

## Food Safety for Outdoor Cookouts

### GRILLING VS. SMOKING

**Grilling:** Grilling is cooking food over direct heat. Its intensity is similar to broiling, so tender meats and poultry are best for grilling. A grill is a utensil made of parallel bars on which food is cooked over charcoal, wood or special rocks heated by gas or electricity.

**Smoking:** Smoking is cooking food indirectly in the presence of a fire. It can be done in a covered grill if a pan of water is placed beneath the meat on the grill; or meats can be smoked in a “smoker,” which is an outdoor cooker especially designed for smoking foods. Smoking is done much more slowly than grilling, so less-tender meats benefit from this method, and a natural smoke flavoring permeates the meat.

### SAFE MARINATING

Some recipes state to marinate meat and poultry for several hours or days, either to tenderize or add flavor. Acid in the marinade breaks down connective tissue in meats. This is especially beneficial in lean meats, such as “Select” grade, which do not have a lot of fat marbling to enhance tenderness. Always marinate food in the refrigerator, not on the counter. If some of the marinade is to be used for basting during cooking or as a sauce on the cooked food, reserve a portion of the marinade. Do not put raw meat and poultry in it. Do not reuse the marinade from raw meat or poultry on cooked food unless it is boiled first to destroy any bacteria.

### PRE-COOKING MEAT

Some people like to cook food partially in the microwave oven or on the stove to reduce grilling time. Some like to partially grill meats to give it that smoky flavor, and then refrigerate or freeze the food to complete the cooking at a later date. Holding partially cooked food is not recommended because any bacteria present would not have been destroyed. If you choose to pre-cook meat or poultry, do so immediately before grilling. Once food is on the grill, cook until it reaches a safe temperature as determined with a meat thermometer.

### GRILLING AWAY FROM HOME

When carrying food to a picnic site, keep it cold to minimize bacterial growth. If take-out foods such as fried chicken or barbecued beef will be reheated on the grill, and the food will not be eaten within two hours of pickup, buy them ahead of time and chill thoroughly.

Place raw meat packages in plastic bags and pack separately from canned drinks and ready-to-eat foods that might otherwise become contaminated.

Use an insulated cooler with sufficient ice or ice packs to keep the food at 40 °F. Pack food right from the refrigerator into the cooler immediately before leaving home.

- In the car, keep the cooler in the air-conditioned passenger compartment; at the picnic, in the shade or shelter.
- Avoid opening the cooler’s lid, which lets cold air out and warm air in. Pack beverages in one cooler and perishables in another cooler.
- When handling raw meat, remove from the cooler only the amount that will fit on the grill.

### PREPARATION

**Handling:** Pack clean, soapy sponges, cloths and wet towelettes for cleaning surfaces and hands. Be sure there are plenty of clean utensils and platters for separately handling the raw foods and the cooked foods. Do not use the same platter and utensils for raw and cooked meat and poultry. Any bacteria present in raw meat or juices can contaminate the safely cooked meat. This is a prime cause of foodborne illness.

**Cooking Equipment:** For grilling and smoking, buy good-quality charcoal, briquettes or aromatic wood chips. Set the grill or smoker in a well-lit, well-ventilated area away from trees, shrubbery and buildings. Only use approved fire starter, never gasoline or paint thinner, for example. Cook foods in grills made of materials approved for contact with meat and poultry. Do not grill or smoke foods in makeshift containers such as galvanized steel cans or other materials not intended for cooking. Chemical residue contamination can result.

**Building a Fire:** Keep children and pets away from the fire. Have a squirt bottle of water nearby to control flare-ups. Do not wear baggy clothes. Use flame-resistant mitts, hot pads and cooking utensils with long handles. Follow the manufacturer's directions for igniting charcoal or preheating a gas or electric outdoor cooker.

Let charcoal get red-hot with gray ash, about 10 to 20 minutes depending upon the quantity. Spread out the charcoal under the grilling surface or bank it around the drip pan for smoking. Replenish charcoal if necessary for grilling. Add about 15 briquettes every hour to maintain 225 to 300 °F in a smoker. For hickory-smoked flavor, add a half-cup water-soaked wood chips or flakes during the last 30 minutes of smoking.

### SAFE COOKING

**Cooking times:** Cooking time depends on many factors: type of meat; its size and shape; distance of food from the heat; the temperature of the coals; and the weather. Cook food to a safe internal temperature and doneness: ground poultry, 165 °F; poultry breast, 170 °F; whole poultry, 180 °F; beef, veal and lamb roasts, steaks and chops, 145 to 170 °F; pork 160 to 170 °F. When using a sauce, apply during the last 15 to 30 minutes of grilling to prevent excess browning or burning. Refer to the table on the next page for grilling times and internal temperatures.

### SAFE SMOKING TECHNIQUES

- Smoking can require up to eight hours, depending on the meat's size and the outdoor air temperature.
- Use high quality charcoal to build a hot fire. Pile about 50 briquettes in the center, and when they are covered with grey ash, push them into two piles. Center a pan of water between the two piles.
- Center the food on the grill over the water pan; close the lid and keep the grill vents open. Add about 10 briquettes every hour to maintain the temperature in the smoker at 225 to 300 °F for

safety. Wood chips such as mesquite are used for additional flavor. Using dry chips at the start creates a fast smoke; wet them later for sustained heat.

