ORP (REDOX) ELECTRODE CALIBRATION PROCEDURE

The performance of an ORP electrode can be determined by use of the ORP Calibration Kit and the procedures given below. The Calibration Kit can be used for 30 calibrations and consists of the following items:

pH 4 Buffer
pH 7 Buffer
4 oz beakers
wood applicators
20 gram bottle quinhydrone

Proceed as follows:

1. Fill a beaker with de-ionized or distilled water to use for rinsing the electrode
2. Fill a second beaker to the 1/2 oz mark with pH 7 buffer

2.1 To this buffer add the amount of quinhydrone that stays on about 1/4 inch (6 mm) of the wood applicator (see sketch).

2.2 Use the wood applicator to stir the quinhydrone into the buffer

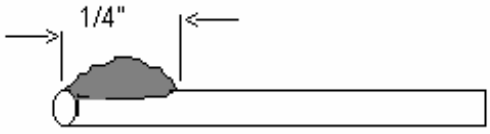
2.3 A small amount of quinhydrone MUST remain un-dissolved; if all the quinhydrone dissolves add a small amount and stir. Repeat as necessary until a small amount of quinhydrone remains un-dissolved

3. Fill a third beaker to the 1/2 oz mark with pH 4 buffer

3.1 To this buffer add the amount of quinhydrone that stays on about 1/4 inch (6 mm) of the wood applicator (see sketch)

3.2 Use the wood applicator to stir the quinhydrone into the buffer

3.3 A small amount of quinhydrone MUST remain un-dissolved; if all the quinhydrone dissolves add a small amount and stir. Repeat as necessary until a small amount of quinhydrone remains un-dissolved



Wood Applicator with Quinhydrone
From Steps 2 and 3

4. Rinse the ORP electrode and pat it dry with a soft tissue

4.1 Put it in the beaker filled with the 7 buffer/quinhydrone mixture, stir the electrode gently and let it rest against the side of the beaker

4.2 Allow the reading to stabilize 30 to 60 seconds typically and note the reading

4.3 The reading should be within about plus or minus 15 mv from the values in the table below

5. Rinse the ORP electrode and pat it dry with a soft tissue

5.1 Put it in the beaker filled with the 4 buffer/quinhydrone mixture, stir the electrode gently and let it rest against the side of the beaker

5.2 Allow the reading to stabilize 30 to 60 seconds typically and note the reading.

5.3 The reading should be between +170 mV and +185 mV above the reading in the 7 buffer mixture (step 4). **FOR EXAMPLE,** if the reading from step 4 is +90 mV then the reading from this step should be between +260 mV (90 + 170) and +275 mV (90+185).

5.4 With time and/or use, the value in the 7 buffer (step 4) may change. However, the +170 mV to +185 mV change in reading between 7 and 4 buffers (steps 4 and 5) should remain the same. Obtaining this reading means that the electrode has good span and should be able to be calibrated along with the meter to reflect the proper residual chlorine concentration or ORP (REDOX) potential

6. If a short span is found-less than a +170 mV change between the 7 and 4 buffers (steps 4 and 5) - the platinum measuring surface may be coated. Remove the coating by one of the following means

6.1 Wipe the surface clean with a soft cloth or tissue

6.2 Soak the electrode in a chemical known to dissolve the suspected coating material.

6.3 As a last resort, very gently polish the surface with 600 grade wet silicone carbide paper

6.4 After cleaning, let the electrode soak in one of the calibration solution for about five minutes before re-calibrating

7. The buffer/quinhydrone mixture should be freshly made each time the ORP electrodes are calibrated. Do not store the mixture or use after 2 hours as their values change with time

READINGS IN pH 7 BUFFER/QUINHYDRONE MIXTURE

Temperature	**Reading**
20°C (68°F)	+96 mV
25° C (77°F)	+90 mV
30° C (86°F)	+83 mV