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TYPE WE200 Ag/AgCl 0.5M KCl REFERENCE ELECTRODE FOR PERMANENT INSTALLATION IN SOIL



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:

The WE200 reference electrode consists of a highly stable silver/silver chloride element enclosed in an acetal housing and surrounded by a solid electrolyte (with 0.5M chloride ion concentration), an enlarged micro porous ceramic plug allows contact with the electrolyte and ionic conduction. These electrodes can be directly installed into moist soil but in dry soils the electrode impedance and that can be very high in relation to the impedance of the measuring circuit. Thus, it would be essential that the reference electrode is bagged in a conductive backfill i.e. bentonite, gypsum and sodium sulphate and the measuring circuit has a high impedance, preferably 30MegOhm or greater.

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 cylinder and nylon cable gland
DIMENSIONS.....	Length: 260mm (283mm w/ gland); Diameter: 35mm
CERAMIC DISC DIAMETER.....	19mm
WEIGHT (W/O CABLE).....	400g

SILVER CHLORIDE ELEMENT

MATERIALS.....	Silver compounds are 99.90% pure
DIMENSIONS.....	Length: 50mm (+/- 2mm); Section: 5mm x 5mm
SURFACE AREA.....	Geometric: 10cm ² ; Real: 500cm ²

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

Vs STANDARD HYDROGEN ELECTRODE @25°C.....	+250mV
IUPAC* GUIDELINES IN 0.5M KCL SOLUTION Vs SCE @ 25°C	+9mV
HISTORIC DNV GUIDELINES IN 0.5M KCL SOLUTION Vs 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	30 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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