

Cooking Meat Safely

Safety Tips for Preparing Meats

Cleanliness:

- Always wash hands thoroughly with soapy water before preparing foods and after handling raw meat.
- Don't let raw meat juices touch ready-to-go foods either in the refrigerator or during preparation.
- Do not wash or rinse raw meat, poultry or seafood. This avoids spreading bacteria around the kitchen. Cooking these foods to a safe internal temperature will get rid of any bacteria present.
- Don't put cooked foods on the same plate that held raw meat. Always wash utensils that have touched raw meat with hot, soapy water before using them for cooked meats.
- Wash counters, cutting boards and other surfaces raw meats have touched. These surfaces may be sanitized by cleaning with a solution of 1 teaspoon chlorine bleach per quart of water.

Thawing: Thaw uncooked meat in the refrigerator or in cold water. NEVER thaw meat at room temperature.

Marinating: Marinate food in the refrigerator, not on the counter. Discard the marinade after use because it contains raw juices, which may harbor bacteria. If you want to use the marinade as a dip or sauce, reserve a portion before adding raw food.

Partial Cooking or Browning: Never brown or partially cook meat, then refrigerate and finish cooking later, because any bacteria present would not have been destroyed. It is safe to partially precook or microwave meat IMMEDIATELY before transferring it to a hot grill or oven to finish cooking.

Cooking: Use a food thermometer EVERY time you cook raw foods; reheat leftovers; and hold hot, cooked foods for serving.

Serving: Hold hot foods above 140 °F and cold foods below 40 °F. Never leave foods, raw or cooked, at room temperature longer than two hours. On a hot day with temperatures at 90 °F or warmer, this decreases to one hour.

Leftovers: Always use clean utensils and storage containers for safe storage. Divide large amounts of leftovers into small, shallow containers for quick cooling in the refrigerator. Avoid placing large pots of gravy or stew in the refrigerator to cool since it will likely take until the next day for this amount of food to cool. To store in the refrigerator, wrap cooked meat in plastic wrap or aluminum foil, or store it in a tightly covered container and use within two to three days. For frozen storage, wrap meat in heavy duty aluminum foil or freezer paper and use within two to three months. If you may have kept the food refrigerated for too long, throw it out. Never taste food that looks or smells strange to see if you can still use it.

Reheating Foods: Reheat thoroughly to a temperature of 165 °F or until hot and steaming. Soups and gravies should be brought to a rolling boil.

Use a Food Thermometer

One of the critical factors in controlling bacteria in food is controlling temperature. Pathogenic microorganisms grow very slowly at low temperatures, multiply rapidly in mid-range temperatures, and are killed at high temperatures. For safety, food must be cooked thoroughly. It is essential to use a thermometer when cooking meat to take the guesswork out of cooking and to assure that a safe

temperature has been reached to destroy harmful bacteria such as Salmonella and *E.coli* O157:H7. Using a thermometer is the only reliable way to ensure safety and to determine the “doneness” of most foods. To be safe, a product must be cooked to an internal temperature high enough to destroy any harmful bacteria that may have been in the food. A thermometer should also be used to ensure that cooked foods are held at a safe temperature (below 40 °F or above 140 °F) until served.

Recent research has shown that color and texture changes are not reliable indicators that all bacteria have been destroyed. For example, ground beef may turn brown before it has reached a temperature that will destroy bacteria. A consumer preparing hamburger patties and depending on color changes in the meat to determine safety is taking a chance that pathogenic microorganisms may survive. A hamburger patty cooked to 160 °F, regardless of color, is safe.

The temperature at which different pathogenic bacteria are destroyed varies, as does the “done-ness” temperature for different meat and poultry products. A roast or steak that has never been pierced in any way during slaughter, processing or preparation and has reached an internal temperature of 145 °F is safe to eat. A consumer depending on color as a sign of doneness, might continue cooking it until it was overcooked and dry. A consumer using a thermometer can be assured that the food has reached a safe temperature.

A Food Thermometer Can Help:

- Prevent foodborne illness;
- Cook foods to a safe temperature;
- Prevent overcooking; and
- Hold hot, cooked foods safely.

