saturated Calomel Electrode (SCE)

230mV +/-10mV versus the Standard Hydrogen Electrode (SHE)

Drift:

less 3mV in 24 hours.

Typically less than +/-10mV expected in 20 years

Note: The potential drift is subject to temperature, Donnan potential and liquid junction potential changes within the surrounding environment which may mask any changes produced by the electrode itself.

Internal Resistance:

Less than 2kOhms

Polarisation Characteristics (determined galvanostatically in sodium hydroxide solution)

2mV potential shift after the application of 0.1µA for 30 seconds.

12mV potential shift after the application of 1µA for 30 seconds.

Dimensions:

75 mm long x 15mm diameter

Cable gland 20mm long x 15mm diameter.

Housing:

White Nylon Barrel

White Nylon Inserts

Cable Gland IP68

Cable:

Supplied to order

Expected life:

More than 30 years at a leakage current of 1µA will result in the loss of 0.7 grams of silver. The functional life of the electrode will most likely to be determined by the life of the associated cables.

Other Features:

Large Measuring Interface (>175mm²)

Anti Drying agent