B2605

University of Wisconsin–Madison Division of Extension

Wisconsin Safe Food Preservation Series

Tomatoes

Tart & Tasty

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Recipes

When those big, plump tomatoes in your garden turn from blushing pink to red, it's time to think about preserving their goodness for year-round use. Tomatoes can please the palate and the eye at any meal of the day, provide vitamins C and A, and are low in calories.

Tomatoes are without a doubt the most widely home-canned product in the United States. But to avoid spoilage and risk of food poisoning, follow these research-tested recipes.

Tomatoes for canning

Many tomato cultivars (cultivated varieties) can be successfully grown in Wisconsin home gardens.

For canning, you will find it more convenient to select a disease-resistant cultivar that has a **determinate** growing habit — producing fruit at the end of branches and ripening early, because the fruit receives plenty of heat and sun. Such tomatoes tend to grow more compactly and produce greater quantities of ripe fruit in a short period of time.

In some cases, **indeterminate** tomato varieties are preferred because they yield fruit over a long period of time. Indeterminate tomato varieties are vining or sprawling. Better Boy is one indeterminate tomato variety popular in Wisconsin. Try a few plants of other varieties to see how well they perform.

Tomato cultivars recommended for Wisconsin include:

Early: Daybreak, Early Girl,* First Lady, Miracle Sweet, Sunstart, Wayahead

Main crop: Better Boy*, Big Beef*, Big Boy*, Black Krim (heirloom)*, Black Prince (heirloom)*, Brandywine (heirloom)*, Celebrity, Cherokee Purple (heirloom)*, Long-Keeper*, Mortgage Lifter (heirloom)*, Mountain Pride, Mountain Spring, Orange Blossom, Oregon Spring, Steak Sandwich*, Striped German*, Yellow Brandywine (heirloom)*, Ultrasweet

Paste or salsa: Amish Paste, Red Agate, Roma VF, Viva Italia

Small fruited: Gardener's Delight*, Husky Gold*, Juliet, Red Grape*, Small Fry*, Sugar Snax*, Sun Cherry*, Super Sweet 100*, Sweet Cluster*, Sweet Million*, Tiny Tim, Yellow Pear (heirloom)*

** Indeterminate variety—yields fruit over a long period of time.*

For a complete list of recommended vegetable varieties, request the publication *Vegetable Cultivars and Planting Guide for Wisconsin Gardens* (A1653). This is available from your county UW-Extension office or Cooperative Extension Publications (learningstore.uwex.edu).

Researchers have identified several conditions and factors that affect the acidity of tomatoes and home-canned tomato products. These include: cultivar, growing conditions and soil type, ripeness and condition of the fruit, and canning process. Do not can overripe or damaged tomatoes, or tomatoes harvested from dead or frost-killed vines.

Tomato acidity

Tomatoes require a certain level of **acid** for safe home canning — pH of 4.6 or less. U.S. Department of Agriculture (USDA) research has found that the fruits of different tomato cultivars vary somewhat in acidity. However, most varieties grown for home canning produce acidic fruits with a pH of 4.6 or below.

Even small-fruited cultivars and white, yellow and pink tomatoes are in the same acidity range as most standard red tomatoes. The difference in taste of these tomatoes — falsely called "low acid" in some seed catalogs — is due to their higher sugar content that masks tartness.

Researchers have also found that the acidity level of a tomato variety grown in different soils or in different years may vary considerably. In Illinois, 15 of 105 tomato varieties tested in 1986 had pH values of 4.6 or above.

Paste tomatoes consistently are **lower in acid** — higher in pH — than standard tomatoes.

Because of the potential variation in acidity, treat all tomatoes the same — whether they be yellow, red or pink.

Overripe, damaged or decayed tomatoes

When tomatoes become overripe and soft, they can become dramatically lower in acid (higher in pH). Damaged areas on tomatoes caused by bruises, cracks, blossom end rot or insects are also lower in acid. Tomatoes exposed to frost or tomatoes harvested from dead vines may be lower in acid.

Tomatoes growing on dead vines or those ripening indoors may not develop the proper acidity for safe home canning. Instead, harvest green tomatoes from late season or frost-damaged vines, and use these green tomatoes in a relish or salsa.

Do not use for canned tomatoes or juice:

- any overripe or damaged tomatoes, or
- tomatoes harvested from dead or frost-killed vines.

Tomatoes not suitable for canning may be trimmed and eaten fresh, or frozen.

See these Wisconsin Safe Food Preservation Series publications, available from your county UW-Extension office or Cooperative Extension Publications (learningstore.uwex.edu).

***Canning Salsa Safely* (B3570)**

***Freezing Fruits and Vegetables* (B3278)**

Acidify tomato products canned at home

In addition to the raw tomato fruit, several other factors can influence the safety and acidity of canned tomato products:

- Tomato juices are less acidic than tomato solids.
- One or more overripe tomatoes in a jar will decrease the overall acidity.
- Adding low-acid ingredients — such as carrots, celery, corn, green or hot peppers, mushrooms, onions, or similar low-acid vegetables — significantly decreases acidity.
- The canning process itself can decrease acidity.

Add citric acid or lemon juice to home-canned tomato products before processing to ensure a safe product. Add 1/4 teaspoon citric acid or 1 tablespoon bottled lemon juice per pint; add 1/2 teaspoon citric acid or 2 tablespoons bottled lemon juice per quart. Do not substitute vinegar for lemon juice, an unsafe product may result.

Since so many factors affect the acidity of canned tomatoes and juices — and because it is impractical if not impossible for the home canner to measure the pH of each container canned — **USDA recommends that acid be added to home-canned tomato products.**

Citric acid is effective at increasing the acidity of tomatoes and tomato products without changing the flavor. Citric acid is widely available in drugstores and where canning supplies are sold.

Use 1/2 teaspoon citric acid per quart or 1/4 teaspoon per pint.

You can also use **bottled lemon juice** to acidify canned tomatoes. **Add 1 tablespoon per pint or 2 tablespoons per quart.** Measure this amount into canning jars before sealing. You can add a small amount of sugar — 1 teaspoon per quart — to offset the acid taste, if you desire.

Small amounts of vinegar are not as effective as lemon juice in increasing acidity. Enough vinegar to increase the acidity of canned tomatoes changes the flavor. For this reason, **vinegar is not recommended** as an acidifier in plain canned tomatoes or juice. However, vinegar (5% acetic acid) is fine in catsup, chili sauce and salsa.

Careful processing prevents spoilage

This bulletin contains recipes for both pressure canning and boiling water canning of tomato products:

- **Pressure canning** uses water heated under pressure (steam) to cook foods at a high temperature to ensure safety.
- **Boiling water canning** can safely process foods high in acid (pH of 4.6 or less) at lower temperatures.

