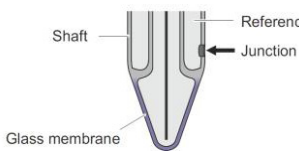



## Double the life of your pH electrode

After choosing the appropriate sensor\* for your application, there are four main factors to improving performance and extending the life of your pH electrode.

<h3>Calibration</h3>	<h3>Proper Use</h3>
<p><i>Your results are only as good as your last calibration.</i></p> <ol style="list-style-type: none"> <li>1. Use fresh buffers. Buffer precision degrades over time. High alkalinity buffers degrade faster when exposed to open air. Follow the manufacturers "use by" dates.</li> <li>2. Rinse clean beaker with buffer solution before filling.</li> <li>3. Rinse the sensor with DI water and/or the next calibration buffer. Blot dry.</li> <li>4. A two point calibration is typically sufficient. We advise a 4 and 7 or 4.01 and 6.87 since the alkaline buffers are less stable.</li> <li>5. Never reuse buffers.</li> <li>6. Calibrate at or near the same temperature of the sample being measured.</li> <li>7. Use NIST traceable, single-use or DIN buffers for superior accuracy and reliability.</li> </ol>	<p><i>A pH sensor is a highly technical, precision instrument.</i></p> <ol style="list-style-type: none"> <li>1. Open the refilling port if present. Keep open during measurements.</li> <li>2. Refill electrolyte if necessary.</li> <li>3. Ensure that the junction is completely submerged.</li> <li>4. Make sure the reference electrolyte is <math>\geq 1"</math> above sample.</li> <li>5. Rinse with DI water and/or the next sample between measurements.</li> <li>6. Ensure a homogenous and temperature stable sample. Stirring may be necessary.</li> <li>7. Avoid contact with the pH membrane to prevent damaging the pH measuring surface. Never use as a stirrer.</li> </ol> <div data-bbox="1068 730 1463 884" style="text-align: right;">  <p>(Example)</p> </div>
<h3>Storage</h3> <p><i>Perhaps the main contributor to the life, speed and precision of your pH electrode.</i></p> <ol style="list-style-type: none"> <li>1. Always store your combination pH electrode in the same solution that is used in your reference electrode. Usually a 3mol/l KCl solution. Use airtight storage vessel.</li> <li>2. Electrodes should be kept in a storage solution between samples. Water-saturated air or a pH 4 buffer are also suitable for short term storage.</li> <li>3. Never store in deionized water. This will diminish the life and accuracy of your combination pH electrode.</li> <li>4. Close refilling port &amp; store upright in a cool, dry place.</li> <li>5. Never allow to dry out. Rehydrating in the appropriate storage solution (see 1) for 24hrs may reconstitute the sensor. Calibrate to ensure proper functionality.</li> </ol>	<h3>Maintenance</h3> <p><i>Just as with a vehicle, maintenance depends on how it is used and how often.</i></p> <ol style="list-style-type: none"> <li>1. When there are visible signs of contaminants or your readings are inconsistent after a calibration, it's time for maintenance.</li> <li>2. Clean according to the instructions for your sensor. General tips on next page.</li> <li>3. Check pH measuring bulb for scratches, abrasions, cracks or nicks. This could cause irregular readings.</li> <li>4. Refill or exchange reference electrolyte.             <ol style="list-style-type: none"> <li>a. Empty, rinse with DI water, rinse with reference electrolyte, refill with reference electrolyte.</li> </ol> </li> <li>5. Air bubbles can cause erratic readings. It is okay to shake a sensor to remove air bubbles from within the sensor.</li> </ol> <div data-bbox="1136 1827 1380 1953" style="text-align: right;">  </div>

# Double the life of your pH electrode

## Cleaning:

It is preferable to clean the electrode chemically, since mechanical cleaning can cause irreparable damage to the measuring surface. In the event of dirt deposits on the electrode or the junction, the following cleaning processes can be performed:

- **Inorganic adhesions:** Soak the electrode in 0.1 mol/l HCl or 0.1 mol/l NaOH for several minutes. If buildup remains, the solution can gradually be heated up to 50 °C before the acid or alkali concentration are increased.
- **Organic adhesions:** Rinse the electrode with organic solvents (e.g. ethanol or acetone). The membrane can be carefully wiped with a damp, lint-free, soft cloth.
- **Proteins:** Soak the electrode in a pepsin/HCl solution for at least 1h.  
- SI Analytics cleaning solution L 5104; Order number 285138295
- **Sulfides on the ceramic junction:** Store the electrode in a thiourea/HCl solution (7.5 % in 0.1 mol/l HCl) until the discoloration on the junction has disappeared.

\*\*After cleaning, always rinse the electrode with deionized water and store it in an electrolyte solution.

## Cleaning of the reference electrode with liquid electrolyte:

- In case of dirt/particles inside the reference electrode: remove the old and refill with new electrolyte. If necessary, repeat until the dirt is removed. Heated electrolyte (about 45 °C) can also be used.
- An internal chemical cleaning is not advised, since the reference system can be irreversibly damaged.
- KCl crystals in the interior: The crystals can be dissolved by heating the electrode in a water bath at 45 °C. Then replace the electrolyte.

\*\*After cleaning, always rinse the electrode with deionized water and store it in an electrolyte solution.

## General treatment recommendations:

- Measurements in aggressive and/or hot media result in a reduction of the service life. Do not leave the electrode in these samples longer than it takes to get a stable measurement.
- When using electrodes with liquid electrolyte, the filling opening must be opened during the measurement/calibration in order to prevent a back diffusion of the sample by the electrolyte flow. The refilling opening must be closed when not in use and storing.
- \*The most important factor in obtaining the highest performance possible is in choosing the appropriate pH electrode. There are many general-use electrodes that will work very well for many applications, but if you have any questions about which pH electrode is best for your lab, feel free to contact us at [customer.focus@xylem.com](mailto:customer.focus@xylem.com).