

Preserving Food: Canning Tomatoes *and* Tomato Products

Organisms that cause food spoilage - molds, yeasts and bacteria - are always present in the air, water and soil. Enzymes that may cause undesirable changes in flavor, color and texture are present in raw fruits.

When tomatoes are canned, they are heated hot enough and long enough to destroy organisms that can make people sick in addition to spoilage organisms. This heating (or processing) also stops the action of enzymes that can spoil food quality.

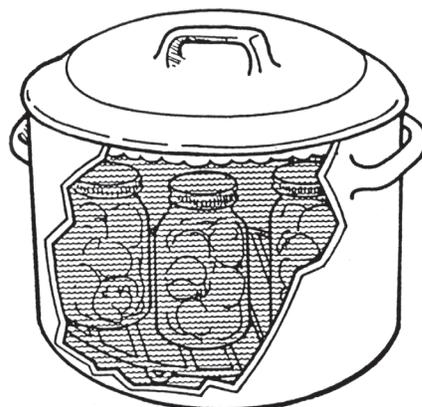
Tomatoes are treated as an acid food for canning purposes. Many tomato products may be safely canned in a boiling water canner. However, because some tomatoes can be slightly low-acid for canning purposes, added acid is required in the boiling water canning of plain tomatoes, juice and sauce.

Directions for canning a variety of tomato products are given on the following pages. Some recipes will give you the option of canning either in a pressure canner or in a boiling water bath. Some will give only boiling water bath times and others will give only pressure canning times. The recipes that specify only pressure canning have so many low acid ingredients added to them that they are only safe when canned in a pressure canner at the specified pressure.

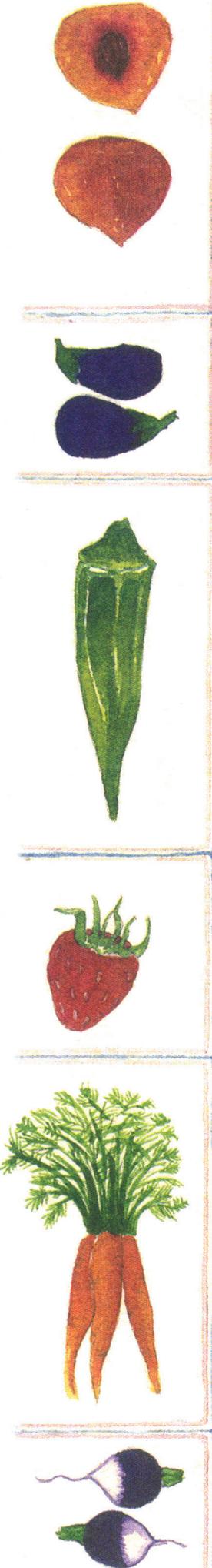
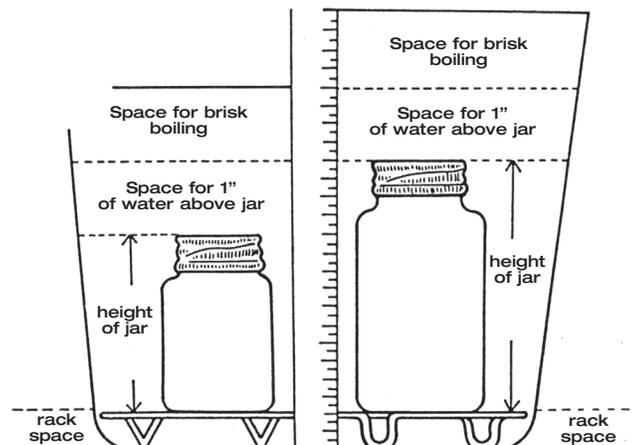
Equipment

