



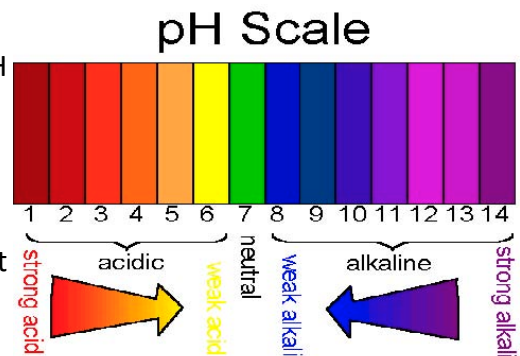
## Purchasing and using a pH meter

### What is pH and why do I need to measure it?

pH measures the amount of **acidity** or **alkalinity** in a food or solution using a numerical scale between 1 and 14. A pH value of 1 is most acidic, a pH value of 7 is neutral, and values above 7 are referred to as basic or alkaline.

**Acidified** foods have a pH value less than or equal to 4.6.

The proper pH of a canned food product can be critical to ensuring the safety of the product. It is very important that pH testing be done correctly and accurately. Paper Strips are NOT accurate enough to measure acidity of home-processed foods.



### How is pH measured?



As a processor of acidified foods, you will be required to monitor the pH of the product that you produce. A pH meter measures the amount of hydrogen-ion (acid) in solution using a glass electrode immersed in the solution. If you are canning acidified foods, accurately monitoring and recording the product pH is key to knowing that you are selling a safe product.

### What is equilibrium pH?



**Equilibrium pH** is the pH of a food product after the added acid has reached throughout the food; the pH of the acid brine and the food have equilibrated. When you monitor pH as part of process monitoring, it is the equilibrium pH that you are measuring. For a proper pH reading, you should test the pH of the product roughly 24 hours after processing, once the jars have cooled to room temperature and stabilized. Do not take the pH of a product just before or right after canning because it will not be an accurate measure of the equilibrium pH.

### What should I look for if I need to purchase a pH meter?

You are required to check your product pH with a meter and there are several things to consider.

Accuracy is listed as a range of +0.XX pH units. This means that the meter may read so many pH units above or below the actual pH of the product. Purchase a pH meter with an accuracy of

+0.02 units or better. For instance, a pH meter with an accuracy of +0.01 is a good choice.

**Calibration.** All pH meters must be calibrated (checked against a known standard) to assure accuracy. Standards are colored liquids of known pH. Purchase a meter that uses at least a 2-point calibration; for acidified foods you will calibrate your meter with pH 4.0 and 7.0 buffers.

**Electrode.** The electrode is the part of the instrument that is immersed in solution. When considering which pH meter to purchase, consider the cost of replacement electrodes. Some electrodes have special non-clog tips and these may be useful if you will be measuring the pH of foods that are not easily blended.

**Temperature.** pH readings are affected by temperature. In order to get an accurate reading, the pH meter must be calibrated at the same temperature as the samples being tested. More expensive meters will compensate for variations in sample temperature (too warm or too cold). Calibrate your pH meter just before you monitor product pH, and test the pH of room-temperature samples (after equilibrium pH has been reached), you do not necessarily need to purchase a meter with temperature compensation.

### **Testing the Equilibrium pH of Pickles**

**1. Open one of your pickles once it has cooled, usually 12 to 24 hours after processing.** You should sample each batch. Heat processing will drive the acid into your food product; sampling after processing (and cooling) will give you an accurate reading of the equilibrium pH.

**2. For solid products like pickles you will have to do some sample preparation before measuring pH.**

a) **Using a colander, strain the solids and drain out the liquid from the jar. Retain the solids and Rinse** the solids with **distilled water**. Place the strained **solids** into a blender.

b) **Blend the solids, adding distilled water if necessary, to produce a slurry.** Added distilled water will not change the pH of the product and will allow for effective blending. You can purchase distilled water at many grocery stores or drug stores.

**3. Use a calibrated pH meter to measure pH.**

The pH meter must be calibrated using a 2-point calibration with pH 4.0 and 7.0 buffers. The pH meter must be calibrated each day that you use it

**4. Record the results in your batch log. The pickles must have an equilibrium pH value of 4.6 or lower.**