Check the canner and pressure gauge

Before you start canning, be sure the canner is in good operating condition. Have a dial pressure gauge tested each canning season to be sure it measures pressure accurately. Contact your county UW-Extension office for dial gauge testing. For a list of county office locations see: www.uwex.edu/cty/.

Canners with weighted pressure regulators do not require testing. But the regulators and vent pipes must be kept clean, and gaskets need to be in good condition. Replace any rubber gaskets that are old or leaking.

Process times in this publication are designed to ensure safe processing for tomatoes and tomato products anywhere in Wisconsin. Recommendations are given for both pressure canning and boiling water canning.

A *pressure canner* is not the same as a *pressure cooker*. Pressure cookers are used to rapidly cook meats, vegetables and other foods for a family meal. They may not maintain adequate pressure for home canning. A pressure cooker also heats and cools too quickly, so may not heat foods long enough to ensure a safe product.

Vent all pressure canners for 10 minutes before beginning pressure processing. Failure to vent canners can result in under-processing. For complete instructions on use and care of your *pressure canner,* request *Using and Caring for a Pressure Canner* (B2593) available from your county UW-Extension office or Cooperative Extension Publications (learningstore.uwex.edu).

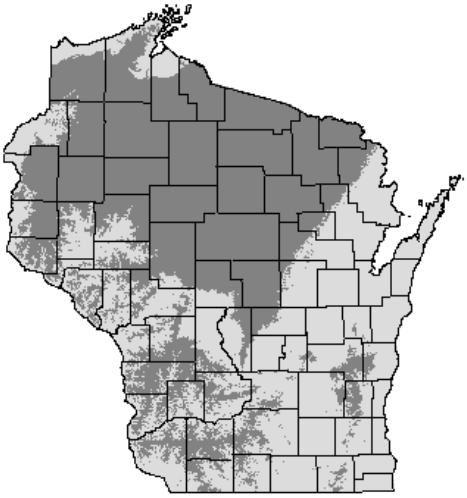
Processing in a pressure canner

Pressure canners may have dial gauges or weighted gauges. Pressure is measured in **pounds per square inch (psi)**. When pressure is applied, water boils at a high temperature. Food can be processed in a pressure canner quickly and safely at these high temperatures. For home canning, use pressure canners that can maintain pressures up to 15 psi. Be sure your canner is in good condition. Check your dial gauge canner for accuracy every canning season.

The pressure required to ensure safety of canned food varies with elevation. Wisconsin elevations range from 580 to 1,953 feet above sea level, with about two-thirds of the state at elevations between 1,000 and 2,000 feet. Adjust for elevation when canning.

For pressure canning:

- Put 2 to 3 inches of hot water in the canner. Place filled jars on the rack, using a jar lifter. Fasten canner lid securely. Leave weight off vent port or open petcock. Heat at the highest setting until steam flows from the petcock or vent port.



Elevation map

Remember to adjust for elevation above sea level when canning tomatoes. To determine your elevation, consult the elevation map on this page, or call your county Land Information office (listed under county government in your phone book). If you share recipes with friends and relatives, be sure to include adjustments for changes in elevation.

Elevation above 1,000 feet

Elevation below 1,000 feet

- Maintain high heat setting and exhaust steam for 10 minutes. Research supports the need to vent all types of pressure canners for 10 minutes. If the steam in the canner is mixed with air, temperatures will not get high enough.
- Once the canner is vented, place the weighted gauge on the vent port or close the petcock (for a dial gauge canner). The canner will pressurize during the next 3 to 5 minutes.
- Start timing the process when the pressure reading on the dial gauge indicates that the recommended pressure has been reached, or when the weighted gauge begins to jiggle or rock. Follow recipe directions precisely, using the process time listed for the type of pressure canner, pack and jar size.
- Regulate heat under the canner to maintain a steady pressure at or slightly above the correct gauge pressure. Pressure variations during processing may cause unnecessary liquid losses from jars.
- When the timed process is completed, turn off the heat, remove canner from the burner if possible, and let the canner depressurize. Do not force-cool the canner. Forced cooling may result in food spoilage. Cooling the canner with cold running water or opening the vent port before the canner is fully depressurized will cause liquid loss from jars and seal failures. Forced cooling may also warp the canner lid of older model canners, causing steam leaks.
- After the canner is depressurized, remove the weight from the vent port or open the petcock. Wait 2 minutes, unfasten the lid, and remove it carefully. Lift the lid away from you so that the steam does not burn your face. Remove jars with a lifter, place on a towel or cooling rack and allow to cool.

The only approved methods for canning tomatoes and tomato-based products are pressure canning and boiling water canning. Follow instructions precisely, using the time listed in each recipe for the canning method you choose. Open kettle canning, microwave canning and oven canning are *very unsafe*.

Boiling water canning

Boiling water canning can be easy to do at home using any large pot with a tight-fitting lid.

For boiling water canning:

- Use a rack to keep jars from touching the canner bottom and to allow heat to reach all sides of the filled jars.
- Put jars into a canner that contains simmering (180°F) water.
- Add boiling water if needed to bring water 1 to 2 inches above jar tops. Do not pour water directly on the jars. Place a tight-fitting cover on the canner. If you use a pressure canner for boiling water canning, leave the cover unfastened and the petcock open to prevent pressure buildup.
- Bring water to a rolling boil. Set a timer for the processing time the recipe gives for the type of pack and jar size. Watch closely to keep water boiling gently and steadily. Add boiling water if necessary to keep jars covered.
- Follow recipe directions precisely, using the process time listed for boiling water canning.
- Remove jars from the canner immediately after the timer sounds. The food could spoil if jars are left in hot water too long.

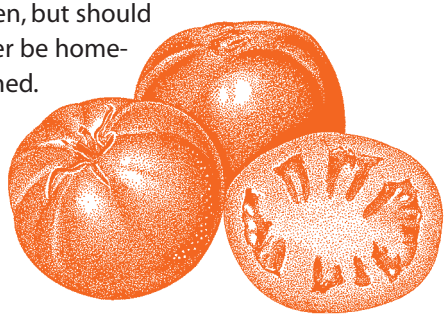
Unsafe canning methods

Open-kettle canning of tomatoes, tomato juice or other tomato products is very unsafe. Because this method involves packing hot tomatoes in jars and sealing them without any further heat processing, microorganisms may survive and the product can spoil or become hazardous.

Microwave canning and **oven canning are also very unsafe.**

Thickening products by adding flour, cornstarch or modified starches, such as with popular tomato or spaghetti sauces, slows the processing of these products. Thickened tomato products can spoil or be unsafe to eat.

Never add a thickening agent to tomato products before canning. You may thicken these products before serving. Thickened condensed tomato soup can be successfully frozen, but should never be home-canned.



Process times

The type of **pack** — whole, quartered, hot or raw — and **packing liquid** — tomato juice or water — affect process times, as do other ingredients, canning method and jar size.

