

Measuring Temperature of Fresh Cut Products

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Keeping fresh cut products at their optimum temperature is key to preserving product quality. A system for managing temperature relies on periodically measuring product temperature. The following recommendations will help you accurately measure the temperature of fresh cut products.

Calibrate thermometers

Most fresh cut products are held at 0°C (32°F) and a well-stirred mixture of crushed ice and clean water has this temperature. Stir a glass of ice and water with a temperature probe until temperature stabilizes. If the thermometer does not read 0°C or 32°F, adjust the unit if it can be recalibrated. Sometimes low batteries cause reading errors. If the reading can not be adjusted, mark the thermometer with a calibration factor. For example, if the unit reads 33°F in the ice bath, indicate that 1°F should be subtracted from the reading.

Infrared thermometers can also be calibrated with a well-stirred ice bath. Point the sensor at the water surface and it should also read 0°C or 32°F. If it does not, check that the emissivity is set for about 0.95 (This is not adjustable on some units.) and that batteries are good. Also remember that most infrared thermometers have significant measurement error if the thermometer is not at equilibrium with the air around it. I have seen units read 3° to 5°C (5° to 7°F) lower than actual when a room temperature infrared thermometer was used in a 0°C (32°F) cold storage. Store an infrared thermometer at the temperature of the environment in which it will be used.

Sensor placement

We would like to know the temperature of the interior contents of a package but this is not easy to do. Piercing a modified atmosphere bag with a temperature probe will destroy the bag's ability to properly maintain a prescribed atmosphere and may introduce human or plant pathogens into the product. Infrared thermometers measure surface temperature, which is the exterior packaging material unless the package has been opened to expose the product.

Placing a probe thermometer between two bags of product can approximate product temperature. You may need to wait several minutes for the temperature to stabilize before taking a reading. Precooling the probe to near the product temperature will reduce measurement time. This method will tend to cause errors that result in readings above the actual temperature of the product. Compare this method with readings taken of actual product temperature to determine error level.

Discard any modified atmosphere package that has been pierced with a probe thermometer. Do not push a probe through a corrugated master container to measure the temperature product inside the box.

Infrared thermometers measure product temperature only if a package is opened, allowing the sensor to "see" the product. An opened package must be discarded.

