



Pressure Canning Basics

Basic Food Safety

Wash Hands Frequently

- Personal cleanliness is a must. Wash your hands thoroughly and frequently. *E. coli* resides in the human nose and intestines. Wash your hands if you rub your nose, or if you wipe your face or skin.
- Bandage any cuts or burns on hands before handling food, or use disposable gloves.

Avoid Cross Contamination

- Rinse all fresh fruits and vegetables well under running water before preparing or eating them. Dry them with a clean cloth or paper towel.
- **ALWAYS** wash your hands, knives, cutting boards, and food preparation surfaces well with soapy water before and after any contact with raw meat, fish, or poultry.
- Use a disinfecting solution of 1½ teaspoon of chlorine bleach to 1 pint of water. Dispense with a spray bottle to disinfect countertops, cutting surfaces, sinks, etc. Let sit one minute then wipe. Make a new solution daily.

When In Doubt, Throw It Out

- Never taste food that looks or smells strange to see if it can still be used.
- Most bacteria that cause foodborne illness are odorless, colorless, and tasteless.

Canning Basics

General Pressure Canning Supplies

- Pressure canner (either dial or weighted gauge, big enough to hold four quart jars on a rack)
- Standard canning jars, rings, self-sealing one-time use lids or reusable lids/seals
- Funnel
- Headspace measurer and de-bubbler
- Jar lifter and tray/towel for hot jars
- Reputable recipe that follows the USDA recommended canning procedures

Get Ready ... Be Prepared!

- Read the recipe thoroughly before you begin.
- Measure out all ingredients. Gather all of your utensils.
- Wash jars in hot soapy water and rinse well. Check jars for imperfections.
- Place clean jars in the canner and heat the jars.
- Prepare lids and rings according to the manufacturer's instructions. (Current boxes of lids don't require pre-heating, older ones did.) *Note: reusable lids follow different preparation and finishing instructions than single-use lids.*
- Do a "dry run" of the recipe to make sure you have all of your materials.

Canning Processes

- Use a **pressure canner** for low acid foods: meats, vegetables, and mixtures of high and low acid foods
- Use an **atmospheric steam canner** or a **boiling water canner** for high acid foods: fruits, pickled and fermented products, jams and jellies.

Why two different processes? Low acid foods must be pressure canned because *Clostridium botulinum*, the bacteria that causes botulism, is a spore former. When conditions are not favorable for the organism to grow (high heat, dryness, etc.), the bacterial cell forms a protective structure called a spore. It takes a higher temperature than boiling to destroy the spores: 240°F. If you do not destroy the spores in low acid foods they will germinate and produce fatal toxins in the food when it is stored on the shelf. High acid foods have enough acidity to destroy spores.

Raw-Pack vs. Hot-Pack Methods

Filling jars with raw, unheated food prior to heat processing is called the raw-pack method. The preferred method, filling jars with preheated, hot food prior to heat processing, is called the hot-pack method. Benefits include a tighter pack and, because food expels air when heated, less float.

Jars & Lids

Check jars, lids and bands for high quality. Wash jars, lids and bands in hot, soapy water. Rinse well. Heat home canning jars in hot water, not boiling, in the pressure canner until ready for use. Add water to the jars to prevent flotation, pour water into canner before filling jars. Bring to a simmer over medium heat. Keep jars hot until ready for use. Keeping jars hot prevents them from breaking when hot food is added. Leave lids and bands at room temperature for easy handling.

Headspace

Headspace is the completely empty space left in the jar underneath the lid and above the food. Headspace allows for food to expand during canning without being forced out from under the lid during processing. Recommended amounts also allow for good vacuums to be formed for holding lids in place and good food quality to be maintained during storage.

Canning Meat, Poultry and Game

Meat, poultry and game are low-acid foods. They must be processed in a pressure canner to assure their safety. Use the processing time and pressure that is specified for each type of meat, poultry or game.

- Can only good quality meat, poultry or game.
- Chill home produced meat soon after slaughter (40°F or lower) to prevent spoilage.
- Keep all meat clean and sanitary. Pat poultry dry with paper towels.
- If meat must be held for longer than a few days, freeze it. Store frozen meat at temperatures of 0°F or lower until canning time.
- Trim meat of gristle, bruised spots and fat before canning. Fat left on the meat will melt and climb the sides of the jar during processing. If the fat comes in contact with the sealing edge of the lid, the jar may not seal.