Which Type Food Thermometer Should You Buy?

There are several types of food thermometers available at grocery, hardware or kitchen supply stores. The type of thermometer determines when it should be inserted in the meat. Make sure the thermometer you buy is designed for meat and poultry, not for candy or appliances.

Regular, Ovenproof Types: These go into the food at the beginning of the cooking time and can be read easily.

Instant-Read and Digital Types: These are not intended to go in the food in the oven, but give you a quick reading when inserted into the cooked food, and can be read easily.

Pop-Up Types: These are commonly found in poultry, but may be purchased for other meats.

Microwave-Safe Types: These are especially designed only for microwave ovens.

When to Insert a Food Thermometer

When should the thermometer be inserted — at the beginning of the cooking time or the end? When you insert the thermometer will be determined by the type, ovenproof or instant-read. The important thing is to use a food thermometer, no matter how the food is prepared — roasted, broiled, fried.

- An ovenproof thermometer may be inserted into the food at the beginning of the cooking time and remain there throughout cooking. The temperature indicator will rise slowly as the food cooks.
- Instant-read thermometers are not designed to stay in the food during cooking. If you are using an instant-read thermometer, pull the meat or poultry out of the oven far enough to insert the stem about 2 inches into the thickest part of the food but not touching bone. The temperatures should register in about 15 seconds.

How to Use a Food Thermometer

Before using a food thermometer, read the manufacturer’s instructions. The instructions should tell how far the thermometer must be inserted in a food to give an accurate reading. Most thermometers also come with instructions on how to recalibrate the thermometer. (See below for more information about calibrating a thermometer.)

If instructions are not available, check the stem of the thermometer for an indentation, or “dimple” that shows how deep it must penetrate the meat to get an accurate reading. Most digital thermometers will read the temperature in a small area of the tip. Dial types must penetrate 2 to 3 inches into the food. Most thermometers available will give an accurate reading within 2 to 4 °F, if the thermometer is placed in the proper location in the product. If inserted incorrectly, or if the thermometer is placed

in the wrong area, the reading will not accurately reflect the internal temperature of the product.

In general, the thermometer should be placed in the thickest part of the food away from bone, fat or gristle. For whole poultry, insert in the inner thigh. When the food being cooked is irregularly shaped, such as may be the case with a beef roast, check the temperature in several places.

Tips for Thermometer Use:

- Use an “instant-read” thermometer to check patty temperatures. They are designed to be used toward the end of cooking time and register a temperature in about 15 seconds.
- If a meat patty is not thick enough to check from the top, insert the thermometer in sideways.
- The thermometer should penetrate the thickest part of the food.
- To check the calibration, place the stem in ice water as described below. Most thermometers have a calibration nut under the dial that can be adjusted.
- Wash the thermometer after each use.

Recommended Internal Temperatures for Meat

Most pathogenic bacteria are destroyed between 140 °F and 160 °F, but the recommendations for “doneness” varies for the type of meat or poultry. See the table below for minimum recommended internal temperatures.

Ground meats must be cooked thoroughly to kill harmful bacteria. Unlike whole muscle meat, which is sterile inside, the grinding process exposes the interior meat to bacteria on the surface, in the air, on equipment or on people’s hands. To kill these bacteria, food safety experts have one major rule of thumb, which is to cook ground meat to at least 160 °F. This simple step offers the best protection that consumers can have to serve ground products safely.

Minimum Internal Temperatures

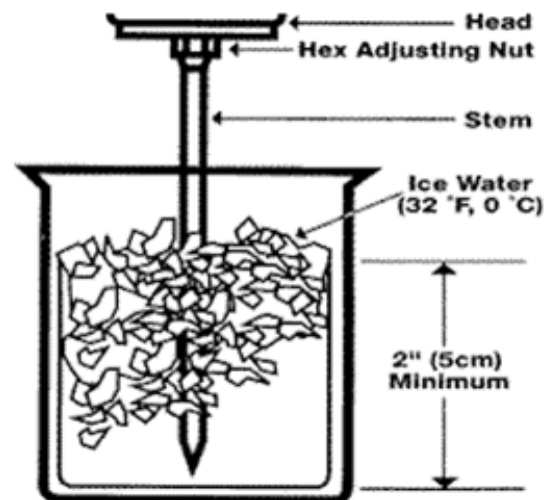
These temperatures ensure that foodborne bacteria have been destroyed. For reasons of personal taste or texture preferences, consumers may choose to cook meat and poultry to higher temperatures.