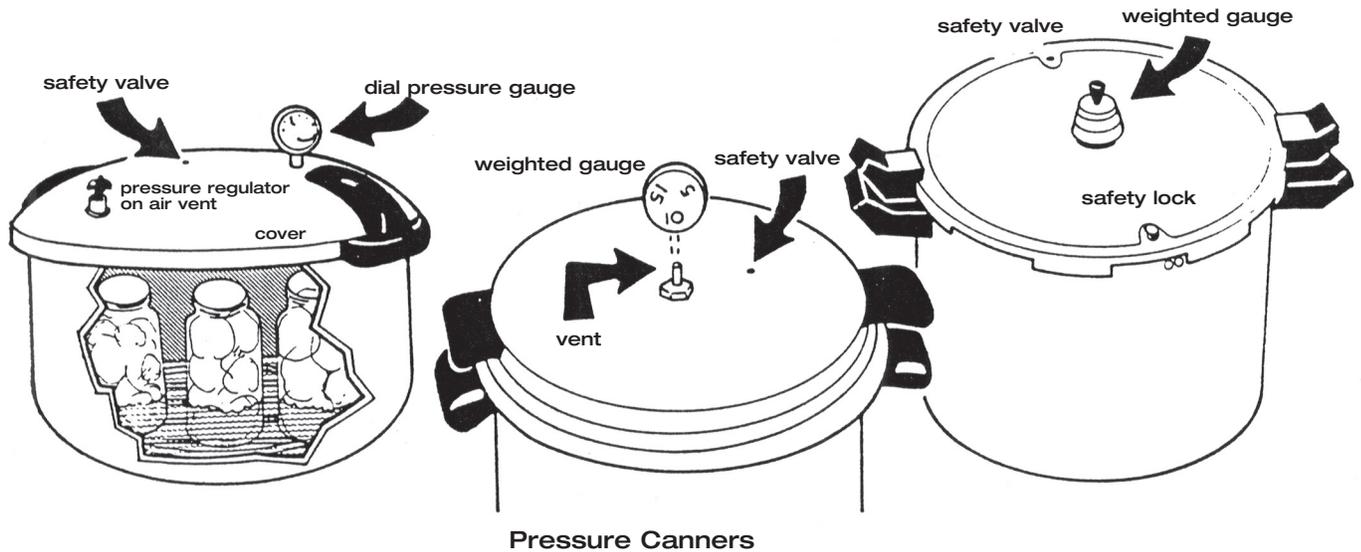
Boiling water canners are available in several types of stores or through Internet sales. Any big metal pot may be used as a boiling water bath canner if it is deep enough so the water can cover the jars by at least one inch and still have ample room for boiling (two or four inches above jar tops - see illustration). The canner must have a tight-fitting cover and wire or flat metal rack with plenty of open spaces in it.

A pressure canner may be used for a boiling water bath canner, provided it is deep enough. Make sure the lid is securely on the bottom, but do not fasten or twist-tighten the cover. Leave the vent pipe open so steam can escape and pressure does not build up in the canner.



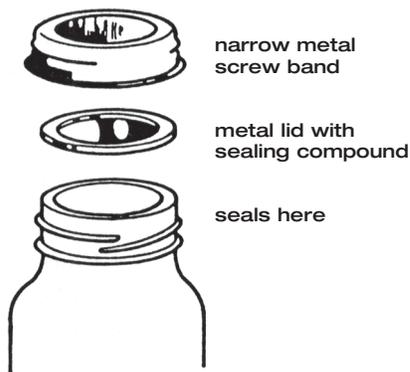
Water Bath Canner





A pressure canner is a specially made heavy pot that has a lid that can be closed steam-tight. It must have a rack in the bottom, a tight-fitting cover, exhaust vent (or petcock), safety valve and an accurate pressure gauge. The pressure gauge may be a weighted gauge that fits over the vent or a dial gauge on which a needle indicates the pressure inside the canner. Newer canners may also have an extra cover lock as an added safety feature.

Canning jars specifically designed for home canning are best. Commercial food jars such as many mayonnaise jars break easily and may not seal. Use only the half-pint, pint or quart sizes for tomatoes as specified with processing directions. Check jars carefully and discard any with cracks, nicks or chips. Wash jars in hot, soapy water, rinse well, and keep hot until filled and placed in the canner.



Jar lids need to be prepared for use ahead of filling time. Read the manufacturer's instructions on preparing and attaching the lids. With two-piece metal canning lids, the flat lid should be used only once for sealing new products, but the ring bands can be reused as long as they are in good condition. Ring bands should be free of rust and

not bent out of shape. Flat lids should be free of dents, scratches and gaps or flaws in the sealing compound. Do not reuse lids from commercially canned foods for home canning.

Preparing the Tomatoes

Select disease-free, preferably vine ripened, firm tomatoes for canning. Do not can tomatoes from dead or frost-killed vines. Green tomatoes can be canned safely with any of the following recommendations. It is also currently accepted that orange or yellow tomatoes, based on limited testing of varieties being grown at this time, can be safely canned with these directions. Rinse all tomatoes thoroughly. To quickly peel tomatoes, dip them in boiling water for 30 to 60 seconds or just until skins split. Then dip in cold water, slip off skins and remove cores.

Filling the Jars

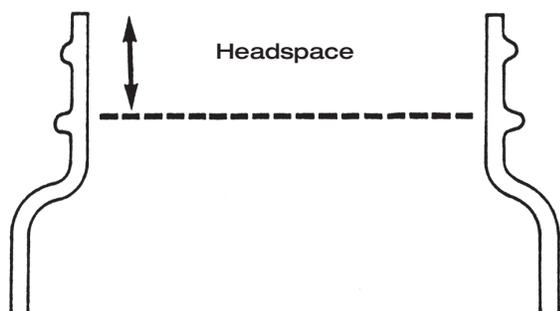
Tomatoes may be packed raw into jars or they may be preheated and packed hot. Read the directions for each tomato product to determine which method may be used. Process times are different for various methods of preparing tomatoes and filling them into jars. If given a choice, the hot pack produces a higher quality product. Remember, have the jars hot to prevent breakage as they are filled.

To raw pack - Put raw tomatoes into jars and cover with boiling water. Raw tomatoes should be packed firmly into the jars because they shrink during processing. Raw pack tomatoes without any added water will require a much longer process time than the raw pack in this publication. Those directions are in other University of Georgia Cooperative Extension publications.

