



pH, ORP & Reference Electrode Instructions



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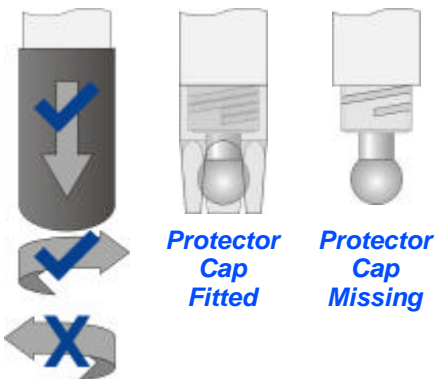
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Important Notes

Removing the wetting cap.

Pull the black wetting cap off the sensor either while twisting clockwise or without twisting at all. Twisting the cap anti-clockwise may unscrew the bulb protector, where this is a separate screw-on piece. Broken pH bulbs are not covered by warranty.



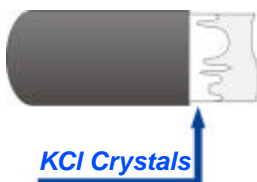
Removing bubbles in the bulb.

A bubble can develop in the bulb of a pH sensor. This affects performance and stability. To remove the bubble, flick the pH sensor down like a thermometer.



Salt crystal build-up around the tip of the sensor.

There is Potassium Chloride solution in the wetting cap and inside the sensor. This may partially leak out during transport and storage. The build-up is perfectly normal and can be washed off with water before use.



Preparation for Use

All sensors are shipped with the measuring tip covered with a "wetting cap". Remove the wetting cap from the electrode and keep it in a safe place for future long term storage.

After rinsing the measuring tip with distilled or de-ionised water, the electrode is ready for use.

During shipment it is possible for air bubbles to move into the bulb. To remove the air, shake down the electrode in the same manner as a clinical thermometer until the glass bulb is filled with solution.

Electrode Storage

Glass bodied pH electrodes should be stored in a pH4 buffer for both overnight and long term storage.

Plastic bodied pH electrodes should be stored in a 1:1 mixture of pH4 buffer and saturated KCl.

Plastic bodied single junction Reference and ORP electrodes should be stored in saturated KCl.

Plastic bodied double junction Reference and ORP electrodes should be stored in 3.0M solution of the salt in outer reference chamber.

Electrode Care & Cleaning

Slow response and non-reproducible measurements are signs that the electrode has been contaminated or clogged.

If the glass becomes coated or clogged the time taken to make a measurement will increase (normally 95% of final reading should be achieved in less than 10 secs).

Rinsing with methyl alcohol should remove the coating and restore the speed of response.

ORP electrodes may need additional cleaning from time to time with fine emery paper.

If the methyl alcohol does not restore the response, soak in 0.1M HCl for 5 minutes. Remove and rinse with water and place in

0.1M NaOH for five minutes. Remove, rinse again, and soak in pH4 buffer for 10 minutes before use.

if a pH electrode is continuously used above 60°C the outer layer of the pH glass loses its sensitivity. This can be restored as follows :

1. Prepare a 10% solution of ammonium bifluoride.*
2. Immerse electrode for 10-20 secs.
3. Rinse in water.
4. Immerse in 5M HCl for 5 mins to remove any excess bifluoride.
5. Rinse again in water.
6. Soak in pH4 buffer for 1 hour before use.

****This is a hazardous chemical and should only be handled by a qualified chemist familiar with Fluoride compounds.***

Note: All pH electrodes respond best after being stored in slightly acidic solutions such as pH4 buffer.

Reference electrodes use a liquid junction for electrical contact to the solution being measured. if the junction becomes clogged or coated, the reference becomes erratic. Cleaning with methyl alcohol or 0.1M HCl periodically will enhance the electrode's performance. Storage should be in slightly acidic 3M KCl solution.

Filling Solutions

Note: Certain combination electrodes are filled with KCl gel. These do not require filling and have no filling hole on the side of the electrode.

*Reference electrodes -
Saturated KCl*

*Combination pH/ORP electrodes -
3.0M KCl saturated with AgCl*

To fill electrode, slide down plastic ring to reveal hole inside. Using a small syringe, fill the outer part of the electrode (via the hole) with the filling solution detailed above, until the filling solution is just level with the hole. Slide the plastic ring back to cover the hole.