



Implementing Active Cooling Methods

What is active cooling?

Active cooling means using an ice water bath and/or chill stick, stirring the food, and refreshing the coolant. Chill sticks are inexpensive small items that reduce cooling times of soups, stews, and other foods that will be stirred while they cool. Water conducts heat faster than air, so heat from the food will transfer more quickly into ice water or chill sticks than into the air that surrounds it. It is important to refresh the ice or replace the chill stick when they have melted. Monitor temperatures at regular intervals.

Blast chillers also may be used for active cooling. Blast chillers use high powered fans to circulate very cold air over and around the food to reduce cooling time and maintain food quality. Blast chillers are recommended for kitchens that cool large quantities of food.

Standard refrigerators and freezers are designed to maintain ambient air and food temperatures. Food cools passively as heat is transferred to the surrounding air. Most hot foods will not cool fast enough in a refrigerator to meet the cooling recommendations in the *FDA Food Code*. Active cooling methods are needed to cool foods quickly.

Why is active cooling important?

Cooling food too slowly is a major contributor to foodborne illness. Safe cooling requires removing heat from the food quickly enough to prevent pathogens from growing and causing a foodborne illness. With passive cooling methods, such as food placed in a walk-in refrigerator, cooling times often exceed required standards. Active cooling methods reduce the time it takes for food to cool.

Critical control points have been established to prevent foodborne illness. Food must be cooled from 135 °F to 70 °F within 2 hours and from 135 °F to 41 °F within a total of 6 hours. Food at room temperature (70 °F) must reach 41 °F within 4 hours. If these critical control points are not met, corrective actions must be taken such as reheating the food to 165 °F for 15 seconds and restarting the cooling process.

How to cool food in an ice water bath

- Fill a large, cleaned, and sanitized container with ice.
- Add approximately 1 part cold water to 1 part ice to make the ice slurry.
- Divide food into shallow pans.
- Place pans, uncovered, in ice water so that ice is level with top of pan, but does not run over, into the food.



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- Stir or turn the food every 15 to 30 minutes to facilitate even cooling.
- Drain water from the ice and replace ice as it melts.
- Monitor and document the temperature of the food at least hourly.
- When food has cooled to 41 °F, cover and place it on the refrigerator shelf.

How to use a chill stick

Use chill sticks along with either refrigeration or ice water cooling

- Wash and sanitize the chill stick. Allow to air dry.
- Fill the chill stick with clean water. Place on a tray in the freezer overnight.
- Place food in refrigerator, freezer, or ice water bath and monitor until food reaches 135 °F. Inserting the plastic paddle into very hot food may crack the plastic.
- Once the food has cooled to 135 °F, insert the chill stick. Stir the food every 15 to 30 minutes for even cooling. While the chill stick is frozen, leave it in the food.
- When the ice in the chill stick melts, replace with another frozen chill stick. Do not leave a melted chill stick in the food because it may slow down the cooling process.
- When the food reaches 41 °F, remove the chill stick. Cover food and place it in the refrigerator. Wash, rinse, sanitize, and store the chill stick.

Clean and sanitize the chill stick

- Remove the cap from the chill stick and drain out any liquid.
- Wash the paddle and cap with warm soapy water, rinse in clean water and sanitize in sanitizing solution.
- Allow to air dry, making sure that all liquid is drained from the inside of the paddle.
- Follow manufacturer's instructions for washing and sanitizing this equipment in the dishwasher.



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References

- The Center of Excellence for Food Safety Research in Child Nutrition Research. (2012). *Cooling Foods in School Foodservice Operations Summary Report*. Retrieved from <http://cnsafefood.k-state.edu>
- U.S. Department of Agriculture, Food and Nutrition Service, & Institute of Child Nutrition. (2016). *HACCP-based standard operating procedures: Cooling time/temperature control for safety foods*. Retrieved from <http://www.theicn.org>
- U.S. Department of Health and Human Services Public Health Services, Food and Drug Administration. (2017). *FDA food code*. Retrieved from <https://www.fda.gov/Food/GuidanceRegulation/RetailFoodProtection/FoodCode/ucm595139.htm>

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