

Home-canning Meat, Poultry and Fish

by Lynn Paul, Ed.D., R.D., Professor and Extension Food and Nutrition Specialist, Montana State University-Bozeman; and MSU Extension Agents: Bernice Mason, Yellowstone County; and Karen Tyra, Stillwater County

This Montguide lists canning pressures for specific altitudes throughout Montana and recommended processing times for various meats. It includes a checklist for safe preparation and storage of home-canned foods, and instructions for canning meat, poultry and fish.



**MONTANA
STATE UNIVERSITY
EXTENSION
MontGuide**

MT200903HR Revised 6/09

Safety is the top priority

The United States Department of Agriculture (USDA) home preservation guidelines used in this MontGuide are based on extensive research to prevent botulism, a potentially deadly foodborne illness caused by a toxin of the bacteria *Clostridium botulinum*, which produces one of the most deadly poisons. *C. botulinum* can grow and reproduce in improperly processed home-canned foods.

The guidelines presented here will also help prevent foodborne illnesses caused by other bacteria, molds and yeast, and will help prevent food spoilage in your home-processed foods.

Additional Resources

This MontGuide is best suited for intermediate and advanced home food preservers. The following resources provide a wide variety of tested recipes and information, based on USDA recommendations, especially important for the beginning food preserver.

National Center for Home Food Preservation (NCHFP),

USDA sponsored Web site is the most current source for publications, video clips, tutorials for the beginning home food preserver, frequently asked questions, and seasonal tips: <http://www.uga.edu/nchfp/>

USDA *Complete Guide to Home Canning*, 2006. Available on NCHFP Web site, above, click on 'publications'

So Easy to Preserve, 5th edition only, MSU Extension does not recommend earlier editions. <http://www.soeasytopreserve.com>

The following publications are available at local stores or online at <http://www.kitchenkrafts.com>: *New Ball Blue Book of Preserving*, 2009 edition only; *Ball Complete Book of Home Preserving*, 2006 edition only; *Ball Blue Book of Preserving*, 2006 edition only.

A Question of Safety

Before beginning your home-canning, ask yourself, 'What is my altitude?' In order to decrease your risk of food-related illness and death, you must determine the correct home-

TABLE 1. Altitudes* of County Seats in Montana

County Seat	Elevation	County Seat	Elevation
Anaconda	5239	Hysham	2618
Baker	2968	Jordan	2640
Big Timber	4199	Kalispell	2984
Billings	3153	Lewistown	3936
Boulder	4938	Libby	2198
Bozeman	4806	Livingston	4557
Broadus	3091	Malta	2275
Butte	5539	Miles City	2362
Chester	3162	Missoula	3232
Chinook	2411	Phillipsburg	5357
Choteau	3799	Plentywood	2068
Circle	2500	Polson	2930
Columbus	3599	Red Lodge	5562
Conrad	3523	Roundup	3198
Cut Bank	3793	Ryegate	3775
Deer Lodge	4609	Scobey	2461
Dillon	5118	Shelby	3300
Ekalaka	3494	Sidney	1967
Forsyth	2510	Stanford	4288
Fort Benton	2698	Superior	2813
Glasgow	2088	Terry	2228
Glendive	2053	Thompson Falls	2519
Great Falls	3398	Townsend	3869
Hamilton	3625	Virginia City	5804
Hardin	2903	W. Sulphur Spr.	5091
Harlowton	4185	Wibaux	2650
Havre	2493	Winnett	2975
Helena	4068	Wolf Point	2043

*accessed January 22, 2009, <http://nris.mt.gov/montanafacts/townelev.html>

canning processing times and pressures for your level of elevation. While water boils at 212°F at sea level, it boils at a much lower temperature at higher elevations. Consequently, home-canned foods must be processed for longer times or at a higher pressure at higher altitudes.

SAFE EQUIPMENT

- Jar lifters
- Canning funnels
- Non-metallic spatulas
- Canning jars and 2 piece lids
- Magnetic wand to lift jar lids
- Pressure canner - a specially made heavy pot with tightly fitted lid. The lid is fitted with a vent and dial or weighted pressure gauge.

