

ERE-Probe

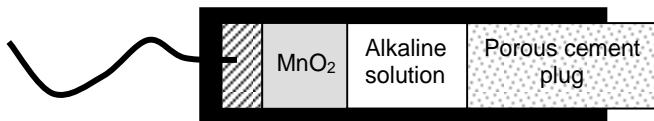
Purpose

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

- Monitor the reinforcement potentials in critical areas for corrosion such as construction joints, splash zones in marine structures, bridge decks, bottoms of bridge columns exposed to ingress of chlorides, etc.
- 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 technical data sheet)

Principle

The **ERE-Probe** (Embeddable Reference Electrode) is a stable, long life reference electrode for monitoring the half-cell potential of reinforcement in concrete structures. It is based on a manganese dioxide electrode in a steel housing with a chloride-free, alkaline gel and having a porous fiber reinforced 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.



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 cementitious mortar. The probe can be used for concrete exposed to chlorides or carbonation and will not induce corrosion or change the natural potential of the steel. A high impedance voltmeter is connected to the cable and used to measure the half-cell potential between the probe and the reinforcement.

ERE-Probe Specifications

- Diameter \approx 18 mm
- Length \approx 85 mm (without protective cap)
- Typical potential = $+205 \pm 20$ mV measured in a saturated $\text{Ca}(\text{OH})_2$ solution at 23°C vs Ag/AgCl electrode*
- Internal resistance $<$ 5,000 Ohm measured in a saturated $\text{Ca}(\text{OH})_2$ solution at 23°C
- Variation: ± 5 mV compared with the initial value at the same temperature and electrolyte environment
- Operating temperature: 0 to $+40^\circ\text{C}$
(false readings are expected during frost but they are recovered after thawing)
- Service life $>$ 30 years



***ERE-Probes** come with a calibration certificate stating their actual potential value

Ordering Numbers:

Item	Order #
ERE-Probe with 3 meter cable	ERE-Probe-3
ERE-Probe with 5 meter cable	ERE-Probe-5
ERE-Probe with 10 meter cable	ERE-Probe-10