

Glass Body pH Electrodes – Calibration & Maintenance

Recommended Calibration Procedures

1. Rinse the pH electrode thoroughly with D.I. water to remove all traces of storage solution, process medium or previous test / buffer solutions to prevent carry over contamination of the pH buffer test solutions.
2. Insert the pH electrode in 7pH buffer solution and momentarily stir the solution using the pH electrode. Allow a minimum of 30 seconds for the pH electrode to thermally equilibrate with the pH buffer solution before taking a reading. The pH reading should be $7.0\text{pH} \pm 0.33\text{pH} (+20\text{mv}) @ 25^\circ \text{C}$. Make any necessary adjustments to the pH meter using the buffer control on the pH meter. (Refer to the pH meter operating manual for full details)
3. Rinse the electrode with D.I. water and insert the pH electrode in 4pH buffer solution and momentarily stir the solution using the pH electrode. Allow a minimum of 30 seconds for the pH electrode to thermally equilibrate with the pH buffer solution before taking a reading. Make any necessary adjustments to the pH meter using the Slope control on the pH meter. (Refer to the pH meter operating manual for full details)

Notes:

- A. Always use fresh pH buffer solutions kept at 25°C for best results.
- B. pH Buffer solutions above 7.0 pH are less stable and have a very limited life. These high pH buffers more readily absorb CO_2 from the atmosphere and will typically change to a lower pH value when left open.
- C. As a pH electrode becomes older, it will exhibit slower response times and will become less efficient in terms of its ability to span several pH units with the same repeatability. You may find the pH electrode can be buffered at 7pH but you will not be able to slope the pH electrode to 4 or 9 pH. The pH electrode will short span.
- D. pH electrodes are imperfect devices and require calibration from time to time in order to characterise the pH electrode to its host pH meter.

Care and Maintenance

1. Storage solution - use 3.8 Molar KCl solution. For best results use an electrode storage bottle which is sized for the electrodes outside diameter.
2. If necessary clean the wick and bulb area thoroughly before using the electrode (see below). Improper cleaning may produce drifting readings or slow response.
3. For storage fill the soaker bottle or storage sleeve with 3.8 Molar KCl and insert the pH electrode. The pH electrode should be stored in an upright (vertical) position.

Cleaning the pH Electrode

1. Initial cleaning – wash the electrode with a solution of liquid detergent and warm water by gently scrubbing with a soft tooth brush or wet tissue. Follow this by thoroughly rinsing the electrode in D.I. or clean tap water.
2. Inorganic Scale Deposits – Dissolve the deposit by immersing the electrode bulb only in a solution of dilute (10 %) Hydrochloric Acid for a few minutes. Please ensure you refer to the Material Safety data sheets and handling instructions when using Acids.
3. Organic Oil or Grease films - wash the electrode with a solution of liquid detergent and warm water by gently scrubbing with a soft tooth brush or wet tissue. Follow this by soaking the pH electrode for between 10 and 30 minutes in a 3.8 Molar KCl solution.
4. Plugged or Dry Ceramic Wick – Remove contaminate with one of the above cleaning procedures. Then soak the electrode in an 80°C , 3.8 Molar KCl solution for 30 minutes. Before allowing the electrode to cool in the same solution to promote flow of internal electrolyte through the liquid junction.