145 °F	Beef, lamb and veal steaks, roasts and chops cooked medium rare (cooked medium to 160 °F). Fish.
160 °F	Egg dishes. Ground beef, veal and lamb. Pork, all cuts.
165 °F	Leftovers. Poultry. Stuffing and casseroles.

Calibrating a Thermometer

A food thermometer can be checked for accuracy using either the ice water method or the boiling water method. The ice water method is explained below. Many food thermometers have a calibration nut under the dial that can be adjusted. Check the package for instructions.

Ice Water Method: To use the ice water method, fill a large glass with finely crushed ice. Add clean, cold tap water to the top of the ice and stir well. Immerse the food thermometer stem a minimum of 2 inches into the mixture, touching neither the sides nor the bottom of the glass. Wait a minimum of 30 seconds before adjusting. (For ease in handling, the stem of the food thermometer can be placed through the clip section of the stem sheath and, holding the sheath horizontally, lowered into the water.) Without removing the stem from the ice, hold the adjusting nut under the head of the thermometer with a suitable tool and turn the head so the pointer reads 32 °F.



Even if the food thermometer cannot be calibrated, it should still be checked for accuracy. Any inaccuracies can be taken into consideration when using a food thermometer, or it can be replaced. For

example, ground beef patties must reach 160 °F. If the thermometer is reading two degrees too high, two degrees would be added to the desired temperature, meaning hamburger patties must be cooked to 162 °F.

Microwave Cooking

Microwave ovens can cook unevenly and leave “cold spots” where harmful bacteria can survive. For this reason, it is important to use the following safe microwaving tips to prevent foodborne illness when cooking or reheating meat.

- Debone large pieces of meat. Bone can shield the meat from thorough cooking.
- Do not cook large cuts of meat on high power (100%). Cook large pieces of meat on medium power (50%) for longer times. This allows heat to conduct deeper into meat without overcooking outer areas.
- Stir or rotate food once or twice during microwaving, and turn large food items upside down so foods cook more evenly and safely.
- When microwaving unequal size pieces of meats, arrange in a dish or on a rack so thick parts are toward the outside of the dish and thin parts are in the center. Cook on medium-high or medium power.
- Place a roast in an oven-cooking bag or in a covered pot for safe, even cooking.
- Do not microwave whole, stuffed poultry. Cooking of meats is so rapid, the stuffing inside might not reach a sufficient temperature to be safe.
- Refer to the manufacturer’s directions that accompany the microwave oven for suggested cooking times.
- Observe standing times so cooking is completed. Then remove from microwave and test for doneness in several places with a meat thermometer, or use the oven’s temperature probe to verify the food has reached a safe minimum internal temperature.
- Never partially cook food. When microwaving food to finish cooking on the grill or conventional oven, transfer the microwaved food to another heat source immediately.

- Remove meat from packaging before defrosting. Do not use foam trays and plastic wraps, which are not heat stable at high temperatures. Melting or warping may cause harmful chemicals to migrate into food.
- Cook meat, poultry and fish immediately after defrosting in the microwave oven because some areas of the frozen food may begin to cook during the defrosting time.
- Only use cookware that is specially manufactured and labeled for use in the microwave oven. Do not use margarine tubs, take-out containers, whipped topping bowls and other one-time use containers in microwave ovens. These containers can warp or melt, possibly causing harmful chemicals to migrate into the food.
- Microwave plastic wraps, wax paper, cooking bags, parchment paper, and white microwave-safe paper towels should be safe to use. Do not let plastic wrap touch foods during microwaving.

For more information, request [HGIC 3500, *Basics of Safe Food Handling*](#), [HGIC 3587, *Food Thermometers: A Key to Food Safety*](#), and [HGIC 3586, *Microwave Food Safety*](#).

Sources:

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