

## Meat and Poultry

Meat and poultry can be preserved for longer-term storage through canning, drying, or freezing. Whether it is game from a recent hunt or product bought on sale from the store, these preservation techniques provide the opportunity to safely consume these meat and poultry products well beyond the time they were harvested.

### Recommended Species

Most species of meat and poultry, both domestic and wild game, can be frozen, canned, or dried. Beef, veal, lamb, pork, bear, or venison can be canned as cubes or chunks, ground, or chopped. Poultry (chicken, duck, goose, turkey, or other game birds) can be canned with or without the bone. Rabbit and squirrel can be canned similarly to poultry. Jerky is best when made from lean beef, pork, or venison. Poultry is not recommended for jerky due to the texture of the meat.

### Quality

Only the freshest meat and poultry of good quality should be preserved. It is important that meats to be preserved have been stored at refrigeration temperatures to prevent deterioration of the meat. For wild game, it is important that the product was field dressed soon after the animal was harvested.

### Preparation

Lean meat is best for canning and drying, so remove excess fat. For strong-flavored wild game, soaking for 1 hour in a brine solution (1 tablespoon of salt per quart) may help reduce gamey flavors.

### Canning

To ensure the safety of canned meats and poultry, all jars or cans must be processed in a pressure canner at a sufficiently high temperature for a long enough time to kill all bacteria that cause spoilage or food poisoning. Meat and poultry can be raw packed or hot packed. *Meat and poultry are low-acid foods, so it is critical that a pressure canner is used when canning.*

#### Canning Large Animal Meat: Beef, Pork, Lamb, Venison, and Bear

Choose high-quality, chilled meat. Remove excess fat. If desired, soak strong-flavored wild meats for 1 hour in brine water con-



Photo credit: Bigstock.com

taining 1 tablespoon of salt per quart of water. Drain and rinse. Remove large bones.

For a hot pack, precook meat until rare by roasting, stewing, or browning in a small amount of fat or oil. Add 1 teaspoon of salt per quart, if desired. Fill jars with pieces and add boiling broth, meat drippings, water, or tomato juice, leaving 1 inch of headspace.

For a raw pack, add 1 teaspoon of salt per quart, if desired. Fill jars with raw meat pieces, leaving 1 inch of headspace. Do not add liquid.

Adjust lids and process per the recommendations in the tables on pages 2–3, according to the canning method used.

#### Canning Ground or Chopped Meat

Pressure and adequate time are necessary to produce a safe canned-meat product. Choose fresh, chilled meat. With venison, add one part high-quality pork fat to three or four parts venison before grinding. Use freshly made sausage, seasoned with salt and cayenne pepper (sage may cause a bitter “off” flavor). Shape chopped meat into patties or balls, or cut case sausage into 3- to 4-inch links. Cook until lightly browned. Ground meat may be sautéed without shaping. Remove excess fat. Fill jars with pieces. Add boiling meat broth, tomato juice, or water, leaving 1 inch of headspace. Add 1 teaspoon of salt per quart to the jars, if desired.

Adjust lids and process per the recommendations in the tables on the following pages, according to the canning method used.



## Canning Small Game Animals and Birds: Chicken, Turkey, Duck, Goose, Game Birds, Rabbit, Squirrel

Choose freshly killed and dressed healthy animals or birds. If desired, soak dressed meat for 1 hour in water containing 1 tablespoon of salt per quart. Drain and rinse. Remove excess fat. Cut meat into suitable sizes for canning. Can with or without bone.

For a hot pack, boil, steam, or bake meat until about two-thirds done. Add 1 teaspoon of salt per quart, if desired. Fill jars with pieces and hot broth, tomato juice, or water, tomato juice, or water, leaving 1¼ inch of headspace. Remove air bubbles.

For a raw pack, add 1 teaspoon of salt per quart, if desired. Fill jars loosely with raw meat pieces, leaving 1¼ inch of headspace. Do not add liquid.

Follow the recommendations in the tables below for additional information about canning meat safely.

### Using a Pressure Canner

Preheat lids according to manufacturer's instructions. Wipe the sealing surface of the jars with a clean, damp towel and then add lids, tighten screw bands so they are finger-tight, and process.

Place jar rack, 2 to 3 inches of water, and sealed jars in a canner. Fasten lid and heat canner on high setting. After exhausting steam for 10 minutes, add weighted gauge or close petcock to pressurize the canner. Start timing the recommended process when the desired pressure is reached (see tables below).

Regulate heat to maintain a uniform pressure. When processing is complete, remove canner from the heat and allow the canner to air-cool until it is fully depressurized. Then slowly remove weighted gauge or open petcock. After waiting for an additional 10 minutes, unfasten and remove the canner lid.