Equipment and methods *not* recommended: Never use a boiling water canner for canning meat, poultry or fish. Open-kettle canning and the processing of freshly filled jars in conventional ovens, steam canners, microwave ovens, and dishwashers are not recommended because they will not prevent growth of botulism. Jars with wire bails and glass caps, one-piece zinc porcelain-lined caps, and pressure sauce pans are no longer recommended.

PACKING

Style of pack: Many fresh foods contain 10-30 percent air. Hot-packed foods will remove more air from the foods than raw packing, prevent floating of food, and yield a higher quantity of product.

- *Raw-packing* is the practice of filling jars with freshly prepared, but unheated foods.
- *Hot-packing* is the practice of heating freshly prepared food to boiling, simmering it 2 to 5 minutes, and promptly filling jars with boiled food.

Jar size: Follow directions for packing in either pint or quart jars. (NOTE: Not all foods can be safely processed in quart jars. Therefore, not all foods will designate quart directions.)

Head space: Follow directions for specific foods.

Lids: Follow manufacturer's directions for lids.

PROCESSING

Follow manufacturer's directions for your pressure canner; directions for use vary among manufacturers.

- Test your dial gauge at least once per year. Weighted gauges do not need testing.
- Canners must be vented for 10 minutes to exhaust air. If canner is not vented, excess air will keep the canner pressure and temperature too low for safe processing.
- Determine pressure and times for altitude.
- Start processing time when weighted gauge begins to rock or dial gauge reaches required pressure for your altitude.

COOLING

- Remove pressure canner from stove, cool at room temperature until pressure returns to zero. Do not force cool the canner by opening vent, removing weight, or running under cold water. After canner is depressurized, remove the weight or open the vent. Wait 10 minutes, then unfasten the pressure canner lid and remove carefully.
- Place jars on rack or cloth so air can circulate. Do not expose to draft or cover with towels. Do not touch or tighten lids until jars have cooled.

SEALING

- Cooled jars should have the center of the lid popped down and not moveable when pressed.
- Jars that have not sealed should be repacked and reprocessed for the original processing pressure and time within 24 hours. If not reprocessed, foods may also be refrigerated or frozen.

CONSUMING

- If you are uncertain about the safety of home-canned foods, follow the advice **“When in doubt, throw it out.”**
- Botulism and other deadly foodborne illness causes are not detected in food by sight, smell and taste. Foods may show no sign of spoilage! If a canned food looks spoiled, foams or even has an “off” odor, dispose of it.

CHICKEN OR RABBIT

Caution: Fresh poultry should be chilled and canned without delay. Do not can meat from diseased or unhealthy animals.

Procedure: Choose freshly killed and dressed, healthy animals. Dressed chicken should be chilled for 6 to 12 hours before canning. Dressed rabbits should be soaked 1 hour in water containing 1 tablespoon of salt per quart, and then rinsed. Remove excess fat. Cut the chicken or rabbit into suitable sizes for canning. Can with or without bones.

Hot pack: Boil, steam, or bake meat until about two-thirds done. Add 1 teaspoon salt per quart to the jar, if desired. Fill jars with pieces and hot broth, leaving 1¼ inch headspace.

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

Wipe rims of jars with a damp, clean paper towel. Adjust lids and process.

GROUND OR FINELY CHOPPED MEAT

Bear, beef, lamb, pork, sausage, veal, venison

Caution: Fresh red meats should be chilled and canned without delay. Do not can meat from diseased or unhealthy animals.

Procedure: 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 cased sausage into 3 to 4 inch links. Cook until lightly browned. Ground meat may be sauteed without shaping. Remove excess fat. Fill jars with pieces. Add boiling meat broth, tomato juice, or water, leaving 1 inch headspace. Add 1 teaspoon of salt per quart to the jars, if desired.

