

## Measuring pH in Yogurt Production

Yogurt is a popular dairy product made from concentrated milk fermentation. The quality of the product depends on production control of lactic acid formed by fermentation. Lactic acid provides the tart flavor and the destabilization of milk protein forms the gel structure. pH measurement monitors lactic acid production and aids in the quality control of yogurt's ingredients.

The production of yogurt starts by selecting and blending the correct ingredients, like milk concentrate and other dairy products, thickening agents, sweeteners and fruit. These ingredients add the correct solids, flavor and viscosity. The blend of ingredients is homogenized at high pressures to prevent fat separation and cause solid dispersion. Next, the temperature is raised to destroy harmful microorganisms and restructure protein to help with the viscosity. After cooling, the starter culture, which contains a particular lactic fermentation bacteria, is added to the mix. Incubation then takes between 4 and 11 hours.

During fermentation, lactose (milk sugar) converts to lactic acid, decreasing the pH values to a range of 4.25 to 4.5. Bacterial action is stopped by rapid cooling at the right lactic acid level. pH meters are the best instrumentation to determine the completion time of fermentation. Incorrect pH levels can lead to discoloration, excessive free whey and excess or insufficient tartness.

### TESTING TIPS

Perform the test on sample by putting the probe in the sample, gently stirring for a few moments to be sure no air bubble is trapped on the sensor surface.

Rinse probe with a jet of distilled or deionized water from a right angle squirt bottle. Point the stream right at the sensor to effectively remove any sample left on the probe.

Protein is the biggest single problem in pH testing of dairy applications. The best approach is a 3-4 minute soak in a 10:1 dilution of water to household bleach. **DO NOT SOAK FOR EXTENDED PERIODS IN BLEACH SOLUTIONS OR DAMAGE TO THE PROBE MAY OCCUR.** Rinse well with protein removal solution, then recalibrate. It is not necessary to use the bleach cleaning solution unless response time slows.

The [EcoScan pH5/6](#) Palm-top meter and [Waterproof CyberScan pH300/310](#) Portable meter will be the ideal tool for measuring pH in yogurt-making.