When you look at instructions in the following recipes, you will notice that raw, whole tomatoes packed in tomato juice require significantly longer process times in a boiling water canner than any other tomato product. This is because juice transfers heat to whole, raw tomatoes less efficiently than water.

Pressure canning is the least time-consuming method to choose if you want to can raw-packed tomatoes in tomato juice.

Filling jars

Follow the manufacturer's directions for pretreating two-piece vacuum seal lids. Fill hot, clean canning jars with tomato products. Be careful not to leave any food on the jar rims. Wipe jar rims with a clean, damp paper towel. Put on pretreated lids and screw on metal bands until you begin to feel resistance, then turn the band until it is firmly tight.

Cooling jars after processing

Put jars on a rack or cloth so air can circulate freely around them. Do not use a fan to cool jars, and avoid cold drafts. Do not retighten screw bands after processing.

Testing for seal

Test each jar for a seal the day after canning. Jars with flat metal lids are sealed if:

- Lid has popped down in the center.
- Lid does not move when pressed down.

If a jar is not sealed, refrigerate it and use within a few weeks, or **reprocess** within 24 hours.

Reprocessing — or detecting spoilage

Jars of tomatoes or tomato products that do not seal may be safely reprocessed within 24 hours.

To reprocess:

Remove lids and empty the tomatoes and liquid into a pan. If a hot pack is called for, heat to boiling. For raw pack, you do not need to heat the tomatoes before packing into jars. Place tomatoes (heated or "raw") in clean, hot jars. Put on new pretreated lids. Process again for the full time.

Twice-processed foods are safe, but the quality may be lower. The texture changes, and more heat-sensitive nutrients are lost, such as vitamin C and B-complex vitamins.

To detect spoilage:
Spoilage has occurred if processed tomatoes sealed at first and then unsealed a few days later. **Do not** reprocess such jars. Safely dispose of the contents so no human or animal will consume them.

The most common reasons home-canned tomato products spoil are:

- **under-processing** or
- **incomplete seals.**

Tomatoes that have not been processed long enough to destroy molds and heat-resistant bacteria may spoil during storage. Carefully inspect jars for signs of spoilage before use. Signs of spoilage may include bubbling in the jars, bulging lids, or the appearance of mold under the lid or on the top layer of food in the jar.

Sometimes food is spoiled even **without** obvious signs of spoilage. **Never use** tomatoes or tomato products where the jar seal has broken or there are obvious signs of spoilage such as bulging lids, bubbling or frothing of jar contents, or a strong sour smell when you lift the jar lid.

Do not taste spoiled food. Follow the instructions below for safely discarding spoiled food.

Process tomatoes for the correct length of time to avoid spoilage. Carefully inspect jars for signs of spoilage *before* use. Safely discard any product with obvious signs of spoilage such as mold growth, bulging lid or sour smell.

Safely discard spoiled food

Carefully dispose of spoiled tomato products in one of two ways:

- If the suspect jars are still sealed, place them in a heavy garbage bag. Close and place the bag in a regular trash container or bury it in a nearby landfill.
- If the suspect jars are unsealed, open or leaking, **detoxify** the jars and their contents before discarding. Detoxifying the jars and their contents will destroy any poisons that might have formed.

To detoxify food:
Carefully place the filled suspect jars and lids on their sides in an 8-quart or larger stock pot, pan or boiling water canner. Wash your hands thoroughly. Carefully add to the pot enough water to cover the jars by 1 or 2 inches. Avoid splashing the water.

Place a lid on the pot and heat the water to boiling. Boil 30 minutes to ensure detoxifying the food and jars. Cool. Discard the jars, their lids and food in the trash, or bury in soil.

Wash with soap and water all counters, pots and equipment including can opener, clothing and hands that may have contacted the spoiled food or jars. Discard any sponges or wash cloths that may have been used in the cleanup. Place them in a plastic bag and discard in the trash.

Tomatoes that failed to seal may be safely reprocessed within 24 hours. Empty tomatoes from jars, heat if hot packing, and ladle into clean, hot jars. Put on new pretreated lids. Reprocess again for the full time.

Safely discard tomatoes that are spoiled or that became unsealed. **If the spoiled jars are still sealed, place them in a heavy garbage bag. Close and place the bag in a regular trash container or bury it in a nearby landfill. If suspect jars are unsealed, open or leaking, detoxify the jars and their contents before discarding.**

Storing canned tomatoes

Wipe cool jars. Label with the date and contents of the jar. Remove the screw bands to avoid rust.

Store jars in a cool, dark place. For best eating quality and nutritive value, use within one year. Heat, freezing temperatures, light or dampness will decrease the quality and shelf life of canned food.

Freezing tomatoes

Tomatoes can also be successfully preserved by freezing. Any of the tomato sauces in this publication can be frozen with excellent results.

To freeze whole or quartered tomatoes, prepare as you would for hot-pack canned tomatoes. Chill the heated tomatoes and pack into freezer containers, leaving 1-inch headspace. Seal, label and date, and freeze at 0° F or lower.

Tomato products thickened with flour, cornstarch or modified starch **must** be frozen. These products cannot be safely canned at home.

Use frozen tomatoes as you would canned tomatoes. Use within one year for best quality.

Yield information

One bushel of fresh tomatoes weighs 53 pounds and will yield about 18 quarts of canned tomatoes.

A canner load of 7 quarts will require an average of 22 pounds of fresh tomatoes; a 7-pint load requires about 10 1/2 pounds; 1 quart of canned tomatoes requires about 3 pounds of fresh tomatoes.

Yield information

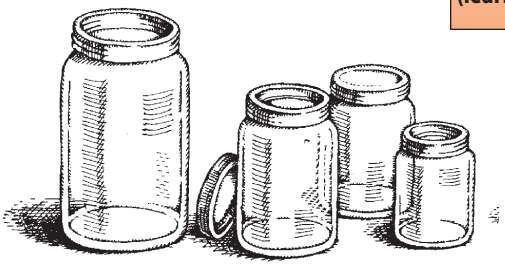
Amount of fresh tomatoes		Amount of canned tomatoes
1 bushel	=	18 quarts
22 pounds	=	7 quarts
10 1/2 pounds	=	7 pints
3 pounds	=	1 quart

Tomato-based vegetable soup

If you can tomatoes in a soup mix with other vegetables such as carrots, celery, corn, lima beans, mushrooms, onions, peas, peppers or potatoes, **process in a pressure canner**.

Adding a significant amount of vegetables to tomatoes decreases the acidity of the mixture, and the product must be pressure canned. For vegetable processing times, see *Canning Vegetables Safely* (B1159), available from your county UW-Extension office or Cooperative Extension Publishing (learningstore.uwex.edu).

Tomato-vegetable soup mixtures are low-acid products and must be processed in a pressure canner. For vegetable processing times, see *Canning Vegetables Safely* (B1159), available from your county UW-Extension office or Cooperative Extension Publications (learningstore.uwex.edu).