Wipe rims of jars with a damp, clean paper towel. Adjust lids and process.

TABLE 2. Recommended processing times for meats in a dial-gauge pressure canner

	Style of Pack	Jar*	Processing Time	0-2000 ft.	2001-4000 ft.	4001-6000 ft.	6001-8000 ft.	
Chicken or Rabbit (no bones)	Hot and Raw	Pints	75 min.	11 lb.	12 lb.	13 lb.	14 lb.	
		Quarts	90 min.	11 lb.	12 lb.	13 lb.	14 lb.	
		(with bones)	Pints	65 min.	11 lb.	12 lb.	13 lb.	14 lb.
			Quarts	75 min.	11 lb.	12 lb.	13 lb.	14 lb.
Ground or chopped meat	Hot	Pints	75 min.	11 lb.	12 lb.	13 lb.	14 lb.	
		Quarts	90 min.	11 lb.	12 lb.	13 lb.	14 lb.	
Strips, cubes or chunks of meat	Hot and Raw	Pints	75 min.	11 lb.	12 lb.	13 lb.	14 lb.	
		Quarts	90 min.	11 lb.	12 lb.	13 lb.	14 lb.	
Fish	Raw	Pints	100 min.	11 lb.	12 lb.	13 lb.	14 lb.	
		Quarts**	—	—	—	—	—	
Smoked fish		Pints***	110 min.	11 lb.	12 lb.	13 lb.	14 lb.	
		Quarts	No safe processing recommendations are available for smoked fish in quarts.					

TABLE 3. Recommended processing times for meats in a weighted-gauge pressure canner

	Style of Pack	Jar*	Processing Time	0-1000 ft.	Above 1000 ft.	
Chicken or Rabbit (no bones)	Hot and Raw	Pints	75 min.	10 lb.	15 lb.	
		Quarts	90 min.	10 lb.	15 lb.	
		(with bones)	Pints	65 min.	10 lb.	15 lb.
			Quarts	75 min.	10 lb.	15 lb.
Ground or chopped meat	Hot	Pints	75 min.	10 lb.	15 lb.	
		Quarts	90 min.	10 lb.	15 lb.	
Strips, cubes or chunks of meat	Hot and Raw	Pints	75 min.	10 lb.	15 lb.	
		Quarts	90 min.	10 lb.	15 lb.	
Fish	Raw	Pints	100 min.	10 lb.	15 lb.	
		Quarts**	—	—	—	
Smoked Fish		Pints***	110 min.	10 lb.	15 lb.	
		Quarts	No safe processing recommendations are available for smoked fish in quarts.			

*If processing with half pints, use same processing time as with pints.

**Directions for canning in quart jars are not available in this Montguide. See Additional Resources, page 4, *So Easy to Preserve*, 5th edition only, and the USDA *Home Guide to Canning*, 2006 edition only, for more information on canning fish.

***Safely canning smoked fish in pints requires distinctly different directions for filling pressure canner than for pressure canning other foods. See page 4 for directions for filling the pressure canner for processing smoked fish.

STRIPS, CUBES, OR CHUNKS OF MEAT

Bear, beef, lamb, pork, veal, venison

Procedure: Choose quality chilled meat. Remove excess fat. Soak strong-flavored wild meats for 1 hour in brine water containing 1 tablespoon of salt per quart. Rinse. Remove large bones.

Hot pack: Precook meat until rare by roasting, stewing or browning in a small amount of fat. Add 1 teaspoon of salt per quart to the jar, if desired. Fill jars with pieces and add boiling broth, meat drippings, water or tomato juice (especially with wild game), leaving 1 inch headspace.

Raw pack: Add 1 teaspoon of salt per quart to the jar, if desired. Fill jars with raw meat pieces, leaving 1 inch headspace. Do not add liquid since raw meat forms its own juices.

Wipe rims of jars with a damp, clean paper towel. Adjust lids and process.

FISH IN PINT JARS

Blue, mackerel, salmon, steelhead, trout, and other fatty fish except tuna

Caution: Eviscerate fish within 2 hours after they are caught. Keep cleaned fish on ice until ready to can.

