pH Electrode Care and Maintenance

Your pH electrode is the most sensitive component of your pH instrument. Correct calibration procedures combined with proper maintenance will provide years of reliable measurement.

Calibration

Since glass pH electrodes measure H^+ (hydrogen ion) concentration relative to their reference half-cells, they must be calibrated periodically to ensure accurate, repeatable measurements. Our wide selection of commercial pH calibration buffer sachets include solutions that are standardized against NIST-certified pH references for calibrating meters with resolution up to 0.01pH.

Although calibration against one pH reference buffer (one-point calibration) typically ensures accurate pH measurement, frequent two-point or even three-point calibrations ensure the most reliable results. Make sure your pH system includes calibration buffers for a range of pH values.

Handling

During shipment it is possible for air bubbles to move into the glass bulb. To remove air bubbles, shake down the electrode in the same manner as a clinical thermometer until the glass bulb is filled with solution.

Rinse electrodes with distilled water before and after measuring a sample. Blot the end of the electrode with lint-free paper to remove excess water. ***NOTE:*** Never wipe the electrode to remove excess water - wiping can create static charges that interfere with correct pH measurement.

Conditioning

After removing the electrode from soaking bottle or protective cap at the bottom of sensor, place the electrode in a clean container containing one of the liquids i.e. 4.0 M KCl or pH 7.0 buffer. Soak electrode for 30 minutes if left dry. ***NOTE:*** Never condition the electrode in distilled water or deionised water - long term exposure to pure water will damage the special glass membrane.

After conditioning the sensor, rinse the electrode with distilled or deionised water. The electrode is ready for calibration and measurement.

Storing

The sensor should never be stored dry. Always keep pH electrode moist. Proper pH electrode storage maximizes electrode performance and extends electrode life. It is best to store electrodes in clean containers filled with pH storage solution, EC-RE005. Do not store an electrode in distilled or deionised water - this will cause ions to leach out of the glass bulb and render your electrode useless.

Cleaning

The solution used to clean pH electrode depends on the presence of possible contaminants. Mechanically intact electrodes may show slow response due to coating or clogging. Use the guide below to choose the appropriate cleaning solution options:-

- For general cleaning: Soak the pH electrode in 0.1 M HCl or 0.1 M HNO_3 for 20 minutes. Rinse well in tap water before use.
- For removing stubborn deposits and bacteria: Soak the pH electrode in a 1:10 dilution of household laundry bleach for 10 minutes. Rinse thoroughly before use.
- For removal of oil and grease: Rinse the pH electrode in mild detergent or methyl alcohol. Wash

in water before use.

- For removal of protein deposits: Soak the pH electrode in 1% pepsin in 0.1m HCl (EC-DPC-BT) for 5 minutes. Rinse well in water before use.

CAUTION: Proper eyewear and hand gloves must be used when handling strong chemicals.

After any of the cleaning procedures, it is good practice to thoroughly rinse the pH electrode with deionised water, drain and refill the reference chamber if necessary before use.