BVPPH Newsletter to our Food Establishments

BVPPH – Blackstone Valley Partnership for Public Health
Representing the Towns of Blackstone, Douglas, Hopedale, Mendon, Millville, Northbridge, Upton and Uxbridge
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Dear Newsletter Recipient,

Welcome to the 3rd Quarterly Newsletter from the Blackstone Valley Partnership for Public Health for 2024! This newsletter will focus on a much more focused subject: caring for your kitchen's probe thermometer.

Thermometer Basics

Thermometers come in multiple varieties. The most common are the ambient air thermometers, which can roughly tell the temperature of the air in a fridge or warmer. There are also infrared thermometers, which can measure the temperature at the surface of the food. But the most precise are what are colloquially called "probe thermometers." These too have their own subcategories, which we'll touch on briefly, but they are your most important tool as a food manager. The probe thermometer is typically used to measure internal cooking temperature, the temperature of cold or hot-held food, cooling temperature, and any temperatures that might be added to a temperature log. Regardless of what thermometer type you use, a thermometer used in a kitchen should be able to measure a broad range of temperatures. Typically, anywhere from 0 F to higher than 212 F is sufficient.

Types of Probes: Largely speaking, probe thermometers are divided into two types – bimetallic stem thermometers, and thermocouples (or thermistors).

Bimetallic stem thermometers tend to be cheaper and more readily available. These thermometers are "analog" devices, in that they do not have a digital display. Bimetallic stems have the advantage of being simple to calibrate and easy to replace when broken. However, they can only measure thicker cuts of food, as around a third to half of the stem must be inserted into the food to detect its temperature correctly.

Thermocouples/thermistors are digital devices. They tend to have smaller sensors than bimetallic stems, be more reliable and consistent, and their digital displays are easier to read. However, while a bimetallic stem can be easily re-calibrated with simple tools, some thermocouples cannot be re-calibrated at all, and must be serviced by the manufacturer. Consult the user manual of your device to learn more about how to adjust its calibration.

Thermocouples can come in several varieties based on the nature of their probe. Some are immersion probes and work particularly well when inserted long-term into liquids. Others are air probes and can measure the ambient air temperature with much greater precision than the ordinary ambient air thermometers used inside a fridge. Still others have flat sensors that are used to measure the temperature of a stovetop to make sure it's working properly. But the one we will be paying attention to most is the penetration probe, which is designed to be stuck into a food item to measure its internal temperature.

Using a Thermometer: Probe thermometers must be inserted into food items to get a measurement of their internal temperature. The type of thermometer determines how large the sensor is, and therefore how thin the food item they can reliably measure must be. Typically, the probe should be inserted into the thickest part of the food, and you must make sure the entire sensor is inserted to get an accurate reading. At least one other measurement at different parts of the food must be taken, to ensure that the internal temperature is evenly distributed.

A thermometer should be cleaned between uses to avoid cross-contamination. Using food-safe probe disinfectant wipes is acceptable, but the thermometer is still considered a food contact surface, and should be properly washed, rinsed, and sanitized just like any other utensil as often as possible.

Thermometers, particularly thermocouples, are usually quite durable. However, if you drop or strongly jostle your thermometer, you should check its calibration to make sure it hasn't been damaged. Likewise, if you expose your thermometer to temperature extremes for prolonged periods, you should check to make sure the calibration is still accurate. Finally, a thermometer should be calibrated at the start of every work shift.

Calibration: "Calibration" refers to the process that determines if your thermometer is providing you with an accurate reading. The only way to do this is to have the thermometer measure something whose temperature we already know for certain, and in this case, there are two temperatures we can use as a reference: boiling and freezing water.

Water boils (at most elevations) at 212 F, or 100 C. Water freezes at 32 F, or 0 C. You can use either temperature as a reference point to make sure that your thermometer is still working properly. However, as boiling water runs a greater risk of injury due to scalding, it is recommended that you use the freezing point instead.

To start, take a single-use cup, ideally Styrofoam, paper, or a single-use plastic. Fill the cup to the brim with ice. Crushed or chipped ice is preferred, but blocks will suffice. Once full, add cold water to your cup until all available space is filled.

Depending on how finely crushed your ice-water bath is, it may take a minute or two for the temperature of the water to stabilize. But don't wait too long, or else the ice will begin to melt, and the water will begin returning to room temperature. After about 1 or 2 minutes, insert the sensor of your probe into the water, and wait around 30 seconds, or until the indicator/display

stabilizes.

A properly calibrated thermometer will read 32 F (0 C) in an ice-water bath. The code allows a probe thermometer to be off by no more than 2 degrees Fahrenheit (in either direction), but if it is off by any amount, make sure this is documented so you know to adjust your logs. If the thermometer is off by more than 2 F, then you should adjust its calibration until it reads 32 F (0 C). Check your thermometer's user manual to find out how to adjust its calibration.

Disclaimer: the images used above are to provide examples of types of thermometers and are not intended to advocate for one brand over others. These are merely example images, and any brand is valid provided that the thermometer is intended as a food contact surface, has a range of at least 0 F to over 212 F, and is otherwise intended to test the internal temperature of food items as determined by the manufacturer. Thermometers that have been certified by ANSI-accredited institutions (such as NSF or UL EPH) as intended for food establishments are considered to meet the requirements of the code.

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