To hot pack - Heat tomatoes without adding liquid (crushed tomatoes) or in water before packing. When packing halved or whole tomatoes as a hot pack, pack the tomatoes loosely. Then cover with the boiling cooking water. Hot pack crushed tomatoes are filled into jars with the juice drawn from the tomatoes during cooking covering all pieces of tomatoes. Hot or raw pack tomatoes covered with tomato juice instead of water will require much longer process times than the ones in this publication. Those directions are in other University of Georgia Cooperative Extension publications.

For either pack, use enough liquid to fill around the solid food in the jar and to cover the food. See directions for each product for the correct amount of headspace to leave between the top of the food and the top of the jar. This headspace is important for obtaining a good seal.

Salt may be added to each jar, if desired. The salt is only for seasoning and does not help to preserve the food. If salt is used, canning or pickling salt is recommended to prevent the liquid from turning cloudy. Usually 1/2 teaspoon salt per pint is adequate.



Acidify Some Products for Safety

Because tomatoes may be borderline in the amount of acid they contain, or even slightly low-acid for canning purposes, some precautions must be taken to can them safely. To ensure the safety of whole, crushed or juiced tomatoes they must be acidified, whether processed in a boiling water bath or pressure canner. When any of the tomato packs, tomato sauce or tomato juice directions have options for both boiling water or pressure canning, then the two alternatives are equal processes to boiling water canning. The pressure option is not additional heating that would allow for leaving out the acidification step.

To acidify tomatoes when called for in the directions, add 1 tablespoon of bottled lemon juice or 1/4 teaspoon citric acid per pint of tomatoes. For quart jars, use 2 tablespoons of bottled lemon juice or 1/2 teaspoon citric acid.

The acid can be added directly to each jar before filling them with the product. If this makes the product taste too acid, add a little sugar at the time of serving to offset the taste.

NOTE: Four tablespoons of vinegar (5%) per quart or two tablespoons per pint can be used instead of lemon juice or citric acid. However, the vinegar may cause undesirable flavor changes.

Closing the Jars

To remove any trapped air bubbles, slide a non-metallic (eg., plastic) spatula between the food and the sides of the jar. Add more liquid if necessary to obtain the proper headspace. Wipe the jar rim with a clean damp paper towel to remove any food particles or liquids. Place the flat lid prepared according to the manufacturer's directions on the filled jar. Screw the metal ring band down fingertip tight.

To Process Tomato Products in a Boiling Water Bath Canner

- * Fill the canner at least half full with clean hot water. Enough water is needed so that the level will be 1-2 inches over the tops of the jars after they are added. Center the canner over the burner and preheat the water to about 180°F (simmering) for hot packs and hot but not yet simmering (about 140°F) for raw packs.
- * Using a canning jar lifter, place filled jars on a rack in the canner containing hot or simmering water. Make sure the jar lifter is securely positioned below the neck of the jar and ring band and keep the jar upright at all times. Tilting the jar could cause food or covering liquid to spill into the sealing area of the lid.
- * Add boiling water if needed to bring water to a level one or two inches over the top of the jars, pouring it between the jars and not directly on them. Put the cover on the canner. Turn the burner to its highest heat setting and bring the water in the canner to a full boil.
- * When the water in the canner comes to a rolling boil, start to count processing time. Boil gently and steadily for the time recommended for the food being canned.

Add boiling water during processing if it's needed to keep jars covered. If the water stops boiling at any time during the process, bring the water back to a boil and begin the timing of the process over, from the beginning.

- * When the jars have been processed for the recommended time, turn off the heat and remove the canner lid. Turn the lid so the steam escapes away from your face. Wait 5 minutes before removing jars.
- * Using a jar lifter, remove the jars, being careful not to tilt them. Carefully place the jars right side up on a rack or dry towels to prevent jars from breaking on contact with a cold surface. Leave at least one inch of space between jars during cooling.
- * Allow the jars to cool undisturbed, away from drafts, for 12 to 24 hours. Do not tighten ring bands on the lids or push down on the center of the lid until the lid is completely cooled. Even if a popping sound is heard as lids seal, leave the jar and lid untouched until completely cool.

To Process Tomato Products in a Pressure Canner

Read the manufacturer's instructions on the use of your pressure canner. The following are general instructions:

