



FREE-STANDING ELECTRODE
CAT. NO. 15315



TANK ELECTRODE WITH EXTENSION
CAT. NO. 16825

ELECTRODES AND ACCESSORIES

**COPPER SULPHATE/
ANTIMONY**

ADVANTAGES:

- Low cost
- Easy to use
- Reliable
- Rugged
- Replaceable CPT* porous plug
- Lexan tube with window
- Extra heavy top cap

*Controlled porosity treated

The MCM Line of Electrodes

MODEL RE-5:

Standard Model. Flat CPT Porous Plug, for general use in soil and (with Submersible Adapter) for use in water. Approx. Overall Size: 1 3/8" dia. X 6" long. Dry Weight: 4 oz.



CAT. NO. 15108

MODEL RE-5C:

Similar to Model RE-5 **except** supplied with a cone-shaped CPT porous plug. For use in soft soils. Provides lower contact resistance. When pushed into soft soils the shape of the plug helps the electrode to "stand up". Approx. Overall Size: 1 3/8" dia. X 6 3/4" long. Dry Weight: 5 oz.



CAT. NO. 15210

MODEL RE-7:

Long, slim model with beveled CPT porous plug. For general purpose use in soil or in a 1" diameter augered hole in pavement. Approx. Overall Size: 1" dia. X 8 1/2" long. Dry Weight: 5 oz.



CAT. NO. 15301

MODEL RE-5/U:

For use on underside of bridge decks, parking garages, etc. in upside-down position.



CAT. NO. 15109

MODEL RE-3A:

Large diameter (3") flat CPT porous plug provides greater contact area. Flat plug provides lower contact resistance than rounded or serrated plug when placed in direct contact with flat surfaces. Especially useful on pavements, dry sand, frozen soil, etc. Stands by itself. Approx. Overall Size: 3" dia. X 5" long. Dry Weight: 16 oz.



CAT. NO. 14909

FREE-STANDING ELECTRODE:

The Model RE-7 is used in the freestanding electrode. This easy to use electrode withstands extreme cold, hot and wet environments.



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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. Special lengths of RE-5, RE-5C and RE-7 are available on order. Use and Maintenance Instructions furnished with each electrode.

MODEL PH-50

Antimony Reference Electrode

Antimony electrode used in conjunction with a Copper/Copper Sulphate reference electrode and voltmeter to measure the PH of soil. The tube assembly of the electrode is etched with the conversion table of millivolts to PH. Approx. Overall Size: 7/8" dia. X 8" long.



CAT. NO. 14700

Accessories and Parts for MCM Electrodes

SUBMERSIBLE ADAPTERS:

Converts any MCM Electrode for use underwater. Includes your choice of lead length (8', 25', 50', 100', 150' or 200') with 27-C Copper Test Clip attached. Water-tight connection.



ANTI-FREEZE SOLUTION:

CAT. NO. 17207 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 round.



CAT. NO. 17105

EXTENSIONS:

Intermediate Electrode Extension: 30" long. One or more can be used with MCM Model I.A. 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 a 1" diameter augered hole.

CAT. NO. 16203



CAT. NO. 16101

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

COPPER SULPHATE: CAT. NO. 17003

Finely divided high-purity crystals. Available in $\frac{3}{4}$ lb. and $2\frac{1}{2}$ lb. containers. Under normal conditions a $\frac{3}{4}$ lb. container will be sufficient to maintain one electrode for a year.

CAT. NO. 16906



SPARE PLUG ASSEMBLY: CAT. NO. 15607

Replacement or spare plug assemblies are available for all electrodes and are supplied with an "O" ring gasket and a protective cap. Note that the RE-5 and RE-5C plugs are interchangeable.



CAT. NO. 15403

CAT. NO. 15450



CAT. NO. 15505



CAT. NO. 17309



GENERAL: COPPER-SULPHATE REFERENCE ELECTRODES AND ACCESSORIES (OFTEN REFERRED TO AS "HALF CELLS")

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-sulphate 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 remote 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-sulphate 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, but the color is painted on the inside rather than extruded. An inspection window is provided.
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 machined out of high-density polyethylene rod, 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-3A is molded Cylolac, as is the plug receptacle.

Tank Electrode with Extension

CAT. NO. 16825

The M.C. Miller Co, Inc. waterproof electrode extension is used for pushing an electrode through a perforated PVC pipe running under an above ground storage tank. It is particularly useful when an electrode cannot be dropped on its own weight into a hole or water. The ridged electrode extension uses a 3/4" PVC pipe, commonly found in



hardware and plumbing stores. Any length of pipe that is desired may be used, including attached pipe lengths using PVC slip couplings in order to reach the desired length. Additionally, a male 3/4" NPT and a female 3/4" NPT may be used to quickly screw multiple pieces of pipe together. The red #16 AWG 150 foot test lead is included with the Tank Electrode Extension/Holder.

MCM
MC MILLER Co.
BUILT TO TAKE IT.

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