Source: *So Easy to Preserve, 2014*

Canning Vegetables

- Home canned vegetables, which are low-acid foods, must be processed in a pressure canner to supply sufficient heat (240°F) to destroy botulism-causing bacteria. Failure to properly process low-acid foods in a pressure canner can allow the survival of *Clostridium botulinum* spores and subsequently toxin that can cause severe illness or death.
- **Always use tested recipes/instructions and process at the number of pounds and specified time for your elevation. Do not take short cuts in recommended preparation or processing procedures!**

Source: *extension.colostate.edu*

Pressure Canning Essentials

Please note that a pressure cooker is NOT a pressure canner, but a pressure canner can be used as a pressure cooker. A pressure cooker must be able to hold **4 quart** jars on a rack to be considered a pressure canner.

Adjusting for Altitude: Pressure Canner

Processing times for all recipes are at sea level. At sea level to 2,000 feet, 11 pounds of steam pressure will produce 240°F. Above 2,000 feet you must increase the steam pressure to reach this temperature. At altitudes above sea level adjust the pressure according to the altitude chart.

Altitude Chart	
Altitude	Required Pressure
Sea Level – 2,000 feet	11 pounds
2,001 – 4,000 feet	12 pounds
4,001 – 6,000 feet	13 pounds
6,001 – 8,000 feet	14 pounds
8,001 – 10,000 feet	15 pounds

Using a Pressure Canner

1. Clean lid gaskets and other parts according to the manufacturer's directions; make sure all vent pipes are clear.
2. Put 2 to 3 inches hot water (140°F for a raw pack, 180°F for a hot pack) into the canner.
3. Place filled jars on the jar rack in the canner, using a jar lifter.
4. Fasten the canner lid securely. Leave the weight off the vent pipe or open the petcock.
5. Turn the heat setting to high; heat until the water boils and steam flows freely in a funnel-shape from the open vent pipe or petcock. While maintaining the high heat setting, let the steam flow (exhaust) **continuously for 10 minutes**.
6. Place the weight on the vent pipe, or close the petcock.
7. Start timing the process when the pressure reading on the dial gauge indicates that the recommended pressure has been reached, or, for canners without dial gauges, when the weighted gauge begins to jiggle or rock as the manufacturer describes.
8. Regulate the heat under the canner to maintain a steady pressure at, or slightly above, the correct gauge pressure. **IMPORTANT:** If at any time pressure goes below the recommended amount, bring the canner back to pressure and begin the timing of the process over, from the beginning using the total original process time. This is important for the safety of the food.
9. When the timed process is completed, turn off the heat, remove the canner from the heat (electric burner) if possible, and let the canner cool down naturally. Do not force cool the canner. Pints take about 30 minutes to cool; about 45 minutes for quarts.
10. After the canner is completely depressurized, remove the weight from the vent pipe or open the petcock. **Wait 10 minutes;** then unfasten the lid away from you to remove.
11. Remove the jars from the canner by lifting them upright and placing them on a rack or folded towel away from drafts.
12. Do not retighten the rings with single-use lids. Leave the ring bands on the jars until they have cooled thoroughly (approximately 24 hours). Do not try to dump or wipe up any water on the lids.
13. Dry the canner, lid and gasket. Take off removable petcocks and safety valves; wash and dry thoroughly. Follow maintenance and storage instructions that come from your canner manufacturer.

Removing and Cooling Jars

Be careful when moving and lifting filled jars. Do not tilt. Do not be tempted to try to pour off the water on the top when lifting them out of the canner. The water on top of the hot jars will evaporate very rapidly. If the jars are tilted, food may become lodged between the glass rim and the sealing compound preventing proper sealing.