- * Place the rack in the bottom of your pressure canner. Preheat two to three inches of water in your canner. The water should be hot but not simmering if you are canning raw pack foods. For hot pack foods, the water should be simmering or 180°F.
- * Using a canning jar lifter, place filled jars on a rack in the canner containing hot or simmering water. Make sure the jar lifter is securely positioned below the neck of the jar and ring band and keep the jar upright at all times. Tilting the jar could cause food or covering liquid to spill into the sealing area of the lid. Space the jars evenly around the canner.
- * Fasten the canner lid securely. Leave the weight off the vent pipe or open the petcock.
- * Turn heat to high so it boils and steam flows freely in a funnel shape from the open vent pipe. Let the steam escape (vent) continuously for 10 minutes with the heat on the high setting.
- * Close the vent, using a weight, or close the petcock, depending on the type of canner. If you have a weighted gauge canner that has a weight of varying pressures, be sure you are using the correct pressure setting. The canner will begin to pressurize.
- * For a dial gauge canner, let the pressure rise quickly to eight pounds of pressure. Adjust the burner temperature down slightly and let the pressure

continue to rise to the correct pressure. (If the burner was left on high, the pressure would be hard to regulate when the correct pressure is reached.) Start counting the processing time as soon as the pressure is reached. For weighted gauge canners, let the canner heat quickly at first and then reduce the heat slightly until the weight begins to rock gently or "jiggle" two or three times per minute, depending on the type of canner you have. Start counting the processing time as soon as the weight indicates the canner is at pressure, according to manufacturer's directions.

- * Keep the pressure constant by regulating the heat under the canner. Do not lower the pressure by opening the vent or lifting the weight. Keep drafts from blowing on the canner. If the pressure ever drops below the recommended setting, bring the canner back to pressure and begin timing of the process over, from the beginning. This is important for the safety of the food.
- * When processing time is completed, turn off the heat. The canner may be removed from the heat of the electric burner if possible to do so without causing jars to tilt. If the canner is too heavy, simply turn off the heat and leave it in place. It is not necessary to move a canner from a turned off gas burner.
- * Let the pressure in the canner drop to zero through natural cooling. This can take 30 to 45 minutes in a 16-quart canner and nearly an hour for a 22-quart canner; the actual time will vary by the type of canner and the amount of hot food in the canner. Do not rush the cooling by setting the canner in water or by running cold water over the canner. Never lift the weight or open the vent to hasten the reduction of pressure.
- * When the gauge on a dial gauge canner registers zero or when a gentle nudge to the weight on a weighted gauge canner does not produce steam or resistance, wait two minutes, and then open the vent or remove the weight. Wait ten more minutes and then open the canner. Unfasten the lid, and tilt it so the steam escapes away from your face. Do not leave the canner unopened to cool completely, or the food inside could begin to spoil and the canner could be difficult to open.
- * Using a jar lifter, carefully remove the jars from the canner being careful not to tilt them. Carefully place the jars right side up on a rack or dry towels to prevent jars from breaking on contact with a cold surface. Leave at least one inch of space between jars during cooling.
- * Allow the jars to cool undisturbed, away from drafts, for 12 to 24 hours. Do not tighten ring bands on the lids or push down on the center of the lid until the lid

is completely cooled. Even if a popping sound is heard as lids seal, leave the jar and lid untouched until completely cool.

Day-After-Canning Jobs

Test the seal on the jar lids. Press flat metal lids at the center. They should be slightly concave and not move. Ring bands should be removed from thoroughly cooled jars; wash and dry them so they will be in good condition after storing. Wash food residue from the jars and rinse. Label sealed jars with contents and date.

Store the canned food in a cool, dry place. Stored properly, canned tomatoes should retain their high quality for about one year.

Treat unsealed jars of food as fresh. The food can be eaten immediately, refrigerated, frozen or recanned. If you recan the food, the whole process must be repeated.

On Guard Against Spoilage

Do not taste or use canned tomatoes or tomato products that show any signs of spoilage! Look closely at all jars before opening them. A bulging lid or leaking jar is a sign of spoilage. When you open the jar, look for other signs such as spurting liquid, an off odor or mold. All spoiled canned tomatoes should be discarded in a place where they will not be eaten by humans or pets.

Some tomato products have vegetables or meats added to them. If these spoil, they can contain botulism toxin. Also, if not properly processed, these products can contain botulism toxin without showing signs of spoilage. Tomato products that contain vegetables or meats are considered improperly canned if ANY of the following are true:

- * The product was not prepared according to an APPROVED recipe.
- * Ingredients were ADDED that were not in the approved recipe or the proportions of ingredients were CHANGED.
- * Up-to-date researched processing times and methods were NOT used. Many products require pressure canning.
- * The correct processing time was NOT used for the size of jar or style of pack.
- * The gauge of the canner was INACCURATE.
- * The processing time and pressure were NOT correct for the altitude at which the food was canned.

Tomato products that contain vegetables or meats that are improperly processed or that have spoiled can contain botulism toxin. Because of this, they should be detoxified before being discarded if the seals are broken.

Spoiled or suspect jars of tomato products that are still sealed should be wrapped securely in a heavy plastic garbage bag. Close and place the bag in trash or dispose in a nearby landfill. Be sure to discard in a manner so they will not be eaten by humans or pets. If the jars are unsealed or opened, they should be detoxified before discarding. Be extremely careful not to splash or come in contact with the suspect food or any liquid. Contact with botulinum toxin can be fatal whether it is ingested or enters through the skin. Wear disposable rubber or heavy plastic gloves. To detoxify these products, place the jar(s) with lid(s) on their sides in a large stockpot or boiling water canner. Wash your gloved hands thoroughly. Carefully add water to the pot, avoiding splashing, being sure that the water completely covers the jars with at least 1-inch of water above them. Heat the water to a vigorous boil and boil for 30 minutes. Cool and discard all contents, although the jar may be re-used if desired and care is exercised in cleaning it up.