Remove jars from the canner with a jar lifter and place on a towel or rack. Do not retighten screw bands. Air-cool jars for 12 to 24 hours. Remove screw bands and check lid seals. If the center of the lid is indented, wash, dry, label, and store jars in a clean, cool location. Do not replace screw bands. If a lid is unsealed, the product can be refrigerated or reprocessed as before (check jar for defects and use a new lid). Canned meat is best if consumed within a year. Do not consume any product that has lost its vacuum seal during storage.

► **Table 1.** Recommended process time for canning strips, cubes, or chunks of meat in a dial gauge pressure canner.

Style of pack	Jar size	Time (min)	Canner pressure at designated altitudes			
			0–2,000 ft	2,001–4,000 ft	4,001–6,000 ft	6,001–8,000 ft
Hot or raw	Pints	75	11 lb	12 lb	13 lb	14 lb
	Quarts	90	11 lb	12 lb	13 lb	14 lb

Source: USDA Complete Guide to Home Canning (2015).

► **Table 2.** Recommended process time for canning strips, cubes, or chunks of meat in a weighted gauge pressure canner.

Style of pack	Jar size	Time (min)	Canner pressure at designated altitudes	
			0–1,000 ft	Above 1,000 ft
Hot or raw	Pints	75	10 lb	15 lb
	Quarts	90	10 lb	15 lb

Source: USDA Complete Guide to Home Canning (2015).

► **Table 3.** Recommended process time for canning ground or chopped meat in a dial gauge pressure canner.

Style of pack	Jar size	Time (min)	Canner pressure at designated altitudes			
			0–2,000 ft	2,001–4,000 ft	4,001–6,000 ft	6,001–8,000 ft
Hot	Pints	75	11 lb	12 lb	13 lb	14 lb
	Quarts	90	11 lb	12 lb	13 lb	14 lb

Source: USDA Complete Guide to Home Canning (2015).

► **Table 4.** Recommended process time for canning ground or chopped meat in a weighted gauge pressure canner.

Style of pack	Jar size	Time (min)	Canner pressure at designated altitudes	
			0–1,000 ft	Above 1,000 ft
Hot	Pints	75	10 lb	15 lb
	Quarts	90	10 lb	15 lb

Source: USDA Complete Guide to Home Canning (2015).

**Table 5.** Recommended process time for canning poultry and small game in a dial gauge pressure canner.

Style of pack	Jar size	Time (min)	Canner pressure at designated altitudes			
			0–2,000 ft	2,001–4,000 ft	4,001–6,000 ft	6,001–8,000 ft
<b>Without bones</b>						
Hot or raw	Pints	75	11 lb	12 lb	13 lb	14 lb
	Quarts	90	11 lb	12 lb	13 lb	14 lb
<b>With bones</b>						
Hot or raw	Pints	65	11 lb	12 lb	13 lb	14 lb
	Quarts	75	11 lb	12 lb	13 lb	14 lb

Source: USDA Complete Guide to Home Canning (2015).

**Table 6.** Recommended process time for canning poultry and small game in a weighted gauge pressure canner.

Style of pack	Jar size	Time (min)	Canner pressure at designated altitudes	
			0–1,000 ft	Above 1,000 ft
<b>Without bones</b>				
Hot or raw	Pints	75	10 lb	15 lb
	Quarts	90	10 lb	15 lb
<b>With bones</b>				
Hot or raw	Pints	65	10 lb	15 lb
	Quarts	75	10 lb	15 lb

Source: USDA Complete Guide to Home Canning (2015).

## Drying

### Jerky Procedure

The USDA's current recommendation for making jerky safely is to heat meat to 160°F before the dehydrating process. This step ensures that any bacteria present will be destroyed by wet/moist heat. However, most dehydrator instructions do not include this step and a dehydrator may not reach temperatures high enough to heat meat to 160°F. *Thus, the meat must be cooked first by baking or boiling before being placed in the dehydrator. Using the dehydrator alone will stop microorganisms from growing, but it will not kill them. The right conditions of heat and moisture may cause the microorganisms to become active without the consumer being aware of a potentially dangerous situation.* After heating the meat to 160°F, maintain a constant dehydrator temperature of 140 to 150°F during the drying process.

- Marinate meat in the refrigerator. Do *not* save marinade for reuse. Marinades are used to tenderize and flavor the jerky before dehydrating it.
- Steam, boil, or roast meat to 160°F, as measured with a meat thermometer, before dehydrating it. Consider using a boiling marinade as a quick method that ensures the safety of the meat.
- Dry meats in a food dehydrator that has an adjustable temperature dial and will maintain a temperature of at least 130 to 140°F throughout the drying process.

