

pH/REF/ORP ELECTRODES OPERATING INSTRUCTIONS



During shipment, it is possible for AIR BUBBLES to move into the glass 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.

① PREPARATION FOR USE.

All sensors are shipped with the measuring end covered with a soaker teat. Remove the soaker teat from the electrode, rinse thoroughly with DI water and gently dry with a non-abrasive tissue. The electrode is ready for use.



Make sure you do not scratch the membrane. This can cause unstable and inaccurate readings.

② CALIBRATION.

Please consult the pH meter manual to ensure correct operation.

Always make sure the electrode has stabilised in your first calibration solution before starting the procedure. A 2-point calibration is preferred: use pH 7 and pH 4 buffers for acidic samples; pH7 and pH10 buffers for alkaline samples. Please contact us for calibration instructions.



A wrong calibration will cause inaccurate readings.

③ ELECTRODE STORAGE.

Store in an up-right position and keep tip wet. SOAKING SOLUTIONS:

- pH electrodes should be stored in 4 Molar KCL for both overnight and long-term storage;
- Reference and Double Junction pH electrodes should be stored in the same solution as inside the outer reference chamber.



Keep the membrane soaked at all times. A dried membrane will cause inaccurate readings and drifts. If so, soak the probe overnight in soaking solution.

④ CARE & CLEANING.



Clean after each use with DI water or a solvent that dissolves your sample. Rinse thoroughly with DI water and gently dry with a non-abrasive tissue. Place back in the soaking solution.

A. COATING OF THE MEMBRANE.

- slow response and non-reproducible measurements are signs that the electrodes have become coated.

- if the glass becomes coated, the time taken to make a measurement will increase (normally 95% of final reading should be achieved in less than 10 secs in pH buffers).

- pH: rinse with IPA or the solvent that dissolves your sample. That should remove the coating and restore the speed of the response;
- ORP: these electrodes might need additional cleaning from time to time with crocus paper.



If the solvent rinse does not restore the response, soak in 0.1M HCl for five minutes. Remove and rinse with water and place in 0.1M NaOH for five minutes. Remove, rinse again, and soak in pH 4 buffer for 10 minutes before use. Exercise great care when handling chemicals.

B. COATING AND CLOGGING OF THE JUNCTION.

- 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 IPA, or 0.1 Molar HCl periodically will enhance the electrodes performance. If this doesn't work, place the tip of the electrode in warm KCl (50°C) for 5 minutes.

⑤ FILLING SOLUTIONS.

- 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:

- R1/Ag – 4 Molar KCl/AgCl
- R2 – Upper chamber 4 Molar KCl/AgCl;
– Lower chamber 0.1 Molar KNO₃;
– Lower chamber can be exchanged for a sample-compatible solution.

- To fill the electrode, slide down the plastic ring/or remove fill hole plug to reveal the hole in side. 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.



Once the filling hole is tightly sealed, shake the electrode to eliminate bubbles from the bulb.

* IPA = Iso-propanol

* DI = De-ionised water