



Milwaukee Instruments pH General Information Sheet

The pH value of a nutrient solution is a measure of the acidity or alkalinity of a solution. A basic, neutral solution is numerically equal to 7. The solution gets more acidic as the numbers decrease and more alkaline as the numbers increase. The pH scale ranges from 0 pH (very acidic) to 14 pH (highly alkaline). Pure water has a pH of 7, indicating that it is neither alkaline nor acidic, but neutral

Different nutrients are absorbed at different pH levels. Most plants need a pH level between 5.8 and 6.5 for optimum nutrient uptake. If the pH is too low, nutrients are bound up and the roots are unable to absorb them. If the pH is too high, your plants may succumb to toxic salt buildup, limiting the ability of the roots to intake water and food.

Your pH will fluctuate and should be monitored regularly. pH meters come in various degrees of sophistication and price. Some are handheld and need to be turned on each time they are used. They cost less but need more frequent calibration to keep them reading accurately. Other pH meters, such as the Milwaukee MC120 & MC110 are continuous reading models which are always on and should be mounted next to the reservoir.

FAQ on PH Meters and Testers

Q. Why is it important to keep my pH probe wet?

A. All pH probes use a cloth junction in the construction of the probe. This cloth is part of the diagnostic process in reading the pH. If the cloth becomes dry the unit will not be able to read.

Q. What is the difference between “Single Point” and “Two Point” calibration units in accuracy?

A. Single point is almost always done at the 7.0 position. Single point is fine as long as the area you are testing is within the neutral zone of 6.0 to 8.0 however 90% of everything we test in agriculture is acidic and for accuracy you need to have two point calibration. That is why most Milwaukee Instruments come with a 2 point calibration procedure and most of our units are provided with both 7.01 and 4.01 calibration solution.

Q. Why is it important to have a full range pH meter (0 to 14) when my test range is (4 to 10) ?

A. If a pH meter has a limited range such as 4 to 10 almost always the closer you get to the end of the range the less accurate your reading will be. Most of these limited range meters either cannot be calibrated or are single point calibrated at 7.0 & they are not as accurate as full range meters

Q. How much effect does temperature of the solution have on pH accuracy?

A. Most pH meters are set for a optimum temperature of 77 F and have very little degradation between 55 F and 85 F

Q. How long will my pH probe last?

A. Average life of a standard electrode (SE220 or MA911B/2) is from 10 to 14 months if the probe is kept wet in the proper storage solution and kept clean

Q. How can I test the life left in my probe?

A. A simple test can be performed using Windex glass cleaner with ammonia and white distilled vinegar. The procedure is as follows: Turn your meter or tester on and place the probe in white distilled vinegar which is acidic (2.4pH) and the reading will be from 2.3 to 2.5 but must be below 3.0 then go to the Windex with ammonia which is alkaline. Your display should move very quickly up the scale to 10.5 – 11.2 but must go above 10.0 If the probe slowly moves up the scale then it is time to consider replacing it. If it does not go below 3.0 pH in vinegar and/or above the 10.0 pH in Windex then probe is dead.

Q. Do I have to calibrate before each use?

A. No, most units hold calibration very well. If you are using your unit every day then check it once a week. If you get a reading that is above or below what you were expecting then check the calibration at that point and retest your solution.

Q. There are many different brands of pH calibration solution to choose from, can I use one made from a company other than Milwaukee Instruments?

A. Yes and No: All manufacturers of meters and testers will tell you to use their specific calibration solution. That being said then Yes; most meter and tester manufacturers use the same calibration solution mix and quality control for their own meters so a 7.01 or 4.01 for Milwaukee and a 7.01 or 4.01 for Oakton or Hanna are close enough to the same quality to be interchangeable. No, in that companies that DO NOT manufacture their own line of meters and testers do not understand and do not have the quality control necessary for production of the correct calibration solution. As a manufacturer, the use of the wrong calibration solution by the public is one of our biggest problems.

Q. How do I know what calibration solution to use with my meter?

A. You can find a Calibration and Probe reference chart for all of our units under the Technical Tips tab on our web site at www.milwaukeeinstruments.com

Q. Can I reuse my pH starter calibration solution packets that come with my new unit .

A. No, evaporation and contamination quickly change the mix because of the small volume.

Q. What are the symptoms of weak batteries?

A. For the end user to be assured that the readings are accurate and not worry about battery strength all Milwaukee Instruments units are designed to shut down when the batteries become too weak to give an accurate reading.

Q. My pH meter has a little mold or dirt on the white strip and bulb will that affect the performance?

A. Yes, you can clean the probe in MA9016 pH cleaning solution or white distilled vinegar: Put the probe in full strength for 10 min. stirring gently then rinse well in tap water and let sit in Storage solution or 4.0/7.0 50-50 mix or Bottle Drinking Water (RO water) for 2 hours and then recalibrate.



**Milwaukee Instruments
2950 Business Park Drive
Rocky Mount, NC 27804**

Main Phone # 252-443-3630 * US Only Toll Free: 877-283-7837 * Fax: 252-443-1937
E-Mail: sales@milwaukeeinstruments.com * Web Address -- www.milwaukeeinstruments.com
