

Pawkit Water Activity Meter Standard Operating Procedure

I. Objective

To establish guidelines for proper Pawkit measurement procedures in order to ensure accurate and precise water activity measurements.

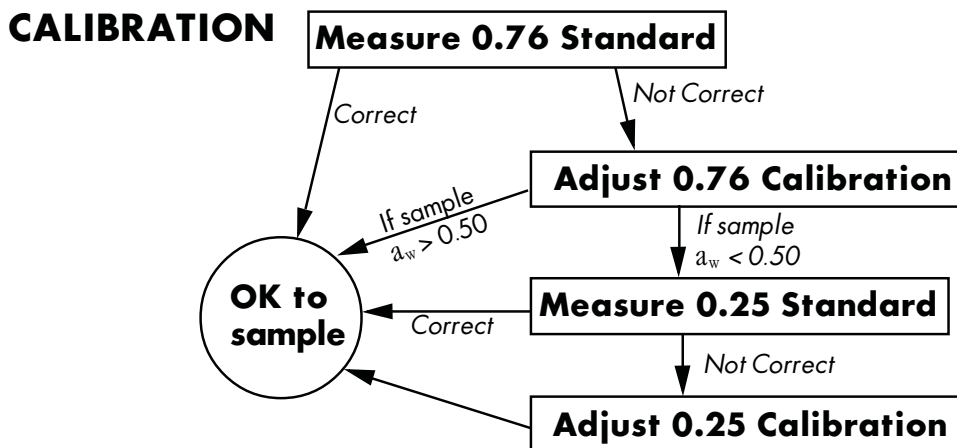
Performance verification should be conducted before sampling at least once per day or shift; or if readings become unstable.

II. Setup

A. Location

1. Place Pawkit in a relatively temperature-stable environment. This location should be well away from air conditioner and heater vents, open windows, outside doors, refrigerator exhausts, or other items that may cause rapid temperature fluctuation.

III. Verification of Calibration



This flowchart is a graphical representation of the directions given below for verification of calibration.

Verify the calibration of the Pawkit with the following verification salt standards at known water activities: 6.0 molal NaCl (0.760 a_w) and 13.41 molal LiCl (0.250 a_w).

Verifying Calibration

1. Open the Pawkit chamber by pulling down on the metal tab until it snaps open. Place Pawkit on a level surface. Press the left button (**I**) to turn on the Pawkit.
2. Use the 0.760a_w NaCl verification standard. Make sure that your standard is at ambient temperature before you load it into the Pawkit.

Note: The 0.76 standard adjustment adjusts the calibration intercept, while the 0.25 adjusts the slope. Changes in the intercept are more likely to occur than changes in the slope, so the 0.76 verification check is the most important and should be done more frequently.

3. Empty the whole vial of verification standard into a sample cup and insert it in the Pawkit's chamber. Carefully close the Pawkit by pressing down on the front end of the case to secure the cup inside the instrument. DO NOT lift or move the instrument. You risk contaminating the chamber and damaging the sensors.
4. Press button (**I**) to begin the water activity measurement. The LCD display will be reset to 0.00a_w. During the measurement the “beams” of the sunburst to the right of the water activity value will move from left to right. The water activity value and temperature will be updated every 30 seconds.
5. After 5 minutes, the Pawkit will beep 5 times and display the final water activity value. If it is reading the correct water activity ± 0.02 , your Pawkit needs no calibration. If not, take a second reading. After the second reading, note the water activity value shown. If it is reading the correct water activity ± 0.02 , your Pawkit needs no calibration. If it is not reading correctly, proceed to the Adjusting Calibration section.

Adjusting Calibration

1. Once the reading is finished, the right button (**II**) will be active. Press it once to enter the calibration mode. The numbers in the upper right corner indicate the a_w measurement that your Pawkit just read. Pressing button (**II**) scrolls through the adjustment selections: **u76**, **d76**, **u25**, **d25**, and **Sto**. The ‘u’ and ‘d’ before each number stand for ‘up’ and ‘down’ adjustment for each standard. The numbers (76 and 25) correspond to the water activity of the calibration standard (0.76 and 0.25a_w).
2. If your NaCl reading is lower than it should be, press the **II** button to scroll to “u76” (“adjust up for 0.76 standard”). If it is higher than it should be, scroll to “d76” (“adjust down for 0.76 standard”).
3. Once you have scrolled to the proper screen for calibration adjustment, press the **I** button to adjust the value to what it should be. Each time you press the **I** button, the value in the corner will change by an increment of 0.01.

4. When you have it set to the correct value, press the **II** button to scroll until “**Sto**” appears in the lower right corner, then press **I**. This will store the new value you have set. You will then return to the main screen and begin a new measurement.

Note: If you do not press “Sto” no change will be made to the calibration of the Pawkit.

5. If the samples to be tested have a water activity $>0.50a_w$ it is not necessary to perform any additional checks, so you may proceed to the Sampling Procedure section. If the samples to be tested have a water activity $<0.50a_w$ then repeat the above process with the $0.25a_w$ LiCl standard.
6. If, after adjusting for linear offset and cleaning the chamber, you still are getting incorrect readings when reading verification standards, contact Decagon at 509 332-2756 (1-800-755-2751 in US and Canada) for further instructions.

IV. Sampling Procedure

1. Make sure that the sample to be measured is homogeneous.
2. Place the sample in a disposable sample cup, completely covering the bottom of the cup, if possible. Make sure that the rim and outside of the sample cup are clean.
3. **Do not fill the sample cup more than half full. Overfilled cups will contaminate the sensors in the sampling chamber!**
4. Insert the sample cup into the Pawkit’s chamber. Close the Pawkit by pressing down on the front end of the case to secure the cup inside the instrument.
5. Press button (**I**) to begin the water activity measurement.
6. The water activity value and temperature will be updated every 30 seconds. After 5 minutes, the Pawkit will beep 5 times and display the final water activity value. At this point you can either restart the measurement by pressing button **I** again, or you can record the displayed value and take the sample cup out.
7. Remove sample from the Pawkit when finished sampling.
Note: Samples left inside the Pawkit for extended periods of time can contribute to contamination of the chamber.
8. Pawkit makes its most accurate measurements when the sample and instrument temperatures are within 1°C. If your sample is colder than the ambient temperature of the Pawkit, the accuracy of you reading after 5 minutes may be questionable. A second water activity measurement may be necessary as the sample warms. Samples too warm will cause the thermometer icon on the left of the screen to appear and the instrument will beep. Remove the sample, place the cup lid on the sample and wait until it has reached ambient temperature before attempting to read again.