- After cooling the jars for 12 to 24 hours, remove the screw bands.
- Check each jar for a seal; press the middle of the single use lid with your finger. If the lid springs up when you release your finger, the lid is unsealed.
- Clean the jars with a damp cloth. Thoroughly dry ring bands may be replaced on the jars, if desired.
- Label the jars with the product name, date, processing method (PC = pressure canner), and store in a cool, dark, dry area.
- If a jar did not seal, check the jar for flaws. Refrigerate and use the product within a few days, freeze the jar, or reprocess it within 24 hours using a new lid and if necessary, a new jar. Process by the method originally advised for the full length of time.

Resources

- National Center for Home Food Preservation (<http://nchfp.uga.edu/>)
- UC Master Food Preserver Program publication library (<http://mfp.ucanr.edu>)

Recipes

Meat Stock (Broth)

Beef: Saw or crack fresh trimmed beef bones (with meat removed) to enhance extraction of flavor. Rinse bones and place in a large stockpot, cover bones with water. Place cover on pot and simmer 3 to 4 hours.

Chicken or turkey: Place large carcass bones (with meat removed) in a large stockpot. Add enough water to cover bones. Cover pot and simmer 30 to 45 minutes or until any remaining tidbits of meat on the bones easily fall off.

1. Remove bones, cool broth and discard excess fat. If desired, remove any tiny amount of meat trimmings still clinging to bones and add back to the broth.
2. Reheat broth to boiling. Ladle hot stock into hot jars leaving 1-inch headspace.
3. Wipe rim with a paper towel moistened with vinegar. Place lids and rings on jars, tighten rings finger tight.
4. Process in a pressure canner: pints 20 minutes, quarts 25 minutes
 - Weighted gauge canner: 10 pounds at 0-1000 feet, 15 pounds above 1000 feet
 - Dial gauge canner: 11 pounds at 0-2000 feet, 12 pounds at 2001-4000 feet, 13 pounds at 4001-6000 feet, 14 pounds at 6001-8000 feet, 15 pounds at 8,001-10,000 feet

Source: National Center for Home Food Preservation, 2024

Vegetable Stock

Yield: About 8 pints or 4 quarts

1 pound carrots, 1-inch pieces	3 cloves garlic, crushed
6 stalks celery, 1-inch pieces	3 bay leaves
3 medium onions, quartered	1 teaspoon crushed dried thyme
2 red bell peppers, 1-inch pieces	8 whole peppercorns
2 large tomatoes, cored, seeded, chopped	28 cups water
2 medium turnips, chopped	

1. Bring all ingredients to a boil over medium-high heat. Reduce heat, cover and boil gently for 2 hours. Uncover and boil gently for 2 hours. Strain stock through a fine sieve or cheesecloth-lined strainer. Discard solids. Return stock to a boil. Ladle into hot jars, leaving 1-inch headspace. Adjust lids and rings.
2. Process in a pressure canner: pints 30 minutes, quarts 35 minutes.
 - Weighted gauge canner: 10 pounds at 0-1000 feet, 15 pounds above 1000 feet
 - Dial gauge canner: 11 pounds at 0-2000 feet, 12 pounds at 2001-4000 feet, 13 pounds at 4001-6000 feet, 14 pounds at 6001-8000 feet, 15 pounds at 8,001-10,000 feet

Source: Ball Complete Book of Home Preserving, 2012

Green Beans

Select filled but tender, crisp pods. Wash beans and trim ends. Leave whole or cut or snap into 1-inch pieces.

Hot pack: Cover with boiling water; boil 5 minutes. Fill hot jars loosely with beans, leaving 1-inch headspace. Add 1 teaspoon of canning salt per quart to the jar, if desired. Cover beans with hot cooking liquid, leaving 1-inch headspace.

Raw pack: Fill jars tightly with raw beans, leaving 1-inch headspace. Add 1 teaspoon canning salt per quart to the jar, if desired. Add boiling water, leaving 1-inch headspace.

Process in a pressure canner: pints 20 minutes, quarts 25 minutes.

