



## The Electrical Resistivity of Materials

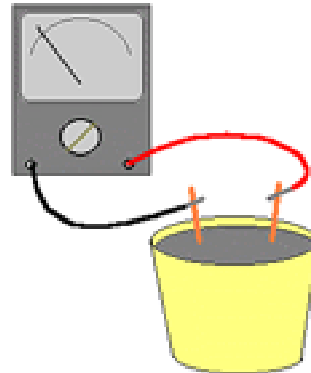
Here's an experiment that you can do to get an idea of how electrical logging works. You can investigate the resistivity of dry ground and ground soaked with different liquids.

### Materials and Equipment:

- several paper or plastic cups
- a measuring cup
- sand, soil, or fine gravel
- six pieces of stiff bare copper wire, each about 10 cm (4 in.) long
- salt
- lubricating oil or vegetable oil
- an ohmmeter
- water

### What to do:

1. Fill three cups with equal amounts of dry sand, gravel or soil. Label the cups A, B, and C
2. Mix up some saltwater in the measuring cup. Use about 30g of salt to 200 ml of water.
3. Pour the saltwater into cup A until the soil is saturated. If you don't have enough saltwater to thoroughly soak the soil mix up some more as you did in step 2. You should add enough water to thoroughly soak the ground, but not so much so that there is a puddle of water on the surface. If you pour too much, soak up the excess with a sponge or paper towel.
4. Saturate the soil in cup B with oil.
5. The soil in cup C should remain dry.
6. Insert two wires into the soil in each cup. They should be about 2 or 3 cm (an inch or so) apart. They should be buried well into the soil, but with the ends sticking out above the surface.
7. Touch the ohmmeter probes to the two wires sticking out of the dry soil. Record the resistance. Do the same with the salt water saturated soil and the oil-saturated soil.
8. Record your results on the table below.



Soil Mixture	Resistance in Ohms
Dry soil	
Soil saturated with salt water	
Soil saturated with oil	