Surfaces that come in contact with spoiled or questionable tomato mixtures should also be cleaned up, taking care to avoid contact with suspect foods or liquids. Wear rubber or heavy plastic gloves while cleaning up. A freshly made solution of 1 part unscented liquid household chlorine bleach (5 to 6% sodium hypochlorite) to 5 parts clean water should be used to treat work surfaces, water faucet and handles, equipment, or other items, including can openers and clothing, that may have come in contact with suspect food or liquid. Spray or wet contaminated surfaces with this bleach solution and let stand for 30 minutes. Wearing gloves, wipe up treated spills with paper towels, being careful to minimize the spread of contamination. Dispose of these paper towels by placing them in a plastic bag before putting them in the trash. Next, apply the bleach solution to all surfaces, let stand for 30 minutes and rinse. As a last step, thoroughly wash all detoxified countertops, containers, and other surfaces. Discard gloves when the cleaning process is complete. (Note: Bleach is an irritant itself and should not be inhaled or allowed to come in contact with the skin.)

Directions for Canning Tomatoes and Tomato Products

CAUTION! ALTITUDE ADJUSTMENTS: The processing times and pressures given in this publication are those recommended by the U.S. Department of Agriculture for altitudes of 0-1000 feet. DO NOT DECREASE the processing times or pressures given. If you are canning at a higher altitude, make the following adjustments:

In a Boiling Water Canner (212° F)

See processing times at the end of this section.

In a Dial Gauge Pressure Canner

As the altitude increases, the processing time for each food stays the same, but the canner pressure must be increased as follows:

- * At altitudes of 1001-2000 feet the processing pressure does not change. Process at 11 pounds pressure.
- * At altitudes of 2001-4000 feet, process at 12 pounds pressure.
- * At altitudes of 4001-6000 feet, process at 13 pounds pressure.
- * At altitudes of 6001-8000 feet, process at 14 pounds pressure.

In a Weighted Gauge Pressure Canner

- * At altitudes above 1000 feet, the processing time for each food stays the same, but the food must be processed at 15 pounds pressure.

Product	Pack	Preparation
Tomatoes - Crushed	Hot Pack	Rinse tomatoes and dip in boiling water for 30 to 60 seconds or until skins split. Then dip in cold water, slip off skins and remove cores. Trim off any bruised or discolored portions and quarter. Heat about 1 pound of the quarters quickly in a large pot, crushing them with a wooden mallet or spoon as they are added to the pot. This will draw off some juice. Continue heating the tomatoes, stirring to prevent burning. Once the tomatoes are boiling, gradually add remaining quartered tomatoes, stirring constantly. These remaining tomatoes do not need to be crushed. They will soften with heating and stirring. Continue until all tomatoes are added. Then boil gently 5 minutes. Add bottled lemon juice or citric acid to hot jars, according to the directions on page 3. Add 1/2 teaspoon salt to each pint jar; 1 teaspoon to each quart jar, if desired. Fill jars immediately with hot tomatoes, leaving 1/2-inch headspace. Remove air bubbles and adjust headspace if needed. Wipe jar rims.
		* Option 1 Process in Boiling Water Bath (212° F): Pints 35 minutes Quarts 45 minutes
		* Option 2 Process in Dial Gauge Pressure Canner at 11 pounds pressure OR in a Weighted Gauge Pressure Canner at 10 pounds pressure: Pints 15 minutes or Quarts
Tomatoes - Whole or Halved (Packed in Water)	Hot Pack	Rinse tomatoes. Dip in boiling water for 30 to 60 seconds or until skins split. Then dip in cold water, slip off skins and remove cores. Leave whole or halve.
		Place prepared tomatoes in saucepan and cover with water. Bring to a boil and boil gently for 5 minutes. Add bottled lemon juice or citric acid to hot jars, according to the directions on page 3. Add 1/2 teaspoon of salt to each pint jar; 1 teaspoon to each quart jar, if desired. Pack hot tomatoes into hot jars, leaving 1/2-inch headspace. Fill jars to 1/2 inch from top with hot cooking liquid. Remove air bubbles and adjust headspace if needed. Wipe jar rims..
		* Option 1 Process in Boiling Water Bath (212° F): Pints 40 minutes Quarts 45 minutes
		* Option 2 Process in Dial Gauge Pressure Canner at 11 pounds pressure OR in a Weighted Gauge Pressure Canner at 10 pounds pressure: Pints 10 minutes or Quarts

Remember to Make Altitude Adjustments

**Tomato -
Vegetable Mixtures**

Unless a tested recipe is used, all tomato-vegetable mixtures must be processed in a pressure canner, according to the directions for the vegetable in the mixture that has the longest processing time. Tomato-vegetable mixture recipes in this publication may have shorter processing times because they have been tested for both pH and heat penetration. When the exact amounts specified in these recipes are used, these mixtures can be processed using the times given.