- Weighted gauge canner: 10 pounds at 0-1000 feet, 15 pounds above 1000 feet
- Dial gauge canner: 11 pounds at 0-2000 feet, 12 pounds at 2001-4000 feet, 13 pounds at 4001-6000 feet, 14 pounds at 6001-8000 feet, 15 pounds at 8,001-10,000 feet

Source: National Center for Home Food Preservation, 2024

Sloppy Joe Mix*Yield: 8 pints*

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|--|-------------------------------|
| 4 pounds lean ground beef or venison
(or a combination) | 2 cups water |
| 3 cups onion, peeled and chopped | 1 tablespoon salt |
| 1 ½ cups green bell pepper, cored and chopped | 1 tablespoon sugar |
| 1 16-ounce tomato sauce | 1 tablespoon prepared mustard |
| 2 cups tomato ketchup | ¾ teaspoon black pepper |

1. Sauté meat and onion. Drain off fat.
2. Add remaining ingredients, bring to a boil, then simmer 5 minutes.
3. Ladle mixture into a hot jar, leaving 1-inch headspace. Remove air bubbles and adjust headspace if needed. Wipe jar rims with a dampened clean paper towel or cloth. Apply and adjust two-piece metal canning lids. Place jar in canner. Repeat with remaining jars.
4. Process in a pressure canner: pints 75 minutes, quarts 90 minutes
 - Weighted gauge canner: 10 pounds at 0-1000 feet, 15 pounds above 1000 feet
 - Dial gauge canner: 11 pounds at 0-2000 feet, 12 pounds at 2001-4000 feet, 13 pounds at 4001-6000 feet, 14 pounds at 6001-8000 feet

Source: Adapted from University of Wisconsin Cooperative Extension, publication B3345

Chicken/Turkey Soup*Yield: 2-4 quarts or 4-8 pints***Full recipe**

- 16 cups chicken stock
- 3 cups diced cooked chicken
(about one 3-pound chicken)
- 1 ½ cups diced celery (about 2 stalks)
- 1 ½ cups sliced carrots (about 3 medium)
- cup diced onion (about 1 medium)
- Salt, optional
- Pepper, optional
- 3 chicken bouillon cubes, optional

Half recipe

- 8 cups chicken stock
- 1 ½ cups diced cooked chicken
(about ½ 3-pound chicken)
- ¾ cups diced celery (about 1 stalk)
- ¾ cups sliced carrots (about 2 medium)
- 1 ½ cup diced onion (about ½ medium)
- Salt, optional
- Pepper, optional
- 1-2 chicken bouillon cubes, optional

1. Combine chicken stock, chicken, celery, carrots and onion in a large saucepot. Bring mixture to a boil. Reduce heat and simmer 30 minutes.
2. Season to taste with salt and pepper, if desired. Add bouillon cubes, if desired. Cook until bouillon cubes are dissolved.
3. Ladle hot chicken soup into hot jars, leaving 1-inch headspace. Remove air bubbles.
4. Wipe rim with white vinegar. Place lids and rings on jars, tighten rings finger tight.
5. Process in a pressure canner: pints 65 minutes, quarts 75 minutes
 - Weighted gauge canner: 10 pounds at 0-1000 feet, 15 pounds above 1000 feet
 - Dial gauge canner: 11 pounds at 0-2000 feet, 12 pounds at 2001-4000 feet, 13 pounds at 4001-6000 feet, 14 pounds at 6001-8000 feet

Source: ballmasonjars.com, 2022

Baked Beans

$\frac{3}{4}$ pounds beans per quart	2 teaspoons salt
3 tablespoons dark molasses	$\frac{3}{4}$ teaspoon powdered dry mustard
1 tablespoon vinegar	7 pieces of pork, ham or bacon ($\frac{3}{4}$ -inch pieces)

Preparation:

1. **Beans:** Sort and wash dry beans. Add 3 cups of water for each cup of dried beans. Boil 2 minutes, remove from heat and soak 1 hour and drain. Heat to boiling in fresh water, and save liquid for making sauce.
2. **Molasses Sauce:** Mix 4 cups water or cooking liquid from beans, 3 tablespoons dark molasses, 1 tablespoon vinegar, 2 teaspoons salt, and $\frac{3}{4}$ teaspoon powdered dry mustard. Heat to boiling.
3. **Baked Beans:** Place seven $\frac{3}{4}$ -inch pieces of pork, ham, or bacon in an earthenware crock, a large casserole, or a pan. Add beans and enough molasses sauce to cover beans. Cover and bake 4 to 5 hours at 350°F. Add water as needed, about every hour.

