



## FACT SHEET

# PH ELECTRODE CARE TIPS FOR IMPROVED ACCURACY AND PRECISION

pH is a fundamental criteria in wine and beer production, and critical to water quality. Optimal pH is important for microbial and chemical stability as well as taste in fermented products and water. Ensuring your pH probe is well maintained will assist in obtaining the most accurate result.

### Considerations to ensure greatest accuracy in pH measurements:

Use fresh buffers for calibration and store buffers in a cool, dry location away from direct sunlight. (Also check use-by dates).

#### 1. Run a control

Make sure that the buffers and samples to be tested are at a similar temperature before calibrating and measuring.

Stir solutions gently during measurement, by hand or with a small magnetic stirrer bar. If there's a vortex, stirring is too vigorous. A healthy, properly calibrated, electrode will give you a stable reading fairly quickly (within approximately 10 seconds). Older electrodes may take longer. It will also give you repeatable readings: answers within +/- 0.03pH units for repeated testing of the same sample.

#### 2. Reconditioning and cleaning

Electrodes not performing this well can be cleaned and reconditioned according to the manufacturer's instructions or with the following procedure:

Immerse the bulb in 0.1M HCl for 5 mins

Rinse with distilled water and place in 0.1M NaOH for 5 mins.

Rinse with distilled water and soak in storage solution or buffer for at least 30 mins.

Refill probe with saturated KCl or KCl gel (probe dependant)

Re-calibrate the electrode and test samples again. If the problem is still there, this procedure can be repeated and the electrode left to recover overnight. Alternatively, the bulb can be cleaned with a non-abrasive cream cleanser and a soft cloth, rinsed and returned to storage solution. If none of the above helps and you still can't trust the results, it may just be time to treat yourself to a new electrode!

### Refilling electrode

If the electrode is the type which needs to be filled with a reference electrolyte, check the level each time the electrode is used and top it up at least weekly when the electrode is in use. (The electrolyte is usually the same or similar to the storage solution ie. a potassium chloride solution or gel). •





Some electrodes come with a small wetting cap for long term storage. Those without can be left with the bulb immersed in a small beaker or bottle of storage solution but take care to prevent evaporation by sealing around the top of the beaker (ie with parafilm).

## **What not to do**

- Never leave the electrode in juice or wine for longer than it takes to get a stable measurement of pH. Tannins, proteins etc in the sample can build up on the membrane and cause a sluggish response. Take the measurement, then rinse the electrode immediately with distilled water and replace in storage solution.
- Don't allow your electrode to dry up. Manufacturers usually recommend storage in a potassium chloride solution (3M KCl), a colourless buffer (pH 4.0) or a combination of both for short and long term storage.

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