

Safe Handling of Beef

Selecting the Best

Fresh is Best: Choose beef that is bright red in color from the fresh meat case. Vacuum packaged beef will be maroon because it has not been exposed to oxygen. Choose beef that is firm to the touch. Look for packages that are cool to the touch, have no wear or punctures, and little or no excess liquid. Always check the "sell-by" date. "Loin" and "rib" are clues that the beef is a more tender cut. "Chuck", "round" and "flank" indicate a less tender cut. Less tender cuts will require marinating or a slower, moist cooking method.

Purchase raw meats last. Make sure all meats, whether raw, pre-packaged or from the deli, are refrigerated when purchased. Fresh meats may contaminate other grocery items. The best way to prevent this cross-contamination is to always keep fresh meats from other items. Put raw meat packages in a plastic bag so juices won't drip onto other foods. Pack raw meats in an ice chest if it will take you more than an hour to get home, and keep the ice chest in the passenger area of the car during warm weather. Take meats straight home to the refrigerator or freezer.

Product Dating: Product dating, applying "sell by" or "use by" dates, is not required by federal regulations. However, many stores and processors may voluntarily choose to date packages of raw beef. Use or freeze products with a "sell by" date within three to five days of purchase. If the manufacturer has determined a "use by" date, observe it. It's always best to buy a product before its date expires. It's not important if a date expires after freezing beef, because all foods stay safe while properly frozen.

Product Inspection: All beef found in retail stores is either USDA inspected for wholesomeness or inspected by state systems which have standards equal to the federal government. Each animal and its internal organs are inspected for signs of disease. The "Passed and Inspected by USDA" seal ensures that the beef is wholesome and free from disease. Although inspection is mandatory, its grading for quality is voluntary, and a plant pays to have its beef graded.

Product Grading: Quality Grade refers to the eating quality of the meat. Grades are determined by the amount of marbling (flecks of fat within the meat), the texture of the meat and its color and appearance. USDA grades for beef are as follows:
USDA Prime: The lean is highly marbled and usually very tender and juicy; outside fat may be excessive.

USDA Choice: The lean is average in marbling and usually tender and juicy; outside fat is variable.

USDA Select: The lean contains some marbling; tenderness and juiciness can be extremely variable; usually not much outside fat.

USDA Standard: Little or no marbling; tenderness and juiciness extremely variable; very little outside fat.

USDA Commercial, Utility, Cutter and Canner: Generally applied to older animals. This beef is most often used in processed products and is rarely cut for the freezer.

Storage

Refrigeration: Keep beef below 40 °F during storage. Store uncooked beef items together, separate from cooked foods. Refrigerate or freeze fresh beef IMMEDIATELY after bringing it home. NEVER leave beef in a hot car or sitting out at room temperature. Packaged whole cuts of fresh

beef may be refrigerated in their original wrappings in the coldest part of the refrigerator for three to five days after purchase, while ground beef can be stored in the refrigerator for one to two days. Keep beef refrigerated until you are ready to cook it. When transporting cooked beef to another dining site, place it in an insulated container or ice chest until ready to eat. Cooked whole cuts of beef are best when refrigerated no longer than two to three days. Cooked ground beef is best when refrigerated no longer than one to two days.

Freezing: Freeze whole cuts of fresh beef if you do not plan to cook it within three to five days after purchase. Freeze ground beef if you do not plan to cook it within one to two days after purchase.

It is safe to freeze beef in its original packaging or repackage it. However, for long-term freezing, overwrap the porous store plastic with aluminum foil, freezer paper, or place in freezer bags to prevent "freezer burn", which appears as grayish brown leathery spots and is caused by air reaching the surface of food. For best quality, use steaks and roasts within 6 to 12 months, ground beef within 3 to 4 months.

Preparation

Cleanliness: Always wash hands thoroughly with hot soapy water before preparing foods and after handling raw beef. Don't let raw meat or juices touch ready-to-go foods, either in the refrigerator or during preparation. Don't put cooked foods on the same plate that held raw beef. 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 beef in the refrigerator or in cold water. NEVER thaw beef at room temperature. Thawing by refrigeration requires planning ahead and most likely allowing a 24-hour thawing period. To thaw beef in cold water, leave the beef in its original wrapping or place it in a watertight plastic bag. Change the water every 30 minutes.

For quick thawing of uncooked or cooked beef, use the microwave, but plan on cooking the meat

immediately after thawing because some areas of the food may become warm and begin to cook during microwaving. Thawing time will vary according to whether you're thawing a whole roast or cuts and the number of parts frozen together. Use the DEFROST or MEDIUM-LOW setting, according to the manufacturer's directions. Turn the roast and separate parts as they thaw, taking care the meat does not begin to cook. Repeat as needed.

Foods defrosted by the cold water method or in the microwave should be cooked before refreezing, because they may have been held at temperatures above 40 °F. For a more detailed outline of safe handling and cold storage of beef, refer to Table 1.

It is safe to cook frozen beef in the oven, on the stove, or grill without defrosting it first, although the cooking time may be about 50% longer. Do not cook frozen beef in a slow cooker.

Marinating: Marinate food in the refrigerator, not on the counter. If you want to use the marinade as a dip or sauce, reserve a portion before adding raw food. Discard uncooked leftover marinade, or bring to a full boil before brushing on cooked beef.

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

Cooking

Importance of Kitchen Thermometers: 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. Cook foods thoroughly to prevent foodborne illness.