**Tomatoes
with Okra
or Zucchini**

Hot Pack

Rinse tomatoes and okra or zucchini. Dip tomatoes in boiling water 30 to 60 seconds or until skins split. Then dip in cold water, slip off skins and remove cores. Quarter tomatoes. If using okra, trim stems and leave whole or slice into 1 inch pieces. If using zucchini, slice and cube. Bring tomatoes to a boil and simmer 10 minutes. Add okra or zucchini and boil gently 5 more minutes. Add 1/2 teaspoon of salt to each pint jar; 1 teaspoon to each quart jar, if desired. Fill hot jars with mixture, leaving 1-inch headspace. Remove air bubbles and adjust headspace if needed. Wipe jar rims.

* Process in a Dial Gauge Pressure Canner at 11 pounds pressure OR in a Weighted Gauge Pressure Canner at 10 pounds pressure:

Pints	30 minutes
Quarts	35 minutes

Variation

You may also add four or five pearl onions or two 1/4 inch thick onion slices to each jar.

Stewed Tomatoes
(about 3 pint jars)

2 quarts chopped tomatoes
1/4 cup chopped green peppers
1/4 cup chopped onions
2 teaspoons celery salt
2 teaspoons sugar
1/4 teaspoon salt

Hot Pack

Combine all ingredients. Cover and cook 10 minutes, stirring occasionally to prevent sticking. Fill hot tomatoes into hot jars, leaving 1/2-inch headspace. Remove air bubbles and adjust headspace if needed. Wipe jar rims.

* Process in a Dial Gauge Pressure Canner at 11 pounds pressure OR in a Weighted Gauge Pressure Canner at 10 pounds pressure:

Pints	15 minutes
Quarts	20 minutes

Tomato Juice

Hot Pack

Rinse tomatoes, remove stems, and trim off bruised or discolored portions. To prevent juice from separating, quickly cut about 1 pound of tomatoes into quarters and put directly into saucepan. Heat immediately to boiling while crushing. Continue to slowly add and crush freshly cut tomato quarters to the boiling mixture. Make sure the mixture boils constantly and vigorously while you add the remaining tomatoes. Simmer 5 minutes after you add all the pieces.

NOTE: If you are not concerned about juice separation, simply slice or quarter tomatoes into a large saucepan. Crush, heat and simmer for 5 minutes before juicing. Press the heated juice through a sieve or food mill to remove skins and seeds. Add bottle lemon juice or citric acid to hot jars, according to the instructions on page 3. Heat juice again to boiling. Add 1/2 teaspoon salt to each pint jar; 1 teaspoon to each quart jar, if desired. Fill hot jars with hot tomato juice, leaving 1/2-inch headspace. Wipe jar rims. Adjust lids and process.

* Option 1

Process in Boiling Water Bath (212° F):

Pints	35 minutes
Quarts	40 minutes

* Option 2

Process in Dial Gauge Pressure Canner at 11 pounds pressure OR in a Weighted Gauge Pressure Canner at 10 pounds pressure:

Pints	15 minutes
or Quarts	

Remember to Make Altitude Adjustments

Tomato Sauce (Unseasoned)

Hot Pack Rinse tomatoes, remove stems, and trim off bruised or discolored portions. To prevent juice from separating, quickly cut about 1 pound of tomatoes into quarters and put directly into saucepan. Heat immediately to boiling while crushing. Continue to slowly add and crush freshly cut tomato quarters to the boiling mixture. Make sure the mixture boils constantly and vigorously while you add the remaining tomatoes. Simmer 5 minutes after you add all pieces.

NOTE: If you are not concerned about sauce separation, simply slice or quarter tomatoes into a large saucepan. Crush, heat and simmer for 5 minutes before juicing. Press the heated juice through a sieve or food mill to remove skins and seeds. Simmer in a large-diameter saucepan until volume is reduced by about one-third for thin sauce; by one-half for thick sauce. Add bottled lemon juice or citric acid to jars, according to the directions on page 3. Add 1/2 teaspoon salt to each pint jar; 1 teaspoon to each quart jar, if desired. Fill hot jars, leaving 1/4-inch headspace. Wipe jar rims. Adjust lids and process.

* Option 1 Process in Boiling Water Bath (212° F):
Pints 35 minutes
Quarts 40 minutes

* Option 2 Process in Dial Gauge Pressure Canner at 11 pounds pressure OR in a Weighted Gauge Pressure Canner at 10 pounds pressure:
Pints 15 minutes
or Quarts

Tomato Catsup (about 6 or 7 pint jars)

24 pounds tomatoes
3 cups chopped onions
3/4 teaspoon ground red pepper (cayenne)
4 teaspoons whole cloves
3 sticks cinamon, crushed
1-1/2 teaspoons whole allspice
3 tablespoons celery seeds
3 cups cider vinegar (5%)
1-1/2 cups sugar
1/4 cup salt

Hot Pack Rinse tomatoes. Dip in boiling water for 30 to 60 seconds or until skins split. Then dip in cold water, slip off skins and remove cores. Quarter tomatoes into 4-gallon pot. Add onions and red pepper. Bring to boil and simmer 20 minutes, uncovered. Combine spices in a spice bag. Place spices and vinegar in a 2-quart saucepan. Bring to a boil. Cover, turn off heat and let stand for 20 minutes.