Tomatoes — Crushed, quartered, hot pack (no added liquid)

1. Wash high-quality, firm, ripe tomatoes.
2. Dip in boiling water for 30 to 60 seconds or until skin splits. Then dip in cold water, slip off skins, remove cores, and cut into quarters.
3. Crush some of the quartered tomatoes in a large kettle while heating rapidly. Gradually add remaining quartered tomatoes, stirring constantly. After all tomatoes are added, boil gently for 5 minutes.
4. **Add 1/2 teaspoon citric acid or 2 tablespoons bottled lemon juice to each quart jar; add 1/4 teaspoon citric acid or 1 tablespoon bottled lemon juice to each pint.** Add 1 teaspoon salt and 1 teaspoon sugar per quart, if desired. Fill clean, hot canning jars with hot tomatoes, leaving 1/2-inch headspace.
5. Remove excess air from the jar by running a spatula or bubble freer between the tomatoes and the side of the jar in several places.
6. Wipe jar rims, and cap with properly pretreated lids. Adjust lids. Process using one of the three methods below.

Hot pack crushed tomatoes

Boiling water canner—process time

Jar size	0-1000 ft	1001-3000 ft
pints	35 min.	40 min.
quarts	45 min.	50 min.

Dial gauge canner—process time

Jar size	process time	canner pressure (psi) 0-2000 ft
pints	20 min.	6 lb.
or		
quarts	15 min.	11 lb.

Weighted gauge canner—process time

Jar size	process time	canner pressure (psi) 0-1000 ft	canner pressure (psi) above 1000 ft
pints	20 min.	5 lb.	10 lb.
or			
quarts	15 min.	10 lb.	15 lb.

Note: lb. = pound tbsp. = tablespoon tsp. = teaspoon

For pressure canning, pressure is measured in pounds per square inch (psi).

Tomatoes — Whole or halves, in water pack

1. Sort and wash tomatoes. Dip in boiling water for 30 to 60 seconds or until skin splits. Then dip in cold water, slip off skins, and remove cores.
2. To clean, hot canning jars **add 1/2 teaspoon citric acid or 2 tablespoons bottled lemon juice to each quart jar; add 1/4 teaspoon citric acid or 1 tablespoon bottled lemon juice to each pint.** Add 1 teaspoon salt and 1 teaspoon sugar per quart, if desired.

Fill jars:

3. **Raw pack**: Leave whole or cut in halves and place in clean, hot canning jars, leaving 1/2-inch headspace.

   Hot pack: Place prepared tomatoes in a saucepan and add enough water to cover. Boil gently 5 minutes. Fill clean, hot canning jars with hot tomatoes, leaving 1/2-inch headspace.
4. Pour either enough hot water (raw pack) OR hot cooking liquid (hot pack) into each jar to cover tomatoes, leaving 1/2-inch headspace.
5. Remove excess air from the jar by running a spatula or bubble freer between the tomatoes and the side of the jar in several places.
6. Wipe jar rims, and cap with properly pretreated lids. Adjust lids. Process using one of the three methods below.

Hot or raw pack in water

Boiling water canner—process time

Jar size	0-1000 ft	1001-3000 ft
pints	40 min.	45 min.
quarts	45 min.	50 min.

Dial gauge canner—process time

Jar size	process time	canner pressure (psi) 0-2000 ft
pints	15 min.	6 lb.
or		
quarts	10 min.	11 lb.

Weighted gauge canner—process time

Jar size	process time	canner pressure (psi) 0-1000 ft	canner pressure (psi) above 1000 ft
pints	15 min.	5 lb.	10 lb.
or			
quarts	10 min.	10 lb.	15 lb.

Tomatoes— Whole or halves, in juice pack

1. Wash fully ripe tomatoes. Dip in boiling water for 30 to 60 seconds or until skin splits. Then dip in cold water, slip off skins, and remove cores. Follow steps for raw pack OR hot pack.
2. To clean, hot canning jars **add 1/2 teaspoon citric acid or 2 tablespoons bottled lemon juice to each quart jar; add 1/4 teaspoon citric acid or 1 tablespoon bottled lemon juice to each pint.** Add 1 teaspoon salt and 1 teaspoon sugar per quart, if desired.

Fill jars:

3. **Raw pack:** Leave whole or cut in halves and place in clean, hot canning jars. Cover tomatoes with hot tomato juice, leaving 1/2-inch headspace.

   Hot pack: Place prepared tomatoes in a saucepan and add enough tomato juice to cover completely. Boil gently 5 minutes. Fill jars with hot tomatoes and cover with hot tomato juice, leaving 1/2-inch headspace.
4. Remove excess air from the jar by running a spatula or bubble freer between the tomatoes and the side of the jar in several places.
5. Wipe jar rims, and cap with properly pretreated lids. Adjust lids. Process using one of the three methods below

Hot or raw pack in juice

Boiling water canner—process time

Jar size	0-1000 ft	1001-3000 ft
pints	85 min.	90 min.
quarts	85 min.	90 min.

Dial gauge canner—process time

Jar size	process time	canner pressure (psi) 0-2000 ft
pints	40 min.	6 lb.
or		
quarts	25 min.	11 lb.

Weighted gauge canner—process time

Jar size	process time	canner pressure (psi) 0-1000 ft	canner pressure (psi) above 1000 ft
pints	40 min.	5 lb.	10 lb.
or			
quarts	25 min.	10 lb.	15 lb.

Juice transfers heat much less effectively than water. Tomatoes packed in juice have a much longer processing time than tomatoes packed in water. Read through each recipe completely before processing to make sure you are producing a safe product.

Tomatoes—Whole or halves (raw pack without added liquid)

1. Wash 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.
2. To clean, hot canning jars **add 1/2 teaspoon citric acid or 2 tablespoons bottle lemon juice to each quart jar; add 1/4 teaspoon citric acid or 1 tablespoon bottle lemon juice to each pint.** Add 1 teaspoon of salt per quart to the jars, if desired.

Fill jars:

3. **Raw pack:** Fill jars with raw tomatoes, leaving 1/2-inch headspace. Press tomatoes in the jars until spaces between them fill with juice. Leave 1/2-inch headspace.
4. Remove excess air from the jar by running a spatula or bubble freer between the tomatoes and the side of the jar in several places.
5. Wipe jar rims, adjust lids and process.

Each recipe gives about how many whole vegetables to use as a guide in preparing the chopped amount. Do not rely on these whole vegetable quantities, but *carefully measure all ingredients in each recipe.*

Raw pack without added liquid

Boiling water canner—process time

Jar size	0-1000 ft	1001-3000 ft
pints	85 min.	90 min.
quarts	85 min.	90 min.

Dial gauge canner—process time

Jar size	process time	canner pressure (psi) 0-2000 ft	canner pressure (psi) 2001-4000 ft
pints or quarts	40 min.	6 lb.	7 lb.
	25 min.	11 lb.	12 lb.

