

## ERE-Probe

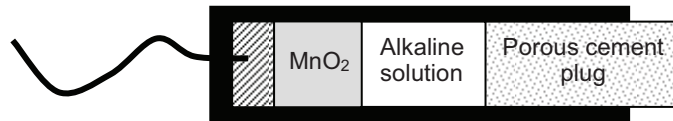
### Purpose

The **ERE-Probe** is a reference half-cell that is embedded in concrete and can be used to:

- Monitor the reinforcement potentials in critical areas for corrosion such as construction joints, splash zones in marine structures, bridge decks, and bottoms of bridge columns exposed to ingress of chlorides
- Monitor the efficiency of cathodic protection
- Monitor the ingress of the depassivation front, due to chloride penetration or carbonation, in combination with installing the **CorroWatch** (see page 32)

### Principle

The **ERE-Probe** (Embeddable Reference Electrode) is a stable, long life reference electrode for monitoring the half-cell potential of reinforcement. It is based on a manganese dioxide electrode in a steel housing with a chloride-free, alkaline gel and having a porous cement plug at one end. The housing is made from a corrosion resistant material. Diffusion of ions through the porous cement plug is low because the pH of the alkaline gel corresponds to that of pore water in normal concrete. The diameter of the **ERE-Probe** is 20 mm and the length is 85 mm



In new structures, the **ERE-Probe** is attached to the reinforcement by plastic straps before placement of the concrete. In existing structures, a hole is drilled to the required depth and the **ERE-Probe** is embedded using an appropriate mortar. A high impedance voltmeter is used to measure the half-cell potential between the probe and the reinforcement.

### Accuracy and variation

At 23 °C in a saturated  $\text{Ca}(\text{OH})_2$  solution, the potential of the **ERE-Probe** is +160 mV  $\pm$ 20 mV versus a saturated calomel electrode (SCE). The in-place operating temperature is from 0 °C to +40 °C.

Over a long period of time, the variation of each **ERE-Probe** is within  $\pm$ 5 mV compared with the initial value at the same temperature and for the same electrolyte environment. The expected life time is 100 years.

### Testing Example



*The **ERE-Probe** attached to reinforcement before placing concrete*

### ERE-Probe Ordering Numbers

Item	Order #
<b>ERE-Probe</b> with 3 meter cable	ERE-Probe-3
<b>ERE-Probe</b> with 5 meter cable	ERE-Probe-5
<b>ERE-Probe</b> with 10 meter cable	ERE-Probe-10

The **ERE-Probe** comes with a calibration certificate stating the potential value measured at 23 °C in a saturated  $\text{Ca}(\text{OH})_2$  solution versus a saturated calomel electrode (SCE).

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