



Operating instructions for  
pH, Reference &  
ORP (REDOX) Electrodes.

## Operating instructions

All EDT direction electrodes and sensors are shipped with the measuring tip covered with a soaker teat or bottle filled with the appropriate soaking solution.

Prior to use remove the soaker teat from the electrode and keep in a safe place for future storage.

If there is a white crystalline precipitate around the teat or on the electrode shaft rinse off with tap water.

After rinsing the sensing end with deionised water, the electrode is ready for use.

**During shipment it is possible for air bubbles to move into the glass bulb. This can lead to instability in the sensor reading.**

**To remove the air, shake down the electrode in the same manner as a clinical thermometer until the glass bulb is filled with solution.**

### Electrode Storage

Glass pH electrode half cells should be stored in pH4 buffer solution for both overnight and long term storage.

Reference and combination electrodes including ORP should be stored in 3.0 Molar KCl (Potassium Chloride) solution.

Double Junction reference electrodes should be stored in the outer junction solution being used in the outer electrode chamber.

## Electrode Care and Cleaning

Slow response and non-reproducible measurements are signs that the electrodes tip has become coated or the reference junction blocked.

## Electrode Care and Cleaning - cont.

If the glass becomes coated or clogged the time taken to make a measurement will increase. The standard measuring time for pH is 95% of the change in reading will occur within around 10 seconds.

Rinsing with Methyl Alcohol (Methanol) should remove the coating and restore the speed of response.

ORP/Redox electrode tips (Platinum rods or discs) may need additional cleaning from time to time with Crocus (mild abrasive) paper.

If the Methyl Alcohol rinse does not restore the response soak the electrode tip in 0.1 Molar HCl (Hydrochloric acid) for five minutes. Remove and then rinse with water and soak the tip in 0.1M NaOH (Sodium Hydroxide)

solution for five minutes. Remove, rinse again and soak in pH4.0 buffer solution for 10 minutes before use.

If a pH electrode is continuously used above 60°C the outer layer of the pH glass loses its sensitivity. This can be restored as follows. Please treat this procedure as a last resort:

1. Prepare a 10% solution of Ammonium bifluoride\*
2. Immerse electrode for 10-20 seconds
3. Rinse in water
4. Immerse in 5 Molar HCl (Hydrochloric acid)for five minutes to remove any excess bifluoride.
5. Rinse again in water
6. Soak in pH4.0 buffer for one hour before use.

**\*This is a hazardous chemical and should only be handled by a qualified chemist.**

**Note: All pH electrodes respond best after being stored in slightly acidic solutions such as pH 4 Buffer.**

Reference electrodes use a liquid junction for electrical contact to the solution being measured.If the Junction becomes blocked or coated the reference becomes erratic and the electrode potential usually rises. Cleaning with Methyl Alcohol (Methanol) or 0.1 Molar HCl (Hydrochloric acid) periodically will enhance the electrodes performance.

Storage should be in slightly acidic 3 Molar KCL or in the filling solution being used in that particular reference electrode.

### Combination pH Electrodes

These are a combination of a pH glass electrode and a reference electrode in the same body. These probes

should be cleaned as above and stored in 3 Molar KCl (Potassium Chloride) slightly acidified.

### Filling solutions:

Note; Certain pH combination electrodes are filled with KCl gel. These electrodes do not require filling and have no filling hole on the side of the electrode.

Calomel Reference Electrodes. Use Saturated KCl. **EDT Catalogue Number E8064**

Ag/AgCl Reference electrodes: Use Saturated KCl saturated with Ag/Cl. **EDT Cat. No. E8067**

Combination pH and ORP electrodes: Use Saturated KCl saturated with Ag/AgCl. **EDT Cat. No. E8067**

### Filling Instructions

Slide down the plastic ring to reveal the side fill hole. Using a small syringe or pipette fill the outer part of the electrode (via the hole) with the appropriate solution until the filling level is just below the hole. Slide the plastic ring back to cover the hole during storage. The hole should be uncovered during prolonged use.