Weighted gauge canner—process time

Jar size	process time	canner pressure (psi) 0-1000 ft	canner pressure (psi) above 1000 ft
pints or quarts	40 min.	5 lb.	10 lb.
	25 min.	10 lb.	15 lb.

Tomato juice

1. Select fully ripe tomatoes. You will need about 22 pounds tomatoes for 7 quarts of juice, 10 1/2 pounds for 7 pints.
2. Wash tomatoes, remove stems and cores. To prevent juice from separating, **quickly** quarter 1 pound of tomatoes directly into a saucepan. Immediately heat to boiling while crushing. Continue to slowly add freshly cut quarters to the boiling mixture, crushing as you add them. Stir frequently to prevent scorching. Simmer 5 minutes once all tomatoes are added.
3. Strain through a fine sieve or food mill to separate juice from skins and seeds. If you have a blender, blend the hot tomatoes for a few seconds before straining to obtain more pulp.
4. To clean, hot canning jars **add 1/2 teaspoon citric acid or 2 tablespoons bottled lemon juice to each quart jar; add 1/4 teaspoon citric acid or 1 tablespoon bottled lemon juice to each pint.** Add 1 teaspoon salt and 1 teaspoon sugar per quart, if desired.
5. Reheat strained juice and pour into prepared jars leaving 1/2 inch headspace.
6. Remove excess air from the jar by running a spatula or bubble freer between the tomatoes and the side of the jar in several places.
7. Wipe jar rims, and cap with properly pretreated lids. Adjust lids. Process using one of the three methods below.

Hot pack tomato juice

Boiling water canner—process time

Jar size	0-1000 ft	1001-3000 ft
pints	35 min.	40 min.
quarts	40 min.	45 min.

Dial gauge canner—process time

Jar size	process time	canner pressure (psi) 0-2000 ft	canner pressure (psi) 2001-4000 ft
pints or quarts	20 min.	6 lb.	7 lb.
	15 min.	11 lb.	12 lb.

Weighted gauge canner—process time

Jar size	process time	canner pressure (psi) 0-1000 ft	canner pressure (psi) above 1000 ft
pints or quarts	20 min.	5 lb.	10 lb.
	15 min.	10 lb.	15 lb.

When preparing tomato juice, blending the raw tomatoes *before* heating is *not recommended*. It hastens enzymatic breakdown of pectin and causes the juice to separate. Instead, rapidly heating the raw tomatoes inactivates the enzyme and keeps the juice from separating.

Tomato-vegetable juice blend

8 quarts fully ripe tomatoes, cored and quartered (20 to 25 lbs.)

1 cup onions, chopped (2 medium)

1 cup carrots, peeled (2 medium)

1 cup celery, chopped (3 stalks)

Optional: 1 cup green peppers, cored (2 medium) — Substitute for 1 cup other vegetables to total 3 cups.

2 bay leaves, as desired

3 tbsp. salt, as desired

1. Wash fully ripe tomatoes, remove stems and cores. Crush and simmer as for making tomato juice. Chop or blend onion, celery, carrots and/or green peppers and add to tomatoes. Season as desired with salt or bay leaf. Add no more than 3 cups of vegetables for every 22 pounds of tomatoes.
2. Heat rapidly to boiling and simmer 20 minutes.
3. Strain through a fine sieve or food mill to separate juice from skins and seeds. If you have a blender, blend the hot mixture for a few seconds before straining to obtain more pulp.
4. To clean, hot canning jars, **add 1/2 tsp. citric acid or 2 tbsp. bottled lemon juice to each quart jar; add 1/4 tsp. citric acid or 1 tbsp. bottled lemon juice to each pint.**
5. Reheat juice to boiling and add to prepared jars leaving 1/2 inch headspace. Remove excess air from the jar by running a spatula or bubble freer between the juice and the side of the jar.
6. Wipe jar rims, and cap with properly pretreated lids. Adjust lids. Process using one of the three methods below, or freeze.

To freeze: Pour strained juice into a pot. Chill in a sink of ice cold water. Stir frequently until cool. Pour into rigid freezer containers, leaving 1-inch headspace. Label and date. Freeze at 0° F or lower. For best quality, use within one year.

Hot pack juice blend

Boiling water canner—process time

Jar size	0-1000 ft	1001-3000 ft
pints	35 min.	40 min.
quarts	40 min.	45 min.

Dial gauge canner—process time

Jar size	process time	canner pressure (psi) 0-2000 ft	canner pressure (psi) 2001-4000 ft
pints or quarts	20 min.	6 lb.	7 lb.
	15 min.	11 lb.	12 lb.

Weighted gauge canner—process time

Jar size	process time	canner pressure (psi) 0-1000 ft	canner pressure (psi) above 1000 ft
pints or quarts	20 min.	5 lb.	10 lb.
	15 min.	10 lb.	15 lb.

Tomato sauce or purée — No other vegetables added

1. Prepare tomatoes as you would for plain tomato juice (see recipe on page 17). You may add salt, sugar, bay leaf or garlic for seasoning.
2. After straining, simmer in a large kettle until sauce thickens:
   - For thin sauce, reduce the volume by one-third.
   - For purée, reduce the volume by one-half.
   - For paste, cook until the mixture rounds up on a spoon.

   Note: Process very thick sauce in pint or half-pint jars, not quarts.
3. To clean, hot canning jars **add 1/2 teaspoon citric acid or 2 tablespoons bottled lemon juice to each quart jar; add 1/4 teaspoon citric acid or 1 tablespoon bottled lemon juice to each pint.** Add 1/2 teaspoon salt and 1/2 teaspoon sugar per pint, if desired.
4. Pour boiling hot sauce into prepared jars, leaving 1/4-inch headspace. Remove air bubbles, wipe jar rims, and cap with properly pretreated lids. Adjust lids.
5. Process or freeze.

To freeze: Pour hot sauce into a pot. Chill in a sink of ice cold water. Stir frequently until cool. Pour into rigid freezer containers, leaving 1-inch headspace. Label and date. Freeze at 0° F or lower. For best quality, use within one year.

Hot pack tomato sauce

Boiling water canner—process time

Jar size	0-1000 ft	1001-3000 ft
pints	35 min.	40 min.
quarts	40 min.	45 min.

Dial gauge canner—process time

Jar size	process time	canner pressure (psi) 0-2000 ft	canner pressure (psi) 2001-4000 ft
pints or quarts	20 min.	6 lb.	7 lb.
	15 min.	11 lb.	12 lb.

Weighted gauge canner—process time

Jar size	process time	canner pressure (psi) 0-1000 ft	canner pressure (psi) above 1000 ft
pints or quarts	20 min.	5 lb.	10 lb.
	15 min.	10 lb.	15 lb.