Canning Processing:

1. Fill jars, leaving 1-inch headspace. Remove air bubbles.
2. Wipe rim with white vinegar. Place lids and rings on jars, tighten rings finger tight.
3. Process in a pressure canner: pints 65 minutes, quarts 75 minutes
 - Weighted gauge canner: 10 pounds at 0-1000 feet, 15 pounds above 1000 feet
 - Dial gauge canner: 11 pounds at 0-2000 feet, 12 pounds at 2001-4000 feet, 13 pounds at 4001-6000 feet, 14 pounds at 6001-8000 feet

Source: National Center for Home Food Preservation, 2020

Split Pea Soup

Yield: About 5 pints or 2 quarts

2 cups dried split peas	1 cup chopped onion	$\frac{1}{4}$ teaspoon ground allspice
8 cups water	1 cup diced cooked ham	Salt and freshly ground black pepper
1½ cups sliced carrots	1 bay leaf	

1. In a large stainless steel saucepan, combine peas and water. Bring to a boil over medium-high heat.
2. Reduce heat, cover and boil gently for about 1 hour or until peas are tender.
3. If a smooth soup is desired, working in batches, puree peas and liquid in a food mill or a food processor fitted with a metal blade. Return puree to saucepan. (Or just use a stick blender in the pot.)
4. Add carrots, onion, ham, bay leaf and allspice to saucepan. Bring to a boil over medium-high heat. Reduce heat and boil gently for 30 minutes. If soup is too thick, thin with boiling water. Season with salt and pepper to taste. Remove bay leaf.
5. Ladle hot soup into hot jars, leaving 1-inch headspace. Remove air bubbles and adjust headspace, if necessary, by adding hot soup. Wipe rim with a paper towel moistened with vinegar.
6. Process in a pressure canner: pints 75 minutes, quarts 90 minutes
 - Weighted gauge canner: 10 pounds at 0-1000 feet, 15 pounds above 1000 feet
 - Dial gauge canner: 11 pounds at 0-2000 feet, 12 pounds at 2001-4000 feet, 13 pounds at 4001-6000 feet, 14 pounds at 6001-8000 feet, 15 pounds at 8,001-10,000 feet

Source: Ball Complete Book of Home Preserving, 2012

Poultry

Chicken, Duck, Goose Turkey or Game Birds

Choose freshly killed and dressed poultry or game birds. Strong flavored game birds (especially water fowl) can be soaked for 1 hour in a brine made from 1 tablespoon salt and 1 quart of water. Rinse. (Note: If you soak game birds, don't add salt when filling the jars.) Dressed poultry and game birds should be chilled for 6 to 12 hours before canning. Pat dry with paper towels.

1. Remove excess fat.
2. Cut the chicken into suitable size parts for fitting into your jars leaving the required headspace. Can with or without bones. The hot pack is preferred for best liquid cover and quality during storage. Natural poultry fat and juices are usually not enough to cover the meat in raw packs.
 - **Hot pack** – Boil, steam or bake meat until about two-thirds done. (*If cooked poultry needs to reach an internal temperature of 160°F, two-thirds would be an internal temperature of 110°F.*) Add 1 teaspoon salt per quart to the jar, if desired. Fill jars with pieces and hot broth, leaving 1¼-inch headspace. Remove air bubbles.
 - **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.
3. Wipe rim with white vinegar. Place lids and rings on jars, tighten rings finger tight.
4. Process in a pressure canner:
 - **Without bones:** pints 75 minutes, quarts 90 minutes; **with bones:** pints 65 minutes, quarts 75 minutes
 - Weighted gauge canner: 10 pounds at 0-1000 feet, 15 pounds above 1000 feet
 - Dial gauge canner: 11 pounds at 0-2000 feet, 12 pounds at 2001-4000 feet, 13 pounds at 4001-6000 feet, 14 pounds at 6001-8000 feet

Source: National Center for Home Food Preservation, 2023

Strips, Cubes or Chunks of Meat

Bear, Beef, Lamb, Pork, Veal, Venison

1. Choose high quality chilled meat. Remove excess fat.
2. Soak strong-flavored wild meats for 1 hour in brine water containing 1 tablespoon of salt per quart. Rinse. Remove large bones.
3. The hot pack is preferred for best liquid cover and quality during storage. The natural amount of fat and juices in today's leaner meat cuts are usually not enough to cover most of the meat in raw packs.