- Prefreeze meat to be made into jerky so it will be easier to slice. Cut partially thawed meat into long slices of ¼ inch thickness. For tender jerky, cut at right angles to long muscles (across the grain). Remove as much fat from the slices as possible to prevent “off” flavors.



Photo credit: Bigstock.com

## Heating Step

**Boiling marinade:** Prepare 2–3 cups of your favorite marinade and bring it to a rolling boil over medium heat. Add a few meat strips, making sure the marinade covers them. Reheat to a full boil. Wait for 1 minute. Remove the pan from the heat source. Remove the strips from the hot marinade and place them in a single, nonoverlapping layer on drying racks.

**Oven heating:** Place the jerky on racks placed on baking sheets, and bake in a 325°F oven. Check the internal temperature using a meat thermometer to make sure it has reached 160°F.

## Drying Step

Dry the strips at 140 to 150°F in a dehydrator, oven, or smoker. Rotate product to ensure even drying. For ovens with no setting below 200°F, use an oven thermometer to maintain the oven temperature around 170°F. Keep the door propped open 2 to 6 inches to ensure a more even temperature. Circulation can be improved by placing a fan outside the oven near the door.

Dry until the product cracks but does not break when it is bent (5 to 6 hours). Pat off any beads of oil with absorbent toweling and cool. Remove strips from the racks. Cool. Package and store in a cool, dry place. For longer shelf-life, consider storing jerky in the refrigerator.

## Freezing

Freezing is an excellent way to store meat and poultry. Freezing prevents the growth of microorganisms and other chemical changes that cause deterioration. The important factors for successful freezing of meat are (1) good packaging that prevents the interaction of air and restricts moisture loss, (2) quick freezing that minimizes damage to the meat, and (3) frozen storage at 0°F or below. It is also important to remember that frozen raw meats must be properly cooked before consuming.

Red meat and poultry can be wrapped in material that is moisture resistant, durable, and can form a tight seal around the meat, including plastic freezer wrap, aluminum foil, or butcher wrap. Freezer bags can be used, but it is important to exclude as much air as possible.

For freshly slaughtered meat, first chill below 40°F within 24 hours to prevent spoilage. While beef and venison can be stored refrigerated for several days before freezing (aging), other meats should be frozen after they are cold.

Cut the meat into workable portions, such as roasts, rolled roasts, steaks, chops, or stew meat. Remove as many bones as possible to reduce space requirements and to prevent bones from tearing the packaging. Tightly wrap the meat in the package, excluding as much air as possible, and leave no openings.

Tightly seal the bag to prevent unwrapping of the packaging material. If stacking meat in the same package, separate slices or patties with two layers of freezer paper.

Place packages in a freezer that is set to a temperature below 0°F. To ensure quick freezing, make sure there is good air flow around the packages and do not overstack unfrozen meat packages on top of one another.

Frozen meat can be cooked from either the frozen or thawed state. To safely thaw meat before cooking, place the item in the refrigerator (at 40°F or below) for a day or two before it is needed, or hold under cool, running water. If thawing in a microwave, the meat must be immediately cooked after removing from the microwave.

Use a food thermometer to check that the meat has been adequately cooked to the recommended safe minimum cooking temperature.

## References

- Andress, E. L., and J. A. Harrison. *So Easy to Preserve*, 6th ed. University of Georgia Cooperative Extension, 2014.
- Cutter, C. N. *Proper Processing of Wild Game and Fish*. Penn State Extension, 2011.
- USDA Complete Guide to Home Canning* (2015).

For additional information about food preservation, visit the Penn State Extension Home Food Preservation website at [extension.psu.edu/food/preservation](http://extension.psu.edu/food/preservation) or contact Penn State Extension in your county.

**Prepared by Catherine Cutter, professor and food safety extension specialist, and Martin Bucknavage, senior food safety extension associate.**

## [extension.psu.edu](http://extension.psu.edu)

Penn State College of Agricultural Sciences research and extension programs are funded in part by Pennsylvania counties, the Commonwealth of Pennsylvania, and the U.S. Department of Agriculture.

Where trade names appear, no discrimination is intended, and no endorsement by Penn State Extension is implied.

**This publication is available in alternative media on request.**

Penn State is an equal opportunity, affirmative action employer, and is committed to providing employment opportunities to all qualified applicants without regard to race, color, religion, age, sex, sexual orientation, gender identity, national origin, disability or protected veteran status.

Produced by Ag Communications and Marketing

© The Pennsylvania State University 2019

Code EE0058

08/19pod