Yield information

Amount of fresh tomatoes		Amount of canned tomatoes
1 bushel	=	18 quarts
22 pounds	=	7 quarts
10 1/2 pounds	=	7 pints
3 pounds	=	1 quart

Tomato paste

14 pounds Roma- or paste-type tomatoes

1 tsp. citric acid

2 bay leaves

1 tsp. canning or pickling salt

1 clove garlic (optional)

Yield: About 8 or 9 half-pint jars

1. Wash and rinse half-pint canning jars; keep hot until ready to fill. Prepare lids and ring bands according to manufacturer's directions.
2. Rinse tomatoes thoroughly under running water and remove cores; do not peel. Chop tomatoes into ½- to ¾-inch pieces. Place in stockpot; cover and bring tomatoes 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.
3. Press cooked tomatoes 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.)
4. 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 2-½ hours. Stir frequently to prevent sticking and burning. Be careful of spattering which could burn your skin as you stir.
5. Remove bay leaves and garlic clove if used. Fill hot paste into clean, hot half-pint jars, leaving ½-inch headspace. Remove air bubbles and adjust headspace if needed. Wipe rims of jars with a dampened, clean paper towel. Apply and adjust prepared canning lids.
6. Process in a boiling water canner according to the recommendations below. Let cool, undisturbed, 12 to 24 hours and check for seals.

Hot pack tomato paste

Boiling water canner—process time

Jar size	0-1000 ft	1001-3000 ft
half-pints	45 min.	50 min.

Note: The citric acid in this recipe needs to be added into the sieved tomatoes before they are cooked down into paste (step 4). Adding it to the jars, as with other canned tomato products, does not allow for adequate distribution of the acid throughout the product. The ratio of citric acid to pounds of tomatoes must be kept consistent.

This recipe was developed at the University of Georgia, Athens. Released by Elizabeth L. Andress, Ph.D., Department of Foods and Nutrition, College of Family and Consumer Sciences. May 2015.

Tomatoes with okra or zucchini—hot pack

An average of 12 pounds of tomatoes and 4 pounds of okra or zucchini is needed per canner load of 7 quarts. An average of 7 pounds of tomatoes and 2 1/2 pounds of okra or zucchini is needed per canner load of 9 pints. **To ensure safety, do not change the proportion of tomatoes to okra or zucchini in this recipe.**

1. Wash 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, and quarter. Trim stems from okra and slice into 1-inch pieces or leave whole. Slice or cube zucchini if used. Bring tomatoes to a boil and simmer 10 minutes. Add okra or zucchini and boil gently 5 minutes.
2. Fill clean, hot canning jars with mixture, leaving 1-inch headspace. Add 1 teaspoon salt to each quart, if desired.
3. Remove air bubbles, adjust lids and process.

Variation: You may add four or five pearl onions or two onion slices to each jar.

Hot pack tomatoes with okra or zucchini

Dial gauge canner—process time

Jar size	process time	canner pressure (psi) 0-2000 ft	canner pressure (psi) 2001-4000 ft
pints	30 min.	11 lb.	12 lb.
quarts	35 min.	11 lb.	12 lb.

Weighted gauge canner—process time

Jar size	process time	canner pressure (psi) 0-1000 ft	canner pressure (psi) above 1000 ft
pints	30 min.	10 lb.	15 lb.
quarts	35 min.	10 lb.	15 lb.

Meatless spaghetti sauce

10 quarts fully ripe tomatoes, peeled and chopped (30 lbs.)

1 cup onion, chopped (1 medium)

1 cup green pepper (cored) or celery, chopped (2 medium peppers or 3 stalks celery)

1/4 cup parsley, chopped (optional)

1 pound fresh mushrooms, sliced (optional)

2 to 4 cloves garlic, minced

1 tbsp. salt

1/4 cup brown sugar

1 tbsp. sweet basil, crushed

1 tbsp. oregano

1/4 cup vegetable oil (optional)

Yield: About 9 pints

1. Wash ripe tomatoes. Dip in boiling water for 30 to 60 seconds or until skin splits. Then dip in cold water and slip off skins, core and quarter. Place in a large saucepan and boil 20 minutes, uncovered, to thicken. Meanwhile, sauté onions, garlic, celery or peppers, and mushrooms in vegetable oil until tender.
2. Combine sautéed vegetables with tomatoes, spices, salt, and sugar. Bring to a boil. Simmer uncovered until thickened, about 1 1/2 hours. Stir often to prevent sticking.
3. Ladle into clean, hot canning jars, leaving 1-inch headspace. Remove air bubbles, wipe jar rims, and cap with properly pretreated lids. Adjust lids.
4. **Do not** process in a boiling water canner. Process using one of the two pressure canning methods below.

Hot pack spaghetti sauce

Dial gauge canner—process time

Jar size	process time	canner pressure (psi) 0-2000 ft	canner pressure (psi) 2001-4000 ft
pints	20 min.	11 lb.	12 lb.
quarts	25 min.	11 lb.	12 lb.

Weighted gauge canner—process time

Jar size	process time	canner pressure (psi) 0-1000 ft	canner pressure (psi) above 1000 ft
pints	20 min.	10 lb.	15 lb.
quarts	25 min.	10 lb.	15 lb.

***Do not* add meat to Meatless Spaghetti Sauce before canning, unsafe food will result. If desired, brown and add ground beef when you reheat the canned spaghetti sauce for serving. Seasonings in this recipe may be decreased, if desired. *Do not alter* proportions of onions, peppers or mushrooms, or add pasta, rice or similar ingredients.**

Spaghetti sauce with meat

30 lbs. tomatoes

2 1/2 lbs. ground beef or sausage

5 cloves garlic, minced

1 cup chopped onions

1 cup chopped celery or green peppers

1 lb. fresh mushrooms, sliced (optional)

4 1/2 tsp. salt

2 tbsp. oregano

4 tbsp. minced parsley

2 tsp. black pepper

1/4 cup brown sugar

Yield: About 9 pints

1. Wash 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 20 minutes, uncovered, in large saucepan. Put through food mill or sieve.
2. Saute beef or sausage until brown. Add garlic, onion, 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, until thick enough for serving. At this time initial volume will have been reduced by nearly one-half. Stir frequently to avoid burning.
3. Fill clean, hot jars, leaving 1-inch headspace. Remove bubbles, adjust lids and process.

Hot pack spaghetti sauce with meat

Dial gauge canner—process time

Jar size	process time	canner pressure (psi) 0-2000 ft	2001-4000 ft
pints	60 min.	11 lb.	12 lb.
quarts	70 min.	11 lb.	12 lb.

Weighted gauge canner—process time

Jar size	process time	canner pressure (psi) 0-1000 ft	above 1000 ft
pints	60 min.	10 lb.	15 lb.
quarts	70 min.	10 lb.	15 lb.

Blender tomato catsup

8 quarts tomatoes, chopped (about 24 lbs.)