Remove spice bag from the vinegar and add the vinegar to the tomato mixture. Boil about 30 minutes. Press boiled mixture through a food mill or sieve. Return to pot. Add sugar and salt and boil gently, stirring frequently until volume is reduced by one-half or until mixture rounds up on spoon without separation. Fill into hot jars, leaving 1/8-inch headspace. Remove air bubbles and adjust headspace if needed. Wipe jar rims.

Adjust lids and process in a Boiling Water Bath (212° F).
Pints 15 minutes

Remember to Make Altitude Adjustments

Tomato Paste
(about 8 or 9
half-pint jars)

14 pounds Roma- or paste-type tomatoes (as purchased)
1 teaspoon citric acid
1 teaspoon canning or pickling salt (optional)
2 bay leaves (optional)
1 clove garlic (optional)

Hot Pack Rinse tomatoes thoroughly under running water and remove cores. Chop tomatoes into 1/2- to 3/4-inch pieces. Place in stockpot; cover and bring to a boil. Stir as needed to prevent burning. Reduce heat, remove lid and cook slowly (simmer) for about 1 hour until volume is reduced by half. Stir frequently to prevent sticking and burning. Press through a fine sieve (or food mill with fine blade). (Do not use a blender or food processor, as these will incorporate undesired air into the tomatoes.)

Return sieved tomatoes to stockpot. Stir in citric acid thoroughly. Add and stir in any or all of salt, bay leaves, and garlic clove (if desired). Continue cooking slowly on medium heat, uncovered, until thick enough to round up on a spoon and volume is reduced again by half, about 2-1/2 hours. Stir frequently to prevent sticking and burning. Be careful of spattering which could burn your skin as you stir. Remove bay leaves and garlic clove if used. Fill hot paste into clean, hot half-pint jars, leaving 1/2-inch headspace. Remove air bubbles and adjust headspace if needed. Wipe jar rims.

Adjust lids and process in a Boiling Water Bath (212° F).
Half-Pints 45 minutes

Barbecue Sauce
(about 4 pint jars)

4 quarts peeled, cored chopped red-ripe tomatoes (about 24 large)
2 cups chopped celery
2 cups chopped onions
1-1/2 cups chopped sweet red or green peppers (about 3 medium)
2 red hot peppers, cored, chopped
2 cloves garlic, crushed
1 cup brown sugar
1 tablespoon dry mustard
1 tablespoon paprika
1 tablespoon salt
1 tablespoon black peppercorns
1 teaspoon Tabasco Sauce
1/8 teaspoon cayenne pepper
1-1/4 cups vinegar (5%)

Hot Pack Combine tomatoes, onions, celery and peppers. Cook until vegetables are soft (about 30 minutes). Purée using a fine sieve, food mill, food processor or blender. Cook until mixture is reduced to about one-half (approximately 45 minutes). Tie peppercorns in a cheesecloth bag; add with remaining ingredients and cook slowly until mixture is the consistency of catsup, about 1-1/2 to 2 hours. As mixture thickens, stir frequently to prevent sticking. Remove bag of peppercorns. Fill hot sauce into hot jars, leaving 1/2-inch headspace. Remove air bubbles and adjust headspace if needed. Wipe jar rims.

Adjust lids and process in a Boiling Water Bath (212° F).
Half-Pints or Pints 20 minutes

Remember to Make Altitude Adjustments

Hot Chili Salsa
(about 7 pint jars)

5 pounds tomatoes
2 pounds chile peppers
1 pound onions, chopped
1 cup vinegar (5%)
3 teaspoons salt
1/2 teaspoon pepper

To Prepare Chile Peppers - (CAUTION: Wear rubber gloves while handling chiles or wash hands thoroughly with soap and water before touching your face.) Rinse and dry chiles. Slit each pepper on its side to allow steam to escape. Peel peppers using one of the following methods:

* Oven or broiler method: Place chiles in oven (400° F) or broiler for 6 to 8 minutes until skins blister.

* Range-top method: Cover hot burner, either gas or electric, with heavy wire mesh. Place chiles on burner for several minutes until skins blister.

Allow peppers to cool. Place in a pan and cover with a damp cloth. This will make peeling the peppers easier. After several minutes, peel each pepper. Remove stem and seeds.

Hot Pack Chop peppers. Rinse tomatoes and dip in boiling water for 30 to 60 seconds or until skins split. Dip in cold water, slip off skins and remove cores. Coarsely chop tomatoes. Add chopped onions, peppers and remaining ingredients in a large saucepan. Heat to a boil and simmer 10 minutes. Fill into hot jars, leaving 1/2-inch headspace. Remove air bubbles and adjust headspace if needed. Wipe jar rims.

