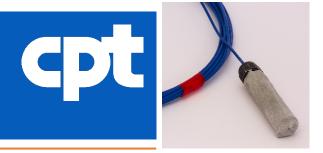# TECHNICAL DATASHEET

MN15 Reference Electrode™

A long life reference electrode used to measure steel potentials in reinforced concrete

Uses

The MN15 is a long life manganese oxide based reference electrode used to measure steel potentials in reinforced concrete and steel framed structures. The purpose of the MN15 is to measure the effectiveness of impressed current and galvanic cathodic protection systems and to monitor steel corrosion activity.

Advantages

- Chloride free
- Exceptional polarisation characteristics
- Compatible cementitious measurement interface
- Compact design
- Supplied electrode potentials ± 20mV
- Reliable long term performance
- Highly stable potential when current is drawn from the electrode
- Simple installation
- Accurate potential measurement
- Cost-effective

Product Data

The reference electrode shall be a manganese dioxide reference electrode used to determine steel potential in reinforced concrete and steel frame structures.

Length	Diameter
70mm (2 ¾")	16mm (⅝")

Application

A suitable location for the electrode must be identified which avoids contact with any steel in the structure.

BS EN 12696: 2016 offers guidance on the positioning of reference electrodes used in the monitoring of cathodic protection systems.

Prior to installation the MN15 electrode must be soaked in water for a minimum of 2 hours and a maximum of 24 hours.

The MN15 reference electrode is typically installed into a pre-drilled hole of dimensions 105mm x 30mm (4⅛" x 1¼"). The hole should be soaked with water prior to insertion of the embedding mortar. The MN15 electrode should be then be pushed into the embedding mortar to ensure complete coverage of the unit and elimination of air voids. A minimum of 20mm (⅞") cover should be achieved.

Technical Data

The resulting potential of the MN15 electrode is +402 mV versus the standard hydrogen electrode or +180mV versus the saturated calomel electrode (SCE).

At a typical leakage current of 1µA the MN15 electrode offers a lifetime of more than 50 years.

The MN15 reference electrode operates as a 'solid state' electrode which does not allow the loss of aggressive activating species into the parent concrete.

The polarising characteristics of the MN15 electrode are summarised below:

Applied current for 30 seconds (µA)	Potential shift (mV)
0.1	0.0
1.0	0.1
10.0	0.5

The MN15 electrode benefits from a highly stable potential when current is drawn from the electrode. This property means that the MN15 can easily tolerate current being drawn from the measurement surface without losing its reference potential. The MN15 electrode is capped with a formulated cementitious plug which offers compatibility with the host concrete. This will minimise the potential for loss of contact following installation. Each MN15 electrode is provided with a calibration certificate.

Limitations

The MN15 reference electrode must be soaked in water prior to application for a minimum of 2 hours and a maximum of 24 hours.

The resistivity of the embedding mortar used during the installation of the MN15 electrode should not exceed 20kΩ .cm

Packaging

Supplied in boxes of 10

Storage

Store dry

Shelf life 12 months

Ancillary Materials

DuoGuard and PatchGuard anodes

Monitoring equipment

Precautions - Health and Safety

Health and safety protective clothing, gloves and eye protection must be worn at all times.

Do not open or swallow the contents.

In the unlikely event that the contents should come into contact with the skin or eyes immediately rinse with water and seek medical help.

Technical and Sales Support

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