

Electrode Selection Guide

The right electrode

While the basic principles of pH measurement are simple, getting an accurate measurement can often be challenging. There are hundreds of applications for pH measurement and each presents different problems. Selecting the right electrode can make the most difficult samples easy to accurately measure.

Gel-filled vs refillable electrodes

Gel-filled electrodes are convenient and easier to maintain than refillable liquid-filled electrodes. However the liquid-filled electrode will provide a faster response. In addition the user can adjust the fill solution to optimize performance, for example adding glycol for better performance at low temperatures.

Glass vs epoxy body electrodes

Glass body electrodes will typically be able to withstand higher temperatures (100°C as opposed to 80°C for epoxy). In addition, the glass design offers better sealing, fusing glass to glass instead of relying on adhesives. The epoxy body however is less susceptible to breakage.

Note: Even though the body of an epoxy electrode is plastic, the measuring bulb will still be glass.

Body design

Oakton offers electrodes in a variety of lengths and diameters. Small diameter probes are ideal for measuring samples in test tubes. Electrodes with wider barrels, greater weight, and longer cable lengths are available for measurements in streams, lakes, or ponds.

Bulb design

Oakton pH electrodes are handblown by experienced craftsmen. The bulb shape can be modified to provide a semi-dome for increased ruggedness, a spear tip for soft penetration applications, or even a flat surface. In addition, the glass formulation can provide increased range.

Reference design

To achieve accurate results, the reference electrode must allow electrolyte solution (or ions, in the case of a gel-filled electrode) to flow into the sample. Depending on the size and material of the junction, this flow rate can be increased or kept to a minimum. Faster flow produces stable readings faster but results in greater service requirements or premature electrode failure.

Reference chemistry

The leading cause of electrode failure is reference contamination. The most popular electrodes use a silver chloride (AgCl) reference solution that can react with heavy metals, sulfides, and organics. If your application has any of these contaminants present, be sure to select double-junction electrode. The double-junction electrode uses a second internal reference junction, restricting the AgCl solution to the upper chamber where it is isolated from the sample.



Double-junction, glass-body, refillable pH electrode 35805-04



Single-junction, epoxy-body, gel-filled pH electrode 35808-71



Submersible pH electrode 35805-24