Note: Glass-like crystals of magnesium ammonium phosphate sometimes form in canned salmon. There is no way for the home-canner to prevent these crystals from forming, but they usually dissolve when heated and are safe to eat.

Procedure: If the fish is frozen, thaw it in the refrigerator before canning. Rinse the fish in cold water. You can add vinegar to the water (2 tablespoons per quart) to help remove slime. Remove head, tail, fins and scales; it is not necessary to remove the skin. You can leave the bones in most fish because the bones become very soft and are a good source of calcium. For halibut, remove the head, tail, fins, skin and bones. Wash and remove all blood. Refrigerate all fish until you are ready to pack in jars.

Split fish lengthwise, if desired. Cut cleaned fish into 3½ inch lengths. If the skin has been left on the fish, pack the fish skin out for a nicer appearance or skin in, for easier jar cleaning.

Fill hot pint jars, leaving 1 inch headspace. Add 1 teaspoon of salt per pint, if desired. Do not add liquids. Carefully clean the jar rims with a clean, damp paper towel; wipe with a dry paper towel to remove any fish oil. Adjust lids and process.

SMOKED FISH

Salmon, trout, whitefish, walleye, bass, tuna, rockfish, flatfish (sole, cod, flounder)

Caution: Safe home-processing times for other smoked seafoods have not been determined. Those products should be frozen. Smoking of fish should be done by tested methods. Lightly smoked fish is recommended for canning because the smoked flavor will become stronger and the flesh drier after processing. However, because it has not yet been cooked, do not taste lightly smoked fish before canning.

Follow these recommended canning instructions carefully. Use a 16 to 22 quart pressure canner for this procedure. Do not use smaller pressure saucepans since safe processing times have not been determined. Do not use jars larger than one pint. Half-pints could be safely processed for the same length of time as pints, but the quality of the product may be less acceptable.

Procedure: If smoked fish has been frozen, thaw in the refrigerator until no ice crystals remain before canning. If not done prior to smoking, cut fish into pieces that will fit vertically into pint canning jars, leaving 1 inch headspace. Pack smoked fish vertically into hot jars, leaving 1 inch headspace between the pieces and the top rim of the jar. The fish may be packed either loosely or tightly. Do not add liquid to the jars. Clean jar rims with a clean, damp paper towel. Adjust lids and process.

Processing change for smoked fish - The directions for filling the pressure canner for processing smoked fish are different from other pressure canning, so please read the following carefully: It is critical to product safety that the processing directions are followed exactly. When you are ready to process your jars of smoked fish, measure 4 quarts (16 cups) of cool tap water and pour into the pressure canner (**NOTE:** The water level probably will reach the screw bands of pint jars). Do not decrease the amount of water or heat the water before processing begins. Place prepared, closed jars on the rack in the bottom of the canner, and proceed as with usual pressure canning instructions.



To order additional publications, please contact your county or reservation MSU Extension office, visit our online catalog at www.msueextension.org/publications.asp or e-mail orderpubs@montana.edu

Copyright © 2009 MSU Extension

We encourage the use of this document for nonprofit educational purposes. This document may be reprinted for nonprofit educational purposes if no endorsement of a commercial product, service or company is stated or implied, and if appropriate credit is given to the author and MSU Extension. To use these documents in electronic formats, permission must be sought from the Extension Communications Coordinator, 115 Culbertson Hall, Montana State University, Bozeman MT 59717; E-mail: publications@montana.edu

The U.S. Department of Agriculture (USDA), Montana State University and Montana State University Extension prohibit discrimination in all of their programs and activities on the basis of race, color, national origin, gender, religion, age, disability, political beliefs, sexual orientation, and marital and family status. Issued in furtherance of cooperative extension work in agriculture and home economics, acts of May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture, Douglas L. Steele, Vice Provost and Director, Montana State University Extension, Bozeman, MT 59717.