2 lbs. onions, chopped

2 lbs. sweet peppers, mix of red and green, seeded and chopped

3 tbsp. dry mustard

1 1/2 tbsp. paprika

1 1/2 tsp. whole allspice

1 1/2 tbsp. whole cloves

2 3-inch cinnamon sticks

9 cups brown sugar, firmly packed

1/4 cup canning or pickling salt

9 cups cider vinegar (5% acetic acid)

Yield: About 9 pints

1. Wash fully ripe tomatoes and all vegetables. Dip tomatoes in boiling water for 30 to 60 seconds or until skins split. Then dip in cold water and slip off skins, core and quarter. Remove seeds from peppers and slice into strips. Peel and quarter onions. Blend tomatoes, peppers and onions at high speed for 5 seconds in an electric blender or food processor.
2. Pour into a 3- to 4-gallon stock pot or large kettle and heat to boiling. Boil gently 60 minutes, stirring frequently.
3. Add vinegar, brown sugar, salt, and a spice bag containing mustard, red pepper and other spices. Continue boiling and stirring until volume is reduced one-half and catsup rounds up on a spoon with no separation of liquid and solids (about 1 to 2 hours). As mixture thickens, stir often and reduce heat to prevent scorching.
4. Pour hot catsup into clean, hot pint canning jars, leaving 1/8-inch headspace. Remove air bubbles, wipe jar rims, and cap with properly pretreated lids. Adjust lids.
5. **Process pints in a boiling water canner:**
   0-1,000 feet 15 minutes
   1,001-6,000 feet 20 minutes

To freeze: Chill quickly. Pour into freezer containers, leaving 1-inch headspace. Label and date. Freeze at 0° F or lower. For best quality, use within one year.

Tomato catsup

24 lbs. ripe tomatoes

3 cups chopped onions

3/4 tsp. ground red pepper (cayenne)

3 cups cider vinegar (5 percent)

4 tsp whole cloves

3 sticks cinnamon, crushed

1 1/2 tsp. whole allspice

3 tbsp. celery seeds

1 1/2 cups sugar

1/4 cup salt

Yield: 6 to 7 pints

1. Wash tomatoes. Dip in boiling water for 30 to 60 seconds or until skins split. Dip in cold water. Slip off skins and remove cores. Quarter tomatoes into 4-gallon stock pot or a large kettle. Add onions and red pepper. Bring to boil and simmer 20 minutes, uncovered. Combine spices in a spice bag and add to vinegar in a 2-quart saucepan. Bring to boil. Cover, turn off heat and hold tomato mixture for 20 minutes. Then, remove spice bag and combine vinegar and tomato mixture. Boil about 30 minutes.
2. Put boiled mixture through a food mill or sieve. Return to pot. Add sugar and salt, boil gently, and stir frequently until volume is reduced by one-half or until mixture rounds up on spoon without separation.
3. Fill clean, hot pint jars, leaving 1/8-inch headspace. Remove bubbles, adjust lids and process.
4. **Process pints in a boiling water canner:**

0-1,000 feet	15 minutes
1,001-6,000 feet	20 minutes

Each recipe gives about how many whole vegetables to use as a guide in preparing the chopped amount. Do not rely on these whole vegetable quantities, but *carefully measure all ingredients in each recipe.*

Country western catsup

24 lbs. ripe tomatoes

5 chile peppers, sliced and seeded

1/4 cup salt

2 2/3 cups vinegar (5 percent)

1 1/4 cups sugar

1/2 tsp. ground red pepper (cayenne)

4 tsp. paprika

4 tsp. whole allspice

4 tsp. dry mustard

1 tbsp. whole peppercorns

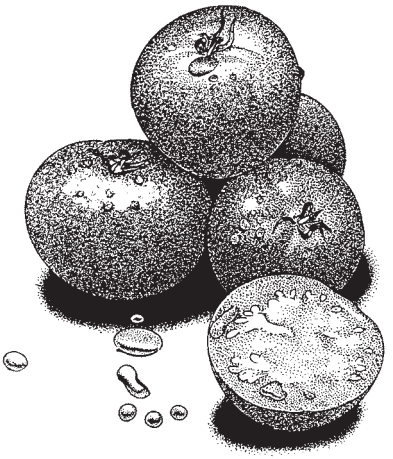
1 tsp. mustard seeds

1 tbsp. bay leaves

Yield: 6 to 7 pints

1. Wash tomatoes. Dip in boiling water for 30 to 60 seconds or until skins split. Dip in cold water. Slip off skins and remove cores. Quarter tomatoes into 4-gallon stock pot or a large kettle. Add chile peppers. Bring to boil and simmer 20 minutes, uncovered. Combine spices in a spice bag and add to vinegar in a 2-quart saucepan. Bring to boil. Turn off heat and let stand until tomato mixture has been cooked 20 minutes. Then, remove spice bag and combine vinegar and tomato mixture. Boil about 30 minutes. Put boiled mixture through a food mill or sieve.
2. Return to pot. Add sugar and salt, boil gently, and stir frequently until volume is reduced by one-half or until mixture rounds up on spoon without separation.
3. Fill clean, hot pint jars, leaving 1/8-inch headspace. Remove bubbles, adjust lids, and process.
4. **Process pints in a boiling water canner:**

0-1,000 feet	15 minutes
1,001-6,000 feet	20 minutes



Barbecue sauce

4 quarts (16 cups) peeled, cored, chopped red ripe tomatoes (24 large tomatoes)

2 cups chopped celery

2 cups chopped onions

1 1/2 cups chopped sweet red or green peppers (medium peppers)

2 hot red peppers, cored, and chopped

1 tsp. black peppercorns

2 cloves garlic, crushed

1 cup brown sugar

1 tbsp. dry mustard

1 tbsp. paprika

1 tbsp. canning salt

1 tsp. hot pepper sauce (e.g., Tabasco®)

1/8 tsp. cayenne pepper

1 1/2 cups of (5%) vinegar

Yield: About 4 pint jars

***Caution: Wear plastic or rubber gloves and do not touch your face while handling or cutting hot peppers. If you do not wear gloves, wash hands thoroughly with soap and water before touching your face or eyes.**

1. Wash and rinse canning jars; keep hot until ready to use. Prepare lids according to manufacturer's directions.
2. Combine prepared tomatoes, celery, onions, and peppers. Cook until vegetables are soft (about 30 minutes). Puree using a fine sieve, food mill, food processor or blender. Cook until mixture is reduced to about one half (about 45 minutes).
3. 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.
4. Fill hot sauce into clean, hot jars, leaving 1/2 inch headspace. Remove air bubbles and adjust headspace if needed. Wipe rims of jars with a dampened clean paper towel; apply two-piece metal canning lids.
5. **Process pints in a boiling water canner:**

0-1,000 feet	20 minutes
1,001-3,000 feet	25 minutes

Hot pepper salsa — Hot tomato-pepper sauce

10 cups tomatoes, peeled, cored and chopped (about 5 lbs.)

5 cups chili peppers, peeled, seeded and chopped (about 2 lbs.)

