



SILVION LIMITED
The Brambles, Grantham Road
Old Somerby, Grantham, Lincs
NG33 4AB
Tel: 01476 590932
Mob: 07872 857310
Email: sales@silvion.co.uk
Web: www.silvion.co.uk

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

>30 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: GB969052587000



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OUTER CASING

MATERIAL.....	Acetal body with porous ceramic cylinder and nylon cable gland
DIMENSIONS.....	Length: 260mm (283mm w/ gland); Diameter: 35mm
CERAMIC CYLINDER 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

STABILITY (POTENTIAL DRIFT AT CONSTANT TEMP AND ENVIRONMENT).....	+/- 1mV (24 Hrs) @ 5µA load
ACCURACY (Vs SCE IN 3% NaCl @20°C).....	-5mV +/-5mV
TEMP COEFFICIENT.....	-0.65V/°C
TEMP RANGE.....	-5 to 70°C
INTERNAL RESISTANCE.....	Less than 500 Ohms
THEORETICAL DESIGN LIFE	30 years @ 0.1 µA load

QA/QC

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

NB: Under no circumstances should the reference electrode be connected directly to the structure or the electrode will self discharge and cease to operate. Minimum input impedance for the voltmeter when measuring the structure to electrolyte potential is 10 MOhm. Historical DNV guidelines have required Ag/AgCl electrodes to have a potential within the range of -5mV +/- 5mV against SCE at ambient temperatures in seawater (or 3 to 3.5% (0.5M) sodium or potassium chloride 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 quote reference electrode potential values on this data sheet using the electrode connection arrangement originally adopted by DNV. However, it should be noted that the values of reference electrode potential often given in published literature for the Ag/AgCl electrode, when quoted with reference to or versus a SCE electrode are in fact +5mV +/- 5mV versus SCE. This is different to the value that has historically been used and quoted by DNV. The reason for the difference is the polarity of reference electrode connection affects the polarity of the potential measurement that is obtained but not its magnitude. When potential values are quoted with reference to or versus SCE, the electrode that is being used as the known voltage source e.g. SCE is connected to the negative terminal of the voltmeter and the Ag/AgCl electrode under test is connected to the positive terminal of the voltmeter. The potential obtained using the latter method of electrode connection will give a potential with reference to the SCE electrode and that value would be within the range +5mV +/- 5mV.

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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