

# Cathodic Protection (CP)



## MC Miller Portable Copper-Copper Sulfate Reference Electrode for Soil



Copper/copper sulfate reference electrode with the rugged ceramic plug having a conical-shaped surface. Designed for use in soft soils. High purity copper rod and robust Lexan tube. The electrode has a transparent "window" to view the condition of the saturated copper sulfate solution. The saturated copper sulfate solution is prepared (inside the Lexan tube) by the end-user, according to the provided instructions. Supplied with a charge of copper sulfate crystals inside the Lexan tube.

### Specification:

- Length: 171 mm (6-3/4 inches)
- Diameter: 35 mm (1-3/8 inches)
- Dry Weight: 140 grams (5 ounces)

### Electrode Preparation Steps

1. Unscrew the orange tube (with the ceramic plug attached) from the copper rod assembly, which will reveal the copper rod.
2. Burnish the copper rod to a shiny metallic finish using a new, unused, non-metallic scouring pad or sandpaper. Oxide type sandpaper must be avoided as oxide sandpaper will introduce unwanted metals into the surface of the copper rod. Once the copper rod has been fully burnished, avoid any contamination that may occur before the rod assembly is reattached to the tube.
3. Reattach the rod assembly to the tube. Hand tighten only as not to damage the rubber O-ring by over torquing. But, be sure to tighten well enough that the electrode does not leak.
4. Remove the plug assembly add copper sulfate crystals (if not already added) to the orange tube. The crystals should fill the orange tube to about 1/3 of the height of the tube.
5. Add Deionized or Distilled Water up to the bottom of the threads on the tube. Be sure to remove any crystals that may have stuck to the threads. If copper sulphate crystals are present on the threads when the plug assembly is reattached, the electrode may leak at this threaded junction.
6. Screw the pre-saturated plug assembly back onto the tube end, being careful not to over-torque the O-ring.
7. Shake the electrode vigorously until the copper sulfate crystals dissolve and the solution becomes fully saturated with copper sulfate. The saturation point is reached when no more crystals can be dissolved into solution. At this point, the solution should be a rich blue color and there should be some crystals remaining out of solution.
8. Allow the electrode to set for a 24-hour period before use. The electrode ceramic plug assemblies are pre-soaked at the factory in a copper sulfate solution and allowed to dry. Before using the electrode, the ceramic plug assembly must become moistened by the solution contained within the electrode. Failure to allow the ceramic plug assembly to moisten for at least 24 hours could cause the electrode to indicate false readings.