Using a thermometer is the only reliable way to ensure safety and to determine the "doneness" of beef and most other 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. Many food handlers believe that visible indicators, such as color changes in the food, can be relied on to determine whether foods have been cooked long enough to ensure bacterial

destruction. However, recent research has shown that color and texture indicators are not reliable.

Whole Muscle Meats: When cooking whole cuts or parts of beef, the thermometer should be inserted into the thickest part of the meat, away from the bone, fat and gristle. The thermometer may be inserted sideways if necessary. When the food being cooked is irregularly shaped, the temperature should be checked in several places. Steaks and roasts should be cooked to 145 °F (medium rare) followed by a 4 minute rest, 160 °F (medium), or 170 °F (well-done).

Ground Beef: Ground beef must be cooked thoroughly to kill harmful bacteria. Unlike whole muscle meat, whose interior meat is sterile, the grinding process exposes the interior meat in ground beef to bacteria, which may be 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—cook ground beef (including hamburgers and ground beef mixtures such as meat loaf) to at least 155 °F. This step, while very simple, offers the best protection that consumers can have for serving ground beef products safely.

Microwaving: When microwaving unequally sized pieces of beef, arrange them in a dish or on a rack so thick parts are toward the outside of the dish and thin parts are in the center, and cook on medium-high or medium power. Place a roast in an oven-cooking bag or in a covered pot. Refer to the manufacturer's directions that accompany the

microwave oven for suggested cooking times. Remove from microwave and test for doneness in several places with a meat thermometer.

Serving

Basic Tips: Wash hands with soap and water before serving or eating food. Serve cooked products on clean plates with clean utensils and clean hands. Never put cooked foods on a dish that has held raw products unless the dish is washed with soap and hot water. 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

Basic Tips: 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 freezer paper, heavy aluminum foil, or place in freezer bag, and use within two to three months. Never taste food that looks or smells strange to see if you can still use it. **IF IN DOUBT THROW IT OUT!**

Table 1. Storage Times for Beef Products

Products	Refrigerator (40 °F)	Freezer (0 °F)
Fresh beef roast, steaks, chops, or ribs	3 to 5 days	6 to 12 months
Fresh beef liver or variety meats	1 to 2 days	3 to 4 months
Home cooked beef, soups, stews or casseroles	3 to 4 days	2 to 3 months
Store-cooked convenience meals	1 to 2 days	2 to 3 months
Cooked beef gravy or beef broth	1 to 2 days	2 to 3 months
Beef hot dogs or lunch meats, sealed in package	2 weeks (or 1 week after a "Use by" date)	1 to 2 months
Beef hot dogs, opened package	7 days	1 to 2 months
Lunch meats, opened package	3 to 5 days	1 to 2 months
TV dinners, frozen casseroles	Keep only in freezer	3 to 4 months
Canned beef products in pantry	2 to 5 years in pantry; 3 to 4 days after opening	After opening, 2 to 3 months
Jerky, commercially vacuum packaged	1 year in pantry; 2 to 3 months in refrigerator	Do not freeze

Table 2. Approximate* Beef Cooking Times

Type of Beef	Size	Cooking Method	Cooking Time	Internal Temperature
Rib roast, bone-in	4 to 6 lbs.	Roast 325 °F	23 to 25 min./lb.	Medium rare 145 °F
Rib roast, boneless rolled	4 to 6 lbs.	Roast 325 °F	Add 5 to 8 min./lb. to times above	Medium rare 145 °F
Chuck roast, brisket	3 to 4 lbs.	**Braise 325 °F	2 to 3 hours	Medium 160 °F
Round or rump roast	2½ to 4 lbs.	Roast 325 °F	30 to 35 min./lb.	Medium rare 145 °F
Tenderloin, whole	4 to 6 lbs.	Roast 425 °F	45 to 60 min. total	Medium rare 145 °F
Steaks	¾" thick	Broil/Grill	4 to 5 min. per side	Medium rare 145 °F
Stew or shank cross cuts	1 to 1½" thick	Cover with liquid; simmer	2 to 3 hours	Medium 160 °F
Short ribs	4" long and 2" thick	**Braise 325 °F	1½ to 2½ hours	Medium 160 °F

*For safety, cook hamburgers and ground beef mixtures such as meat loaf to 155 °F on a meat thermometer. However, whole muscle meats such as steaks and roasts may be cooked to 145 °F (medium rare), if that is followed by a 4 minute rest before carving or eating. The cooking times listed here are approximate for use in meal planning. Use a meat thermometer to check for safe cooking and doneness of beef.

**Braising is roasting or simmering less-tender meats with a small amount liquid in a tightly covered pan.

Sources:

1. FDA. *Food Code 2009*. <http://www.fda.gov/Food/FoodSafety/RetailFoodProtection/FoodCode/FoodCode2009/ucm186451.htm>
2. USDA Food Safety and Inspection Service. May 2011. *USDA Revises Recommended Cooking Temperature for All Whole Cuts of Meat, Including Pork, to 145 °F*. http://www.fsis.usda.gov/News_&_Events/NR_052411_01/index.asp
3. USDA, Food Safety and Inspection Service. (February 2003.) *Beef...from Farm to Table* http://www.fsis.usda.gov/Fact_Sheets/Beef_from_Farm_to_Table/index.asp
4. Tamplin, Mark L., (1994). *Safe Food Storage Times and Temperatures*, Fact Sheet HE 8490. Florida Cooperative Extension Service, University of Florida.
5. US FDA (1996). *A Consumer Guide to Safe Handling and Preparation of Ground Meat and Ground Poultry*.

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