- Use a meat thermometer to be sure the food has reached a safe internal temperature.

### KEEPING MEAT HOT

After cooking meat and poultry on the grill, at home or on a picnic, keep it hot until served. Outdoors, keep the cooked meats hot by setting them to the side of the grill rack, not directly over the coals where they would eventually overcook. At home, the cooked meat can be kept hot in a 200 °F oven, in a chafing dish or slow cooker or on a warming tray. Hold hot, cooked food at 140 °F or warmer.

### SERVING AND LEFTOVERS

**Servicing:** When taking food off the grill, do not put the cooked items on the same platter that held the raw meat. Any bacteria present in the raw meat juices could contaminate the safely cooked meat or other grilled foods. In hot weather (90 °F and above), food should never sit out for more than one hour.

**Leftovers:** At home, store leftovers in the refrigerator or freezer within two hours of taking food off the grill. Leftovers that have been off the grill for less than one hour can be safely transported home in a cooler, if there is plenty of ice in it. Discard any food left out more than two hours.

Source: USDA Food Safety and Inspection Service. *Grilling and Smoking Food Safely*. May 1997

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This information has been reviewed and adapted for use in South Carolina by E.H. Hoyle, Extension Food Safety Specialist, Clemson University.

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<b>APPROXIMATE GRILLING TIMES FOR MEAT AND POULTRY</b>			
<b>ITEM</b>	<b>SIZE</b>	<b>GRILLING TIME</b>	<b>INTERNAL TEMP (°F)</b>
<b>BEEF</b>			
Steaks	¾ inch thick	3-4 min./side 4-5 min./side	Medium rare 145 Medium 160
Kebabs	1-inch cubes	3-4 min./side	145-160
Hamburger patties	½ inch thick	3 min./side	Medium 160
Roast, rolled rump and sirloin tip (indirect heat)	4-6 lbs. 3½ - 4 lbs.	18-22 min/lb. 20-25 min/lb.	145-160
Ribs, Back	Cut in 1-rib portions	10 min./side	Medium 160
Tenderloin	2-3 lbs. Half 4-6 lbs. Whole	10-12 min./side 12-15 min./side	Medium rare 145 Medium 160
<b>HAM</b>			
Fully cooked (indirect heat)	Any size	8-10 min/lb.	140
Cook-before-eating	Whole, 10-14 lbs. Half, 5-7 lbs.	10-15 min/lb. 12-18 min/lb.	160
<b>LAMB</b>			
Chops, shoulder, loin or rib	1-inch thick	5 min./side	145-160
Steaks, sirloin or leg	1-inch thick	5 min./side	145-160
Kebabs	1-inch cubes	4 min./side	145-160
Patties, ground	4 oz., ½ -inch thick	3 min./side	Medium 160
Leg, butterflied	4-7 lbs.	40-50 minutes total	145-160
<b>PORK, FRESH</b>			
Chops, bone-in or boneless	¾ -inch thick 1½ -inch thick	3-4 min./side 7-8 min./side	Medium 160
Tenderloin	½ - 1 ½ lbs.	15-25 minutes total	Medium 160
Ribs (indirect heat)	2-4 lbs.	1½ - 2 hours	Fork tender
Patties, ground	½ -inch thick	4-5 min./side	Medium 160
<b>VEAL</b>			
Chops, steak	1-inch thick	5-7 min./side	145-160
Roast, boneless (indirect heat)	2-3 lbs.	18-20 min/lb.	145-160
<b>VENISON</b>			
Roast, saddle or leg	6-7 lbs.	25-30 min/lb.	145-160
Steaks	¾ -inch thick	4-5 min./side 6-7 min./side	Medium rare 145 Medium 160
<b>CHICKEN</b>			
Whole (indirect heat), not stuffed			
Broiler fryer	3-4 lbs.	60-75 minutes	180 measured in the thigh
Roasting hen	5-7 lbs.	18-25 min/lb.	
Capon	4-8 lbs	15-20 min/lb.	
Cornish hens	18-24 oz.	45-55 minutes	
Breast halves, bone-in	6-8 oz. Each	10-15 min./side	170
Boneless	4 oz. Each	6-8 min./side	
Legs or thighs	4-8 oz. Each	10-15 min./side	180 or until tender and juices run clear
Drumsticks	4 oz.	8-12 min./side	
Wings, wingettes	2-3 oz.	8-12 min./side	
<b>DUCK OR GOOSE</b>			
Duck, whole	4½ lbs.	2½ hours	180-185
Goose, whole	8-12 lbs.	18-20 min/lb.	180-185
<b>TURKEY</b>			
Whole turkey (indirect heat)	8-12 lbs.	2-3 hours	180 measured in thigh
Not recommended over 16 lbs	12-16 lbs.	3-4 hours	
Breast, bone-in	4-7 lbs.	1-1¾ hours	170
Boneless	2¾ - 3½ lbs.	Not recommended	
Thighs, drumsticks (indirect heat)	8-16 oz.	1½-2 hours	180
Direct heat (precook 1 hour)		8-10 min./side	