Hot pack – Precook meat until rare by roasting, stewing, or browning in a small amount of fat. Add 1 teaspoons 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 2 teaspoons of salt per quart to the jar, if desired. Fill jars with raw meat pieces, leaving 1-inch headspace. Do not add liquid.
4. Wipe rim with white vinegar. Place lids and rings on jars, tighten rings finger tight.
5. Process in a pressure canner:
 - Pints 75 minutes, quarts 90 minutes
 - Weighted gauge canner: 10 pounds at 0-1000 feet, 15 pounds above 1000 feet
 - Dial gauge canner: 11 pounds at 0-2000 feet, 12 pounds at 2001-4000 feet, 13 pounds at 4001-6000 feet, 14 pounds at 6001-8000 feet

Source: National Center for Home Food Preservation, 2023

Ground or Chopped Meat

Bear, Beef, Lamb, Pork, Sausage, Veal, Venison

1. 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).
2. 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.
3. Remove excess fat.
4. Fill jars with pieces. Add boiling meat broth, tomato juice, or water, leaving 1-inch headspace. Add 2 teaspoons of salt per quart to the jars, if desired.
5. Wipe rim with white vinegar. Place lids and rings on jars, tighten rings finger tight.
6. Process in a pressure canner:
 - Pints 75 minutes, quarts 90 minutes
 - Weighted gauge canner: 10 pounds at 0-1000 feet, 15 pounds above 1000 feet
 - Dial gauge canner: 11 pounds at 0-2000 feet, 12 pounds at 2001-4000 feet, 13 pounds at 4001-6000 feet, 14 pounds at 6001-8000 feet

Source: National Center for Home Food Preservation, 2023

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 or refrigerated until ready to can. 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.

1. Remove head, tail, fins, and scales. Wash and remove all blood. Split fish lengthwise, if desired.
2. Cut cleaned fish into 3½ inch lengths. Fill pint jars, skin side next to glass, leaving 1-inch headspace. Add 1 teaspoon of salt per pint, if desired. Do not add liquids.
3. Place lids and rings on jars, tighten rings finger tight.
4. Process pint jars in a pressure canner for **100** minutes.
 - Weighted gauge canner: 10 pounds at 0-1000 feet, 15 pounds above 1000 feet
 - Dial gauge canner: 11 pounds at 0-2000 feet, 12 pounds at 2001-4000 feet, 13 pounds at 4001-6000 feet, 14 pounds at 6001-8000 feet

Source: National Center for Home Food Preservation, 2023

Fish in Quart 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 or refrigerated until ready to can. 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.

1. 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.
2. Remove the head, tail, fins and scales. It is not necessary to remove the skin. You can leave 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 the bones.
3. Wash and remove all blood. Refrigerate all fish until you are ready to pack in jars.
4. Cut the fish into jar-length filets or chunks of any size. The one-quart straight-sided mason-type jar is recommended. 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.
5. Pack solidly into hot quart jars, leaving 1-inch headspace. If desired, run a plastic knife around the inside of the jar to align the product; this allows firm packing of fish.
6. For most fish, no liquid, salt or spices need to be added, although seasonings or salt may be added for flavor (1-2 teaspoons salt per quart, or amount desired). For halibut, add up to 4 tablespoons of vegetable or olive oil per quart jar if you wish. The canned product will seem moister. However, the oil will increase the caloric value of the fish.
7. Carefully clean the jar sealing edge with a damp paper towel; wipe with a dry paper towel to remove any fish oil. Place lids and rings on jars, tighten rings finger tight.

Processing Change for Quart Jars: The directions for operating the pressure canner during process of quart jars are different from those for processing pint jars, so please read the following directions carefully. It is critical that the processing directions are followed exactly.

