

Policy & Procedure Manual

Resource: Taking Accurate Temperatures

Choosing A Thermometer

Start with an accurately calibrated thermometer that is in good working condition. There are many types of thermometers available. Check state regulations for more specific guidelines.

For general use, the bimetallic thermometer is a cost efficient tool and if used correctly can provide accurate temperatures. When using the bimetallic stem thermometer, remember that the sensor on the probe is 1 to 2" above the tip. This area must be submerged into the food for several seconds to achieve an accurate temperature. Other types of thermometers available include: the digital thermistor thermometer, thermocouple technology and the digital thermocouple thermometer. Infrared thermometers are also available, but they are generally not used in health care kitchens.

- The digital thermistor is usually battery powered, takes only a few seconds to register the temperature, and the sensor is near the tip of the probe.
- The thermocouple has two wires of dissimilar metals joined together at both ends. When one end is heated, the difference that is generated is proportional to the junction of temperature. Their small size makes them very sensitive to temperature fluctuations.
- The digital thermocouple thermometer gives the quickest temperature response, has the widest temperature range and is easy to calibrate.
- Data collection thermometers are handheld instruments that can store up to 2000 entries. They download data to a PC, sort and graph temperature reports.

Calibrating the Thermometer

For all thermometers, follow the manufacturers' directions for calibration.

Bimetallic Thermometers

There are two ways to calibrate a bimetallic thermometer: the ice point method and the boiling point method. Thermometers should be calibrated at least monthly.

Ice Point Method

1. Start with a container large enough to easily accommodate your thermometer. Fill it with ice (crushed is best). Add tap water to fill and stir. Allow the ice water mixture to cool for a few minutes.
2. Place the thermometer probe into the ice water mixture. It is important to wait about 30 seconds without having the probe touch the sides or bottom of the container. Be sure the temperature indicator is no longer moving.
3. Look for the nut on the underside of the thermometer, use a wrench* and turn the head of the thermometer until the reading on the face of the dial reads 32° F (0° C).

Boiling Point Method

1. In a fairly deep pan, bring tap water to a boil.
2. Place the probe of the thermometer carefully into the boiling water so the sensor on the stem is completely submerged without touching the sides or bottom of the pan.
3. Wait about 30 seconds or until the temperature on the face of the dial stops moving.
4. Again, look for the nut on the underside of the thermometer and use a wrench* and turn the head of the thermometer until the temperature reads 212° F (100° C) or at the boiling point

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for your elevation. **Some bimetallic thermometers have a “wrench” tool attached to the case or sheath.*

Taking Accurate Temperatures using Metal Stem Thermometers

1. To take temperatures, a clean, rinsed, sanitized and air dried thermometer that is the metal stem type, numerically scaled and accurate to plus or minus 2° F is needed. Should this thermometer have a tube type cover, it must also be sanitized as indicated for the thermometer. A temperature record for recording the temperatures is also needed. Choose the proper thermometer for the food to be monitored. (Thin foods will require a different thermometer than thick foods. Digital instant-read and thermocouple thermometers can be used in both thin and thick foods.)
2. To take hot food temperatures, insert the thermometer at a 45 degree angle to the middle of the food item, taking care not to touch the container or bone if applicable. Wait for the thermometer to rise to the maximum temperature, read and record the temperature and then remove the thermometer from the food item and immediately clean and sanitize. Repeat these guidelines until all hot food temperatures have been taken.
 - Normally, hot foods will be 165° to 180° F or higher when removed from the cooking heat source. Assure a high enough holding temperature to maintain a temperature at or above 135° F during holding, distribution and service.
3. To take cold food temperatures, insert the thermometer at a 45 degree angle to the middle of the food item using care not to touch the container. Wait for the thermometer to drop to the minimum temperature, read and record the temperature and then remove the thermometer from the food item and immediately clean and sanitize. Repeat this guideline until all cold food temperatures have been taken. The thermometer must be sanitized between uses in different foods.**
4. Temperatures should be taken periodically to assure hot foods stay above 135° F and cold foods stay below 41° F during the serving process.
 - Maintain a cold enough holding temperature to assure foods are maintained at or below 41° F until they leave the service area.
 - Frozen items such as ice cream and sherbet should be held at a low enough temperature to maintain their frozen state until service, at which time they should remain in a solid state with little melting.

***Thermometers should be sanitized according to manufacturer's instructions. Bimetallic thermometers may be sanitized using a dish machine or three sink method. In between uses at one meal, an alcohol swab may be used to sanitize. (Use a new swab for each sanitizing.)*

Note: For more information, visit the USDA Food Safety and Inspection Service website: Kitchen Thermometers: <https://www.fsis.usda.gov/food-safety/safe-food-handling-and-preparation/food-safety-basics/kitchen-thermometers>.