

# RE-SERIES REFERENCE ELECTRODES

COPPER/COPPER SULFATE ELECTRODES



## FEATURES AND BENEFITS

- All RE-Series electrodes have rugged ceramic plugs
- High purity copper rods and heat treated Lexan tubes used in the construction
- Transparent “windows” created in the Lexan tubes to view the condition of the saturated copper sulfate solution
- All RE-Series electrodes are supplied with an appropriate charge of high purity copper sulfate crystals and instructions on electrode preparation
- Replacement ceramic plug assemblies available for all RE-Series electrodes



M. C. MILLER -TRUSTED BY CORROSION ENGINEERS WORLDWIDE

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### MODEL RE-5:

Flat surface ceramic plug for general use on soil surfaces. Approx. overall size 1 3/8" dia. X 6" long. Dry weight: 4 oz.



### MODEL RE-5C:

Ceramic plug has conical shape designed for use in soft soil conditions. Approx. overall size 1 3/8" dia. X 6 3/4" long. Dry weight: 5 oz.



### MODEL RE-7:

Ceramic plug has a flat surface with beveled edge for general purpose use on soil surfaces. Fits through 1 inch diameter holes in pavement & asphalt, for example. Approx. overall size: 1" dia. X 8 1/2" long. Dry weight: 5 oz.



### MODEL RE-5/U:

Ceramic plug is uniquely designed to permit the electrode to be used in any orientation, including an upside down configuration. Approx. overall size 1 3/8" dia. X 6" long. Dry weight: 4 oz.



### MODEL RE-2.5U:

Highly durable, large area ceramic plug (2.25" diameter). Electrode can be used in any orientation, including upside down configuration. Ideal for concrete corrosion potential mapping (bridge decks, parking garages, etc.) - stands upright by itself. Electrode supplied with highly absorbent sponge cap for enhanced electrical contact to concrete surfaces.



### MODEL RE-375:

Small diameter electrode (non-extendable) designed for readings taken through small holes or cracks. Comes in de-ionized water (DW) and antifreeze (AF) versions. Length: 6 1/2" Diameter: 3/8 inch



### FREE-STANDING RE-5C ELECTRODE:

Allows readings to be taken without the technician having to hold onto a reference electrode. Includes a RE-5C electrode (Item # 15210). Highly durable plastic stake with stainless steel clip. Length: 15" Width: 1 3/4" Depth: 3 1/2"



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## ACCESSORIES AND PARTS - COPPER/COPPER SULFATE ELECTRODES

### SUBMERSIBLE ADAPTERS:

Coverts any MCM electrode for use underwater, includes your choice of a lead length (8', 25', 50', 100', 150' or 200') with banana plug. Water-tight connection. (\* 8' model shown)



Cat. No. 16305\*

### EXTENSIONS:

**Intermediate electrode extension:** 30" long. One or more can be used with MCM model IA and LC series meters or between the electrode and the standard electrode extension, so that the electrode can be easily placed at the desired location inside manholes, water tanks, etc. Will fit through 1" diameter augered hole.



Cat. No. 16203

### ELECTRODE EXTENSIONS:

Electrode extensions 30" long. Side terminal connection allows use of the electrode without bending over or stooping. Extensions also available in 15" lengths.



Cat. No. 16101

### ANTI-FREEZE SOLUTION:

For use with any MCM electrode. Permits potential measurements with temperature as low as -10°F (-23°C) without danger of cracking electrode tube. Available in 8 oz. and 32 oz. (fl.) containers. Can be used year around.



Cat. No. 17207



Cat. No. 17105

### COPPER SULPHATE:

Finely divided high-purity crystals. Available in ¼ lb and 2 ½ lbs containers. Under normal conditions a ¼ lb container will be sufficient to maintain one electrode for a year.



Cat. No. 17003



Cat. No. 16906

### LEAK STOP GEL:

New, improved Leak Stop Gel for use with any MCM electrode. Stops the leaking of CuSO<sub>4</sub> electrodes, has no expiration date

Cat. No. 18020

Cat. No. 18010



# RE-SERIES REFERENCE ELECTRODES

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**THE M.C. MILLER CO.** "RE"- series of electrodes provides three areas of improvement over other electrodes formerly available. These are: a Lexan tube, a CPT\* ceramic plug, and a strong top cap with a 1/4" high-purity copper rod with 1/4 x 20 external thread and brass knurled nut.

### The CPT\* ceramic plugs offer numerous advantages.

1. The porosity of the CPT ceramic plug is uniform and controlled. All ceramic plugs are alike.
2. The CPT ceramic plug is fast wetting, and the electrode can be used within minutes after filling. (It often takes many hours to wet up a wood plug).
3. The CPT ceramic plug is pre-treated to provide lower electrical resistance which remains low as long as the plug is moist with saturated copper sulfate solution.
4. A CPT ceramic plug can become thoroughly dried out and it will re-wet in a few minutes with the same low resistance. It is not necessary to keep the electrode in a position where the solution will be in contact with the plug.
5. Tests indicate that it is not necessary to keep the CPT plug covered to prevent drying when not in use. It is, however, desirable to do so, and a protective cap is provided for this purpose.
6. The CPT ceramic plug is housed in a high-density polyethylene fitting which helps protect it against chipping or breaking in the event it is accidentally dropped.

**THE BRILLIANT ORANGE** color of the Lexan tube was selected to provide an electrode which can be readily seen in grass, and to help locate it when it is placed remotely, or when it breaks loose from the "pull-in" lead.

### Some of its other advantages are:

1. The Lexan tube, used in the model RE-5, RE-5C and RE-7 electrodes, is extruded in two colors, orange and clear. The orange is opaque and provides a sun shield to eliminate the small potentials which sometimes occur with full transparent tubes. A clear transparent section extending the length of the electrode provides a window for visual inspection to observe the condition and level of the copper sulfate solution. We believe this window is essential to maintain the electrode in good condition. Lexan is also used in the body of the model RE-3A electrode.
2. The lexan tube is highly resistant to damage. It can be misused, pushed into soft ground, dropped and carried in a tool kit without breaking.

The top caps of the model RE-5, RE-5C and RE-7 are heavy and strong. They are molded out of high density polyethylene and are extra thick where the copper rod is threaded through. A neoprene gasket provides a liquid and air tight seal. The top cap of the model RE-2.5U is molded Cyclocac, as is the plug receptacle.

All copper sulphate electrodes are shipped dry, but include a charge of high-purity copper sulphate crystals. A protective cap for the CPT porous plug is also supplied. Use and maintenance instructions furnished with each electrode.