8. Add at least 3 quarts of water to the pressure canner so there is 2-3 inches of water covering the bottom. Place closed jars on the rack according to the instructions provided with your pressure canner. Fasten the canner cover securely, but do not close the lid vent.
9. Heat the canner on high for 20 minutes. If steam comes through the open vent in a steady stream at the end of 20 minutes, allow it to escape for an additional 10 minutes. If steam does not come through the open vent in a steady stream at the end of 20 minutes, keep heating the canner until it does. Then allow the steam to escape for an additional 10 minutes to vent the canner. This step removes air from inside the canner so the temperature is the same throughout the canner. The total time it takes to heat and vent the canner should never be less than 30 minutes. The total time may be more than 30 minutes if you have tightly packed jars, cold fish or larger sized canners.
10. For safety's sake, you must have a complete, uninterrupted 160 minutes (2 hours and 40 minutes) at a minimum pressure of 11 pounds pressure for a dial gauge or 10 pounds pressure for a weighted gauge. Write down the time at the beginning of the process and the time when the process will be finished.
11. Process quart jars in a pressure canner for **160** minutes (2 hours and 40 minutes)
 - Weighted gauge canner: 10 pounds at 0-1000 feet, 15 pounds above 1000 feet
 - Dial gauge canner: 11 pounds at 0-2000 feet, 12 pounds at 2001-4000 feet, 13 pounds at 4001-6000 feet, 14 pounds at 6001-8000 feet

Source: So Easy to Preserve, 2014

Soups – when you don't have a reputable recipe

- Can vegetable, dried bean or pea, meat, poultry, or seafood soups. These foods are low-acid foods and must be pressure canned to ensure that they are free of *Clostridium botulinum* spores.
- **Caution:** Do not add noodles or other pasta, rice, flour, cream, milk or other thickening agents to home canned soups. The tested process time depends upon the product's pH as well as the heat conductivity of the soup mixture. Thickening a soup changes the way the product heats; heat transfer is less efficient with thicker soups.
- If dried beans or peas are used, they must be fully rehydrated first. Otherwise they absorb liquid during the canning process, thickening the soup.
- If soups contain meat, the meat must be pre-cooked before canning.
- If soups contain any seafood, it must be processed for 100 minutes.
- Do not can pureed squash soups. Pureed squashes are so thick and the USDA does not have a reliable canning recipe to guarantee complete heat penetration.
- Do not puree soups before canning unless the recipe is from a reputable source that is known to test their recipes for safety.
- If canning a meat soup, use white vinegar to wipe the jar rim instead of water to remove any oils.
- *Not confident you followed the USDA recommendations for canning soup correctly?*
 - Boil soup 10 minutes at altitudes below 1,000 feet altitude; add 1 additional minute per 1,000 feet additional elevation. Boiling means you are able to see the liquid in the food actively forming large foamy bubbles that break all over the surface. This process should destroy any botulism toxins, but don't use this technique to bypass proper processing and reputable recipes.

Canning Soup Procedure:

- Select, wash, and prepare vegetables, meat and seafood as described below.
 - Cover meat with water and cook until tender. Cool meat and remove bones.
 - Cook vegetables.
 - If not soaking beans overnight: For each cup of dried beans or peas add 3 cups of water, boil 2 minutes, remove from heat, soak 1 hour, heat to boil and drain.
- Combine solid ingredients with meat broth, tomatoes, or water to cover. Boil 5 minutes. Salt to taste.
- Fill jars halfway with solid mixture. Add remaining liquid, leaving 1-inch headspace.
- Adjust lids and process following the recommendations below according to the type of pressure canner used.

Recommended process time and pressure for soups in a dial-gauge pressure canner						
Style of Pack	Jar Size	Process Time	0 - 2,000 ft	2,001 - 4,000 ft	4,001 - 6,000 ft	6,001 - 8,000 ft
Hot	Pints	60* minutes	11 pounds	12 pounds	13 pounds	14 pounds
	Quarts	75*	11	12	13	14
* Caution: Process 100 minutes if soup contains seafood.						

Recommended process time and pressure for soups in a weighted-gauge pressure canner				
Style of Pack	Jar Size	Process Time	0 - 1,000 ft	Above 1,000 ft
Hot	Pints	60* minutes	10 pounds	15 pounds
	Quarts	75*	10	15
* Caution: Process 100 minutes if soup contains seafood.				

Source: National Center for Home Food Preservation, 2023

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