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## **Sponge Bottle Electrode – Copper/Copper Sulfate** **Version (Cat # 15625)**

### **SUGGESTED PREPARATION OF APPARATUS, CARE AND STORAGE**

The MCM Sponge Bottle Electrode (CAT.# 15625), has been developed as a “special” test electrode for corrosion control / cathodic protection testing of reinforced steel in concrete typically found in bridge decks, parking garages, and driveway slabs. The apparatus consists of a special version of the MCM RE-7 Cu/CuSO<sub>4</sub> electrode. This unit has a surfactant reservoir for holding a “wetting agent” and an integrated dispensing sponge for wetting the surface of the concrete at the prospective test location.

### **PREPARATION OF THE Cu/CuSO<sub>4</sub> ELECTRODE**

- 1) Remove the surfactant reservoir cap with the electrode attached by unscrewing the cap counter clockwise.
- 2) Invert the electrode and unscrew the bottom porous plug assy. (Leave the cap on the electrode)
- 3) Fill the electrode with distilled water or MCM antifreeze solution to the bottom of the threads (**Do not use tap water**)
- 4) Replace the plug assembly and hand tighten snugly.
- 5) Vigorously shake the electrode for a minute or two to dissolve the crystals.
- 6) Some of the un-dissolved Cu/CuSO<sub>4</sub> crystals should be visible in the tube assembly. If all the crystals have dissolved, additional crystals may be added. Unscrew the bottom plug assembly and add more crystals.
- 7) Allow about 1 hour for the porous plug to become saturated by the copper sulfate solution.
- 8) See the separate Copper Sulfate Reference Electrode Instructions document for additional electrode preparation instructions.

### **PREPARATION OF THE ELECTRICAL CONTACT SOLUTION CONTAINER**

- 1) Remove the cap and electrode assembly from the main water container. Make sure the container is clean. If necessary, wash the bottle with soap and water only and rinse thoroughly.
- 2) Remove the sponge from the bottle by grabbing the Velcro ring on the

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sponge and pulling it away from the bottle. Clean and rinse the sponge with clean water only.

- 3) Re-install the sponge on the container bottle by lining up the cut-out in the sponge with the lexan tube on the bottom of the bottle and by pressing the Velcro rings together.
- 4) When ready for use, fill the surfactant reservoir approximately  $\frac{3}{4}$  full with prepared electrical contact solution. Such a solution would be composed of a mixture of 95ml of wetting agent, or a liquid household detergent, thoroughly mixed with 5 gallons (19 Liters) of potable water. Under working temperatures of less than about 50 degrees F (10 degrees C), approximately 15% by volume of either isopropyl or denatured alcohol must be added to prevent clouding of the electrical contact solution, since clouding may inhibit penetration of water into the concrete to be tested.
- 5) Upon filling the container, install the cap with the electrode attached onto the decanter as quickly as possible and hand tighten snugly.
- 7) Always keep the surfactant reservoir in an upright position to avoid excessive leaking of the electrical contact solution. Transporting the surfactant reservoir with the electrical contact solution therein is not recommended or suggested.

### **READY FOR TESTING**

Use of the surfactant reservoir with electrode would be similar to your use of any other reference electrode on a concrete structure only without the hassle of wrapping toweling around the electrode and trying to keep it wet for the duration of the test. By slightly loosening the surfactant reservoir cap, you can break the vacuum created inside the decanter thereby allowing the electrical solution to slowly leach out through the sponge. Additionally, by exerting some downward pressure on the sponge, electrical contact solution can also dispense through the attached sponge.

Metering/Test wire would be of a conventional nature as dictated by your test procedure or as recommended in our concrete corrosion mapping system reference guide (available through MCM's web site) or ASTM method C-876, (available from ASTM or MCM's web site).

### **CARE AND CLEANING**

Upon completion of the testing, remove the surfactant reservoir cap with electrode attached and dispose of all remaining electrical contact solution in the container. Remove the dispensing sponge from the bottom of the container. Thoroughly rinse all of the components with plenty of clean water. Dry with toweling and air dry before storing it away. Store in a clean dry place. For care of the copper sulfate electrode, please consult the separate copper sulfate reference electrode instructions document.

DO NOT insert the electrode with the orange protective cap into the surfactant reservoir.