

The Use and Care of a pH Meter

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Before all else, condition your probe!

When you first get your pH meter, the probe will most likely be dry and it will need to be conditioned before it can be used reliably. This is simply done by removing the protective cap that covers the probe, filling the cap with a pH storage solution and replacing the cap so that the probe can soak in the storage solution for a minimum of 4 hours. Once the probe has been conditioned, you should keep the cap filled with the storage solution for the rest of your probe's life*.

**Note: The probe on a pH meter is usually guaranteed for 6 months, but if you take care of your meter, i.e., keep it always topped-up with storage solution and do not exceed the heat limitations for your individual instrument, you should reasonably expect to get about a year's use out of it.*

Using the pH meter

-Calibration:

Once the probe has been properly conditioned, you will need to calibrate it against a known set of values before it will yield accurate readings. This is done by going through the probe's calibration protocols (found in the directions that came with your meter!...) and using a set of calibrating solutions that have a known pH of 7.01 and 4.01, respectively. In general, once you have entered the calibration mode, the meter will first ask you to place it in one of these solutions (usually the 7.01). Then, once it has locked this value in, it will ask you to place it in the other solution (the 4.01). When it has completed the cycle, it will then signal that it has been calibrated and it is now ready to be used.

-Taking an Accurate Reading, or “The Benefits of “Double-Dipping”:

Once you have successfully calibrated your meter, it should give you accurate results providing you follow some basic guidelines. PH meters are very sensitive and you need to take care not to contaminate your samples, or you will get inaccurate results. A good way to do this is to always use two sets of samples for each sample being tested, i.e., an “A” and a “B”. The first one, “A”, just serves as a rinse to wash the probe with the sample before being placed directly (with no rinsing in between) into the second sample, “B”. By rinsing the probe with some of the sample before you test it, you thereby lower the risk of contaminating it with a previously tested sample or even with the rinse water itself. This then leads to a more accurate reading.

-Note: The use of an “A” and a “B” for each sample being tested is not only important for the accurate testing of samples, it is also equally important during the initial calibration of the meter itself. The following section illustrates this in more detail.

A Suggested Guideline to Using a pH Meter

First, you prepare your calibration solutions:

Using 4 small glasses, fill 2 of them (an “A” and a “B”) with the 7.01 solution so that:

- “A” has about 1/8” of the solution in it (just enough to rinse off the probe)
- “B” has enough solution in it to cover the bulb of the probe completely, about 1/4”, or so (this portion will be used to calibrate the meter).
- Using the remaining 2 glasses, repeat the above two steps using the 4.01 solution.

Next, you prepare the meter:

Remove the cap from the probe, place it in an upright position so that the storage solution doesn’t spill out. Next, rinse the probe in clean, running water to remove the storage solution (about 15 seconds). Finally, wipe-off the excess water from the meter with a clean, dry paper towel, taking care not to touch the glass probe itself. (You can, however, sharply blow on the glass probe to get the water off of it -much like you blow out the candles on a birthday cake).

Then, you calibrate the meter:

Following the directions that came with the meter, enter the calibration mode:

- When it asks for the 7.01 solution, dip it briefly into the “A” portion of the 7.01 solution, rinse it around, then transfer the meter directly into the “B” portion of the 7.01 solution. Leave it in, gently stirring every couple of seconds until the meter accepts the 7.01 and then asks you for the next solution (the 4.01).
- Rinse the probe in clean, running water for another 15 seconds. Again, wipe off the excess water with a dry, clean paper towel, taking care not to touch the glass probe itself. (Remember that you can also blow the excess water off of the glass probe with sharp breaths).
- Since the meter is now requesting the 4.01 solution, dip it briefly into the “A” portion of the 4.01 solution, rinse it around, then transfer the meter directly into the “B” portion of the 4.01 solution. Leave it in, gently stirring every couple of seconds until the meter accepts the 4.01 solution. The meter will then end the calibration mode, and should go back into the normal user mode (please consult your directions for the specifics on your exact meter). Your pH meter is now properly calibrated and is ready to be used*.

****Important to Note:*** After you calibrate the meter, for each sample you test after that, you will need to follow the same rinse and dry procedures mentioned above before you test it, and it is highly recommended that you should also follow the “double-dip” (“A” and “B”) system for the most accurate readings possible.

Finally, you test your sample:

-Using 2 small glasses, (an “A” and a “B”), fill them each with some of the sample to be tested so that:

-“A” has about 1/8” of the sample in it (just enough to rinse off the probe)

-“B” has enough sample in it to cover the bulb of the probe completely, about 1/4”, or so (this portion will be used to test the sample).

-If you have just calibrated the probe, rinse and dry it.

-Next, you dip the meter briefly into the “A” portion of the sample to be tested, rinse it around, then transfer the meter directly into the “B” portion of the sample. Leave it in, gently stirring every couple of seconds until the meter stabilizes (about 30 seconds, or so). Finally, you just read the meter and note the pH.

-When you are done, rinse and dry the probe, and replace the protective cap on the meter (making sure it is full of the storage solution).