

Application Note

pH Electrode Care and Maintenance

Conditioning the Electrode

1. Empty as much of the filling solution out of the electrode as possible by turning it upside down over a sink and shaking.
2. Fill with the appropriate fill solution (in most cases 3M KCl).
3. Place electrode in 0.1N HCl solution for 1 hour. Rinse off electrode with DI water.
4. For Denver Electrodes 300729.1, 300731.1 & 300736.1 ONLY - Open fill hole and place the wetting cap back onto the electrode. Air bubbles from the reference junction should flow to the top of the electrode. It might take several times of placing the cap on before bubbles are released. If no bubbles appear place the electrode back into the HCl for another hour and repeat with the wetting cap until bubbles do appear.
5. Let soak in a 3M or saturated KCl solution for at least two hours.
6. Check mV readings. Between a pH 7 and pH 4 buffer there should be a 159-186mV change.

Short-Term Storage

- Fill a container with 3M KCl or commercially made electrode storage solution. Make a line indicating the volume. Use DI water to wash down crystals and maintain solution level. Change monthly.
- Close fill hole.

Long-Term Storage (more than a week)

- Fill Electrode with 3M KCl Solution.
- Add a few drops of KCl to the wetting cap and insert electrode.
- Close fill hole.

Why Store in 3M KCl Solution Versus Buffer Solutions?

- Prevents the formation of a precipitate of AgCl in the junction
- Diffusion layer of buffer will not form on the platinum reference junction introducing an error in the reference potential
- The glass membrane will be preconditioned to an appropriate pH value

Tips for Use

- Make sure filling solution is always $\frac{3}{4}$ full
- Before using a new electrode or one that has been storage, condition the electrode.
- Open the fill hole
- Standardize by using buffers that bracket the range of your samples
- Place electrode in storage solution whenever not measuring sample

Cleaning Procedure

- **General Cleaning:** Soak in 0.1M HCl for half an hour. Drain and refill the reference solution. Soak the electrode in Filling Solution for 1 hour.
- **Inorganic Samples:** Soak in 0.1M tetrasodium EDTA solution for 15 minutes.
- **Protein Solutions:** Soak in 1% pepsin / 0.1M HCl for 15 minutes.
- **Grease and Oil:** Rinse with detergent.
- **For Denver Electrodes 300729.1, 300731.1 & 300736.1** - Open the fill hole and place wetting cap on electrode. When air bubbles are observed the reference junction has been cleared.