

## Frequently Asked Questions on pH

### **If I order a pH meter, what accessories do I need to use with it?**

You need a pH electrode and at least two pH buffers, one at pH 7 and the other at either pH 4 or 10.

### **My co-worker is using an ORP (Redox) electrode to measure the same solution as I, but our readings are not even close. Could there be something wrong with my electrode?**

No. Because ORP (Redox) is a relative measurement, it is almost impossible to compare two ORP electrodes directly. ORP electrodes come equipped with bands made up of platinum, gold, or hydrogen, for example. Each band type will give you a different reading in the same solution. Even if the electrodes are of the same band type, the leak rate through the reference junction will affect your readings.

Instead, simply measure two solutions and note the difference between the two electrodes. Once again, the difference between two solutions should compare. You should be looking for a change of state, rather than an absolute measurement. You can check your electrode using pH buffer and Quinhydrone.

### **Can I measure the pH of a gas?**

The only way to measure the pH of a gas is to dissolve it into distilled water and measure the mixture. Technically, the pH of the distilled water/gas mixture will be that of the gas.

### **How should I store my electrode?**

The best solution for electrode storage is 4M KCl. pH 4 buffer, pH 7 buffer, or tap water are also acceptable. Never store your electrode in distilled water.

### **What is the difference between a combination electrode and a sensing electrode with a reference cell?**

A combination electrode is more convenient and requires a smaller sample container and volume. The sensing electrode with reference cell combination allows you to select the reference cell most compatible with your solution. You can select the double junction, calomel, or half cell. You will probably get better life from this combination, and can replace each cell individually.

### **How does one take soil pH measurements?**

Prepare the sample by combining a 5 g soil sample with 5 g of distilled water, mixing thoroughly, and allowing the mixture to settle for 10 minutes. Carefully insert probe so bulb is in the soil part and the junction is in the supernatant. Allow reading to stabilize.

### **Why is a double junction electrode better than a single junction electrode?**

A double junction electrode is less likely to become clogged because the second junction is located higher up in the probe out of contact with the fluid.

### **Is Automatic Temperature Compensation (ATC) really necessary?**

The necessity of ATC depends on the required accuracy of a pH reading. pH readings vary with temperature. For example, a sample with a pH of 7 at 25°C, may have a pH of 7.08 at 5°C and a pH of 6.98 at 60°C.

### **When do you use a half cell?**

When you are measuring a pressurized flow in a stream or pipe. The reference half cell would be mounted upstream, the measuring electrode would be mounted down stream.

**How often should I calibrate my pH meter?**

Before each use or set of uses.

**How can you unclog a pH electrode? How can you restore a dry pH electrode?**

First check the interior wire. If corrosion is evident, replace the electrode. If not, then soak the electrode in pH 4 buffer solution at 50 degrees C for 2-4 hours. Restore a dry electrode by soaking it in tap water after rinsing out the refill chamber with distilled water and refilling with the proper solution.

**If measuring the entire range of pH what slope should be used?**

The upper end or pH 10 buffer.

**What is the difference between blue glass and amber glass, and what does that have to do with pH measurement?**

The valance of  $\text{Na}^+$  is much larger than  $\text{H}^+$ . Amber glass has a smaller pore size thus possibly discriminating between  $\text{H}^+$  and  $\text{Na}^+$  allowing only the smaller  $\text{H}^+$  to enter the greatly eliminating  $\text{Na}^+$  interference.