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TYPE WE10 Ag/AgCl 0.5M KCl EMBEDDABLE REFERENCE ELECTRODE FOR USE IN CONCRETE



The silver/silver chloride (Ag/AgCl) elements in all Silvion electrodes are manufactured using a "unique" and advanced technique that results in a porous silver matrix. The matrix is then coated with precise quantities of silver chloride to ensure:

- 1). HIGH RELIABILITY;
- 2). HIGH STABILITY;
- 3). GREATER ACCURACY;
- 4). INCREASED LIFE PERFORMANCE.



NOTE:

For our embeddable electrodes we ensure that the pre determined chloride ion concentration around the element is maintained at a constant value by using an inert electrolyte compatible with the Ag/AgCl chloride element. Ionic continuity to the environment is via a micro-porous sintered disc. The WE10 body has been designed as two separate housings which couple together via male and female threads. The WE10 is supplied with the Ag/AgCl element section of the body completely sealed leaving the silver wire protruding so the client may supply and connect their own cable tail, if required. Electrodes can be supplied with a compression gland to accept up to a single core 6mm² double insulated cable.

SILVION REFERENCE ELECTRODES

>40 Years' Service to the Corrosion Prevention Industry

Registered Office: Windsor House, A1 Business Park at Long Bennington, Nottinghamshire NG23 5JR
 Registered in England No: 6860239 VAT No: 975 9426 61 EORI No: GB975942661000



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OUTER CASING

MATERIALS.....	Acetal body with porous ceramic sintered disc and nylon cable gland
DIMENSIONS.....	Length: 62mm (84mm w/ gland); Diameter: 15mm
CERAMIC DISC DIAMETER.....	20mm
WEIGHT (W/O CABLE).....	22g

SILVER CHLORIDE ELEMENT

MATERIALS.....	Silver compounds are 99.90% pure
DIMENSIONS.....	Length: 15mm (+/- 2mm); Section: 6mm
SURFACE AREA.....	Geometric: 3cm ² ; Real: 100cm ²

ELECTROLYTE	Inert electrolyte with 0.5 Molar KCl
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PERFORMANCE DATA (See N.B. below for details)

V _s STANDARD HYDROGEN ELECTRODE @25°C.....	+250mV
IUPAC* GUIDELINES IN 0.5M KCL SOLUTION V _s SCE @ 25°C	+9mV
HISTORIC DNV GUIDELINES IN 0.5M KCL SOLUTION V _s SCE @20°C.	-5mV
ACCURACY.....	+/-5mV
STABILITY (POTENTIAL DRIFT AT CONSTANT TEMP AND ENVIRONMENT)....	+/- 1mV (24 Hrs) @ 5µA load
TEMP COEFFICIENT.....	-0.65mV/°C
TEMP RANGE.....	-5 to 70°C
INTERNAL RESISTANCE.....	Less than 500 Ohms
THEORETICAL DESIGN LIFE	20 years @ 0.1µA load

QA/QC

All our electrodes are fully tested, calibrated and supplied complete with a calibration certificate. They are individually identified with a unique serial number to ensure full traceability. All dimensions +/-1mm unless otherwise stated.

WARRANTY

Our reference electrodes are fully warranted against defects in materials and workmanship for six months from the date of receipt. We will replace/ refund any defect units within this period, but we require the unit(s) for examination to determine any fault.

N.B. Under no circumstances should the reference electrode be connected directly to the structure or the electrode will self-discharge and cease to operate. The minimum input impedance for the voltmeter used to measure the structure to electrolyte potential should be 10 MOhm.

In published literature, potential values for common reference electrodes used in Corrosion are measured with respect to a Standard Hydrogen Electrode (SHE) at 25°C and are shown as a positive value. However, historical DNV guidelines have required Ag/AgCl electrodes to have a potential within the range of -5mV +/- 5mV against a Saturated Calomel Electrode (SCE) at ambient temperatures in seawater (or 3% (0.5M) to 3.5% (0.546M) NaCl or KCl solutions). The DNV guidelines had been based on the value measured when the SCE electrode is connected to the positive terminal of the voltmeter and the Ag/AgCl electrode connected to the negative terminal. Silvion Ltd quote reference electrode potential values in this data sheet using both the electrode connection arrangement originally adopted by DNV giving a negative potential measurement and currently used by *International Union of Pure and Applied Chemistry (IUPAC) which gives a positive potential measurement. It should be noted that the polarity of the reference electrode connection affects the polarity of the potential measurement that is obtained, but not its magnitude.

The information provided in this document was accurate at the time it was published; however, we reserve the right to revise this document without prior warning.

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