



Castle Electrodes LD10 Silver/Silver Chloride/0.5M KCl Reference Electrode Datasheet

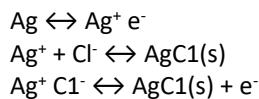


- Model: LD10
- Silver/Silver Chloride/0.5M KCL
- Anticipated service life: 30 years
- 80mm long x 10mm diameter
- Interface > 20mm²

The LD10 is a long life silver/silver chloride/0.5M KCL reference electrode for permanent installation in atmospherically exposed concrete structures. It is not suitable for submerged seawater or splash zones where we recommend using our RB15 manganese dioxide reference electrode. The essential components are silver metal, silver chloride, soluble silver ions and chloride ions.

Ag, AgC1(s), Cl⁻, Ag⁺

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:

$$E = E_0 - \frac{RT}{F} \ln[C1^-]$$

Where **E₀**, **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 nylatron barrel and inserts

Element Type:

Silver/silver chloride

Typical 1.2g pure silver

Potential:

-15mV wrt saturated calomel electrode (SCE) at 20°C

Drift:

+/-3mV in 24 hours

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

Dimensions:

80mm long x 10mm diameter

Housing:

White nylatron barrel and inserts

Cable:

Raychem cable product code 44A0111-16-6

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.