

## **HOW TO USE YOUR EPOXY BODY, SEALED REFERENCE COMBINATION pH ELECTRODE**

Sensorex epoxy body combination electrodes afford a unique ease of use. Because the pH bulb is recessed inside the polymer body, the electrode can be allowed to rest against the bottom of a beaker without damaging the glass bulb. In many measurements this recessed bulb design eliminates the need for electrode holders and the electrode actually can be used as a stirring rod. The sealed reference design eliminates the need to add filling solutions, minimizes reference dryout and allows the electrode to be used in up to 100 psig systems without the need for external pressurization.

### **HELPFUL OPERATING TECHNIQUES**

1. The electrode is shipped in a plastic bottle containing a solution of 4 buffer and potassium chloride. The electrode should remain in the bottle until it is used. If the electrode is used infrequently the bottle and its solution should be saved and the electrode stored in it (see the Electrode Storage Section).
2. During shipment the air bubble in the electrode's stem may move into the bulb area. If bubbles are seen in the bulb area, hold the electrode by its top cap and shake downwards as is done with a clinical thermometer.
3. Vigorously stir the electrode in the sample, buffer or rinse solution. This action will bring solution to the electrode's surface more quickly and improve speed of response.
4. After exposure to a sample, buffer or rinse solution, shake the electrode with a snap motion to remove residual drops of solution. This action will minimize contamination from carryover.
5. As a rinse solution, use a part of the next sample or buffer which is to be measured. This action also will minimize contamination from carryover.
6. When calibrating, use a buffer close in value to that expected from the sample. This action will minimize span errors.
7. Keep buffers and samples at the same temperature. This action will eliminate the need to correct values for temperature effects.
8. pH readings stabilize faster in some solutions than others; allow time for the reading to stabilize. In general, buffers provide stable readings in several seconds (tris buffers take somewhat longer) while samples usually take longer times.
9. Keep in mind that all pH electrodes age with time. Aging is characterized by shortened span and slower speed of response. If the meter has a manual or microprocessor slope (span) control, the control can be adjusted to compensate for electrode span errors (but will not affect the speed of response). Aging is best detected by calibrating the electrode in, for example, 7 buffer, then rinsing and placing the electrode in 4 buffer. As a rule, if the span is 10% or more in error (a reading of 4.3 or higher for this example) the electrode should be cleaned and retested (see the Electrode Cleaning Section) or reconditioned (see the Reconditioning Section). If performance is not restored the electrode should be replaced.

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