

## Temperature Reading Devices and Food

Temperature control is the single most important aspect of food safety and thus the monitoring and collection of this data is crucial to ensuring safe food products. Only food grade thermometers are acceptable when monitoring food temperatures. *Mercury and/or glass thermometers are potential hazards and should not be used when food products are involved.*

There are several types of thermometers which are regularly used in the food industry. If multi-use thermometers are used, they should be able to measure internal temperatures from -17.8 to 104°C (0 to 220°F) and be accurate to  $\pm 1^\circ\text{C}$  ( $\pm 2^\circ\text{F}$ ). Common types of food thermometers include:

### 1) Thermocouples

Thermocouples measure temperature through a sensor in the tip of the stem. When the user presses a button, the thermocouple produces a readout of the temperature. This device accurately and quickly measures a range of temperatures without the need to recalibrate often.

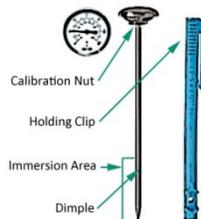


### 2) Bi-Metallic Thermometers

Bi-Metallic thermometers are the most common type of food service thermometers.

They can measure temperature through a metal stem with a sensor in the lower end. The sensing area is from the tip to a half inch past the dimple. When selecting and using this type of thermometer, remember that it should have:

- an adjustable calibration nut
- easy to read temperature markings
- a dimple marking the end of the sensing area.



### 3) Digital Thermometers

Digital thermometers measure through a metal strip or sensing area and provide a digital readout. They are especially easy to read. Many models are available for measuring surface, interior and air temperatures.



### 4) Temperature Recorders

Temperature recorders are designed to maintain a record of temperatures over a designated time period. These instruments are useful in determining if and when hazardous fluctuations occur within a distribution system or a refrigeration unit.



### Calibrating Thermometers

All thermometers need to be calibrated on a routine basis to ensure their accuracy. Precautions should also be taken to recalibrate when extreme temperature changes occur or if the unit has been dropped. Thermometers may be calibrated by one of two methods - ice point method for cold foods, or boiling point method for hot foods.

Using the ice point method you submerge the sensor in a 50/50 ice and water slush. For a bi-metallic stemmed thermometer, wait until the needle stops, then use a small wrench to turn the calibration nut until the dial reads  $0^\circ\text{C}$  ( $32^\circ\text{F}$ ). For a thermocouple or digital thermometer try putting in a new battery or have the manufacturer or a repair service check the unit.

Using the boiling point method you submerge the sensor into boiling water. Follow the same instructions used with the ice point method and ensure the thermometer is reading  $100^\circ\text{C}$  ( $212^\circ\text{F}$ ). You need to be very careful when using the boiling point method to avoid burns.

**NOTE:** The boiling point lowers about  $0.6^\circ\text{C}$  ( $1^\circ\text{F}$ ) for each 550 feet above sea level [i.e. at 1100 feet above seal level, water will boil at  $98.8^\circ\text{C}$  ( $210^\circ\text{F}$ )].

### Using Food Thermometers

- Clean & sanitize thermometers before and after each use. A sanitizing mixture or sanitizer coated fabric wipe for food-contact surfaces can be used.
- Do not let the sensing area touch the bottom or sides of food containers.
- Insert the stem so that the sensing area is in the center of food. Wait at least 15 seconds and then record the reading.
- Never leave the thermometer in food that is being cooked.