1 cup onion, chopped (about 1 medium)

6 cloves garlic, minced

1 cup cider vinegar (5% acetic acid)

1 tbsp. salt

1/4 cup cilantro, minced (optional)

1 tsp. cumin (optional)

Yield: 6 to 8 pints

1. Wash fully ripe tomatoes. Dip in boiling water for 30 to 60 seconds or until skins split. Dip tomatoes in cold water, slip off skins, remove cores and coarsely chop.
2. Use a mixture of mild and hot peppers. Slit each pepper on its side to allow steam to escape, and peel using the following method:
   - Roast chilies in oven (400° F) or broiler for 6 to 8 minutes until skins blister.
   - Place roasted peppers in a pan and cover with a damp cloth to cool. After several minutes, slip off pepper skins.
3. Combine all ingredients in a large saucepan. Heat to boiling and simmer 10 minutes. Ladle hot salsa into clean, hot pint jars, leaving 1/2-inch headspace.
4. Remove excess air from the jar by running a spatula or bubble freer between the tomatoes and the side of the jar in several places.
5. Wipe jar rims, and cap with properly pretreated lids. Adjust lids.
6. **Process pints in a boiling water canner:**

   0-1,000 feet 15 minutes
   1,001-6,000 feet 20 minutes

***Caution:* The volatile oils in hot peppers can cause burns. Wear rubber gloves when you cut or chop these peppers. Do not touch your face, particularly near your eyes. Wash hands thoroughly with soap and water if you do handle hot peppers.**

Each recipe gives about how many whole vegetables to use as a guide in preparing the chopped amount. Do not rely on these whole vegetable quantities, but *carefully measure all ingredients in each recipe.*

Piccalilli

6 cups green tomatoes, chopped

1 1/2 cups sweet red peppers, seeded and chopped

1 1/2 cups green peppers, seeded and chopped

2 1/4 cups onion, chopped

7 1/2 cups cabbage, chopped

1/2 cup canning or pickling salt

3 tbsp. whole mixed pickling spices

4 1/2 cups cider vinegar (5% acetic acid)

3 cups brown sugar

3 tbsp. mustard seed

1 tbsp. celery seed

Yield: About 9 half-pints

1. Wash and mix, chop and combine vegetables with 1/2 cup salt. Cover with hot water and let stand 12 hours.
2. Drain vegetables, squeezing out as much liquid as possible.
3. Tie spices in a spice bag, combine with vinegar and brown sugar, and heat to boiling in a saucepan.
4. Add drained vegetables and boil gently 30 minutes or until the volume of the mixture is reduced by half. Remove spice bag.
5. Sterilize jars by boiling for 10 minutes in enough water to cover the jars by 1 to 2 inches.
6. Pack hot relish in sterile half-pint or pint canning jars, leaving 1/2-inch headspace.
7. Remove excess air from the jar by running a spatula or bubble freer between the vegetables and the side of the jar in several places.
8. Wipe jar rims, and cap with properly pretreated lids. Adjust lids.
9. **Process half-pints in a boiling water canner.**

0-1,000 feet	5 minutes
1,001-6,000 feet	10 minutes

Pickled sweet green tomatoes

16 cups green tomatoes, sliced (10 to 11 lbs.)

2 cups onion, sliced

1/4 cup canning or pickling salt

4 cups cider vinegar (5% acetic acid)

3 cups brown sugar

1 tbsp. mustard seed

1 tbsp. allspice

1 tbsp. celery seed

1 tbsp. whole cloves

Yield: About 9 pints

1. Wash and slice tomatoes and onions. Place in a bowl, sprinkle with 1/4 cup salt, and let stand 4 to 6 hours. Drain.
2. Heat vinegar and stir in sugar until dissolved. Tie mustard seed, allspice, celery seed and cloves in a spice bag. Add to vinegar with tomatoes and onions.
3. If needed, add just enough water to cover. Bring to a boil and simmer 30 minutes, stirring as needed to prevent burning.
4. Tomatoes should be tender and transparent when properly cooked. Remove spice bag.
5. Pack hot tomatoes in clean, hot pint or quart canning jars, leaving 1/2-inch headspace.
6. Remove excess air from the jar by running a spatula or bubble freer between the vegetables and the side of the jar in several places.
7. Wipe jar rims, and cap with properly pretreated lids. Adjust lids.
8. **Process in a boiling water canner.**

Pints

0-1,000 feet	10 minutes
1,001-6,000 feet	15 minutes

Quarts

0-1,000 feet	15 minutes
1,001-6,000 feet	20 minutes

Pickled green tomato relish

10 pounds small, hard green tomatoes, chopped

1 1/2 pounds sweet red peppers, seeded and chopped

1 1/2 pounds green peppers, seeded and chopped

2 pounds onions, chopped

1/2 cup canning salt

4 cups water

4 cups white sugar

4 cups vinegar (5% acetic acid)

1/3 cup prepared yellow mustard

2 tbsp. cornstarch

Yield: About 8 pints

1. Wash and coarsely grate or finely chop tomatoes, peppers and onions. Dissolve the 1/2 cup canning salt in water and pour over vegetables in a large kettle. Heat to boiling and simmer 5 minutes. Drain in a colander.
2. Return vegetables to kettle. Add sugar, vinegar, mustard and cornstarch. Stir to mix.
3. Heat to boiling and simmer 5 minutes.
4. Sterilize pint jars by boiling for 10 minutes in enough water to cover the jars by 1 or 2 inches.
5. Fill sterile pint jars with hot relish, leaving 1/2-inch headspace.
6. Remove excess air from the jar by running a spatula or bubble freer between the vegetables and the side of the jar in several places.
7. Wipe jar rims, and cap with properly pretreated lids. Adjust lids.
8. **Process pints in a boiling water canner.**

0-1,000 feet	5 minutes
1,001-6,000 feet	10 minutes

Green tomato pie filling

4 quarts chopped green tomatoes

3 quarts peeled and chopped tart apples

1 lb. dark seedless raisins

1 lb. white raisins

1/4 cup minced citron, lemon, or orange peel

2 cups water

2 1/2 cups brown sugar

2 1/2 cups white sugar

1/2 cup vinegar (5%)

1 cup bottled lemon juice

2 tbsp. ground cinnamon

1 tsp. ground nutmeg

1 tsp. ground cloves

Yield: About 7 quarts

Combine all ingredients in a large saucepan. Cook slowly stirring often, until tender and slightly thickened (about 35 to 40 minutes). Fill clean, hot jars with hot mixture, leaving 1/2-inch headspace. Wipe rims, adjust lids and process.

Process quarts in a boiling water canner:

0-1,000 feet	15 minutes
1,001-6,000 feet	20 minutes

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USDA Complete Guide to Home Canning (Ag Information Bulletin 539, 1994) is online via the National Center for Home Food Preservation: www.uga.edu/nchfp/publications/publications_usda.html

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