Adjust lids and process in a Boiling Water Bath (212° F).

Pints 15 minutes.

**Spaghetti Sauce
With Meat**
(about 9 pints)

30 pounds of tomatoes
2-1/2 pounds ground beef or sausage
5 cloves garlic, minced
1 cup chopped onions
1 cup chopped celery or green peppers
1 pound fresh mushrooms, sliced (optional)
2 tablespoons oregano
4 tablespoons minced parsley
2 teaspoons black pepper
4-1/2 teaspoons salt
1/4 cup brown sugar

Hot Pack Rinse tomatoes and dip in boiling water for 30 to 60 seconds or until skins split. Dip in cold water and slip off skins. Remove cores and quarter tomatoes. Cook tomatoes for 20 minutes, uncovered in a large saucepan. Stir as needed to prevent sticking. Press through a food mill or sieve.

Sauté beef or sausage until brown. Add garlic, onions, celery or green pepper and mushrooms, if desired. Cook until vegetables are tender. Combine with tomato pulp in large saucepan. Add spices, salt and sugar. Bring to a boil. Simmer, uncovered, stirring frequently, until thick enough for serving. (The volume should be reduced by nearly one-half.) Fill hot sauce into clean, hot jars, leaving 1-inch headspace. Remove air bubbles and adjust headspace if needed. Wipe jar rims. Adjust lids and process.

Process in Dial Gauge Pressure Canner at 11 pounds pressure OR in a Weighted Gauge Pressure Canner at 10 pounds pressure:

Pints 60 minutes
Quarts 70 minutes

Remember to Make Altitude Adjustments

**Spaghetti Sauce
Without Meat**
(about 9 pint jars)

30 pounds of tomatoes
1 cup chopped onions
5 cloves garlic, minced
1 cup chopped celery or green peppers
1 pound fresh mushrooms, sliced (optional)
1/4 cup vegetable oil
2 tablespoons oregano
4 tablespoons minced parsley
2 teaspoons black pepper
4-1/2 teaspoons salt
1/4 cup brown sugar

Hot Pack CAUTION: Do not increase the proportion of onions, peppers or mushrooms. Rinse tomatoes and dip in boiling water for 30 to 60 seconds or until skins split. Dip in cold water and slip off skins. Remove cores and quarter tomatoes. Boil tomatoes for 10 minutes, uncovered, in a large saucepan. Stir as needed to prevent sticking. Press through a food mill or sieve.

Sauté onions, garlic, celery or peppers, and mushrooms (if desired) in vegetable oil until tender. Combine sautéed vegetables and tomatoes and add remaining spices, salt and sugar. Bring to a boil. Simmer, uncovered, stirring frequently until thick enough for serving. (The volume should be reduced by nearly one-half.)

Fill hot sauce into clean, hot jars, leaving 1-inch headspace. Remove air bubbles and adjust headspace if needed. Wipe jar rims. Adjust lids and process.

Process in Dial Gauge Pressure Canner at 11 pounds pressure OR in a Weighted Gauge Pressure Canner at 10 pounds pressure:

Pints	20 minutes
Quarts	25 minutes

Spicy Chili Sauce
(about 6 pint jars)

4 quarts peeled, cored chopped tomatoes (about 24 large)
2 cups chopped onions
1-1/2 to 2 cups chopped sweet green peppers (about 3 medium)
1-1/2 cups sugar
1 tablespoon salt
1 tablespoon celery seed
1 teaspoon ground all spice
1 teaspoon ground cloves
1 teaspoon ground cinnamon
1 teaspoon ground ginger
1 to 1-1/2 cups vinegar (5%)

Hot Pack Combine all ingredients. Bring to a boil; simmer until thick as desired (about 1 to 2 hours). Stir frequently to prevent sticking. Fill hot sauce into hot jars, leaving 1/2-inch headspace. Remove air bubbles and adjust headspace if needed. Wipe jar rims.

Adjust lids and process in a Boiling Water Bath (212° F).

Half-Pints or Pints	15 minutes
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Remember to Make Altitude Adjustments

Boiling Water Bath Processing Times for Tomatoes and Tomato Products At Altitudes Over 1000 Feet

Product	Style of Pack	Jar Size	Process Time (Minutes) at Altitude of		
			1001-3000 feet	3001-6000 feet	6001-8000 feet
Tomatoes-crushed	Hot	Pints	40	45	50
		Quarts	50	55	60
Tomatoes-Whole or Halved (Packed in Water)	Raw or Hot	Pints	45	50	55
		Quarts	50	55	60
Tomato Juice	Hot	Pints	40	45	50
		Quarts	45	50	55
Tomato Sauce-Unseasoned	Hot	Pints	40	45	50
		Quarts	45	50	55
Tomato Catsup	Hot	Pints	20	20	25
Tomato Paste	Hot	Half-Pints	50	55	60
Barbecue Sauce	Hot	Half-Pints or Pints	25	30	35
Hot Chili Salsa	Hot	Pints	20	20	25
Spicy Chili Sauce	Hot	Half-Pints or Pints	20	20	25



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