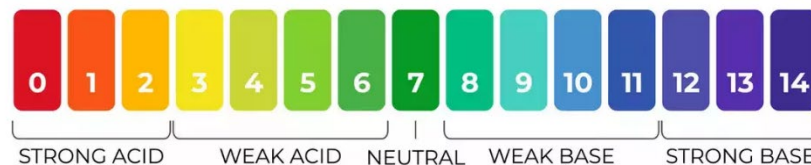



## Antimony Electrode Information

Antimony is an unusual metal, in that its electrical potential depends on the pH of the soil or solution in which it is in contact with. The potential difference between antimony and a copper sulphate electrode is a function of the soil pH value, meaning that it is a convenient way to obtain soil pH readings within the Cathodic Protection field.

Acidic solutions have more Hydrogen (H<sup>+</sup>) ions than Hydroxyl (OH<sup>-</sup>) ions, and vice versa for alkaline solutions. Acquiring the Hydrogen ion concentration allows one to determine the acidity or alkalinity of a given substrate, measured by the pH. The scale of pH ranges from 0-14; 0 being the most acidic, 7 is neutral, and 14 is the most alkaline (see below).



The relationship between voltage and pH is notated on the electrode. 

For the most accurate results the exposed antimony tip should be kept smooth. Before taking a new reading, or group of readings, the electrode tip should be sanded using the supplied sandpaper. If any other damage occurs resulting in a rough antimony exterior, it must be smoothed until you are left with a uniform contact surface before use.

The antimony works due to an oxide film that forms on the surface of the metal. After the antimony is placed in contact with the soil, it may take a few seconds for the oxide film to stabilize, so expect the reading to drift during this time before settling. Note that this stabilization is much slower in acidic conditions than in alkaline.

The antimony and copper sulphate electrodes should be kept close to each other when obtaining readings, due to surface potential type of voltage gradients interfering. Please note that copper sulphate solution should be kept away from the antimony, as it will cause copper to plate the antimony. Areas in which current is flowing in the soil should be avoided if possible. If this cannot be avoided, place the electrode in a line at right angles to the current flow.

