Food Safety Program, for Processors and Distributors

FACT SHEET #3

Thermometer Calibration Guide

Accurate temperature measurement is critical for ensuring food safety and calibration of temperature measuring devices is essential for a food processing plant.

Important Considerations

- The calibration method used at your facility will depend on the types of temperature measuring device, monitoring frequency and intended use (ex: product receiving, product storage tanks, cold storage areas, pasteurization).
- The frequency of calibration depends on the type of thermometer and its intended use.
- Thermometers should be calibrated: before use; if dropped; when going from one temperature range to another; and after a long storage time.
- In most applications, a thermometer should be within ±1°F or ±0.5°C when compared to the reference thermometer used for calibration.
- Accurate thermometers can be used as a reference thermometer (ex: National Institute of Standards and Technology, NIST). In some critical applications calibration against a certified reference thermometer is required.

Proper Thermometer Use

What to Do

- Calibrate the thermometer as scheduled.
- Wash and sanitize the thermometer before use.
- Immerse the entire sensing area in the food product for at least 30 seconds or until the temperature reading is stable.
- Use the appropriate thermometer for the type of food (liquid or solid).
- Place the thermometer in the thickest part of the product.
- In liquid products, stir before taking the temperature reading.

What NOT to Do

- Don't touch the surface of the container when taking the measurement.
- Don't take the product temperature only in one place, particularly products that do not have a uniform shape.

Calibration Methods

There are two common calibration methods:

- melting ice
- calibration against a reference thermometer

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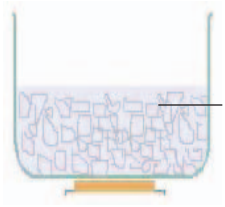
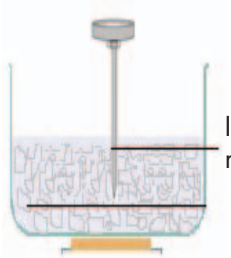
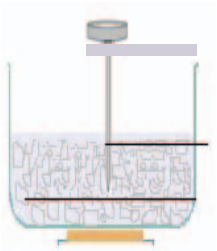
Reference thermometer

How to Calibrate a Dial Thermometer

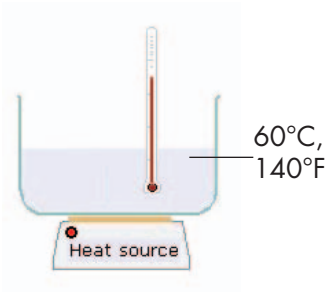
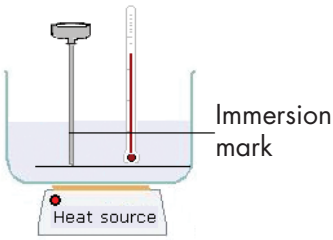
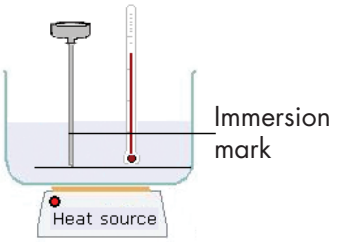
Melting Ice Calibration

(for low temperature application)

Thermometer to calibrate

 **Melting ice**	 **Min 30 seconds**	 **Adjust**	 **Recheck**
Step 1 Fill a large glass with ice-water slurry. Stir well. Wait until it reaches the freezing/ melting temperature of fresh water, 0°C (32°F).	**Step 2** Place the thermometer to calibrate in the water. Wait at least 30 seconds or until the temperature is stable. Avoid touching the bottom of the container.	**Step 3** Use a wrench to turn the adjusting nut until the thermometer reads 0°C (32°F).	**Step 4** Recheck the temperature reading on the calibrated thermometer after adjustments. Repeat step 2. Record in the calibration log book.

Calibration Using a Reference Thermometer

	 **Min 30 seconds**	 **Adjust**	 **Recheck**
Step 1 Fill a large glass with clean water. Bring to the desired temperature (ex: 60°C or 140°F), then place the reference thermometer in the water. The entire thermometer sensing area must be immersed.	**Step 2** Place the thermometer to calibrate in the water. Wait at least 30 seconds or until the temperature is stable. Avoid touching the bottom of the container. Compare readings and keep record.	**Step 3** Use a wrench to turn the adjusting nut until the thermometer reads the desired temperature (ex: 60°C or 140°F).	**Step 4** Recheck the temperature reading on the calibrated thermometer after adjustments. Repeat step 2. Record in the calibration log book.

For information on the Food Safety Program contact the CVO/Food Safety Knowledge Centre.
For technical information, call 204-795-7968 or 204-795-8418 in Winnipeg; or e-mail foodsafety@gov.mb.ca.
For general information, contact your local GO Centre.

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