Accumet Excel XL 25 pH Meter Calibration and Use

1. EQUIPMENT AND SUPPLIES

   1.1. Accumet Excel XL 25 (S/N XL94005930)

   1.2. Combination pH Electrode

      1.2.1. Keep electrode stored in pH 4 buffer solution. The fill solution level should not fall more than 0.25" below the cap. If it is below this level, fill with KCl before use.

   1.3. Automatic Temperature Compensation (ATC) probe

   1.4. Buffer solution, pH 7, Fisher Scientific

   1.5. Buffer solution, pH 4, Fisher Scientific

   1.6. Secondary buffer solution, pH 7, Orion

   1.7. Small plastic cups

2. METER CALIBRATION

   2.1. Press the black start up button and hold for 5 seconds. Check that the fill hole on the side of the pH probe is exposed. If not, turn the plastic sleeve on the probe to expose the fill hole. Make sure that there is an appropriate amount of fill solution. Touch the Standardize icon then press **Clear** to clear the previous calibration values and press **OK**.

   2.2. Thoroughly rinse the electrode with deionized water and place into a cup containing the Fisher pH 7 buffer and stir. The meter will automatically recognize the buffer. When the reading is stable, "STABLE" appears on the screen. Touch **Confirm** to standardize the buffer and accept this reading as the first calibration point. Input the batch number of the Fisher pH 7 buffer in the pH meter log under "pH 7 Buffer". The meter will return to the pH measurement screen. Touch **Standardize** on the pH measure screen to access the standardization screen again for the next calibration point.

   2.3. Repeat Step 2.2 for the Fisher pH 4 buffer. Input the batch number of the Fisher pH 4 buffer in the pH meter log under "pH 4 Buffer". Once the reading is stable and accepted as the second calibration point, the "Buffer" section should display both pH 4, 7, and the % slope between the two readings. Input the % slope into the pH meter log under "Slope". If the calibration passes (% slope within 90-102%), the meter will display "Last Standardization time/date".

   Repeat Steps 2.1-2.3 if calibration fails.

   2.4. Touch the measure icon and take a final reading with the Orion pH 7 buffer.

   If it does not read at a pH of 6.9-7.1, repeat Steps 2.1-2.4. If it is within range, record the value in the pH meter log under "Calibration Verification". Additionally, record

The OFFICIAL COPY is the on-line version. All other copies are considered unofficial and uncontrolled.

the batch number of the Orion pH 7 buffer under "Secondary pH 7 Buffer" in the pH meter log.

2.5. Record the calibration values in the *pH_Meter_Log* in LIMS **Laboratory / Technical / Laboratory Logbook**.

3. pH MEASUREMENT

3.1. Make sure the meter is in pH Measure mode. If not, press the **Measure** button. Verify that the fill hole on the side of the probe is exposed before reading. Rinse the ATC probe and electrode, place into the solution to be read, and stir. The ATC probe does not need to be used if the solution is at room temperature.

3.2. When the reading stabilizes, and "STABLE" displays on the screen, record the pH.

3.3. To shut down, close applications and log off. Bring up the task bar by tapping anywhere along the bottom of the screen. Tap the **Start** button that appears then tap the **Shutdown** button then click **Yes**. Turn the plastic sleeve on the pH probe to close the fill hole and return the probe to storage in pH 4 buffer solution.

4. REFERENCES

4.1. Standard Methods 4500-H^+-2000

4.2. Accumet Excel XL series user manual.

APPENDIX OF CHANGES

07/15/2009 Updated to new SOP style. Added References section.

06/26/2014 Updated to reflect new pH meter.

01/23/2015 Formatted for 508 compliance.

03/15/2017 Added remarks regarding the pH probe fill hole and updated references.

03/13/2018 Added remarks regarding the pH probe fill hole being exposed before taking a measurement.

03/26/2020 Updated necessary measurements for LIMs.

03/09/2022 Updated to include a "calibration verification" step and rewrote the "initial pH" step to reflect the standard methods for pH meter calibration.

The OFFICIAL COPY is the on-line version. All other copies are considered unofficial and uncontrolled.