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# HOME CANNING

## Fruits & Vegetables



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## SAFE HOME CANNING

Successful home canning depends on:

- (1) heat destruction of food spoilage agents
- (2) exclusion of air from the jar.

Both may be accomplished by carefully following procedures described in this bulletin for the product being canned.

Enzymes, yeasts, molds, and bacteria cause spoilage in canned foods. Enzymes, yeasts, molds, and some bacteria will be inactivated by temperatures of 212° F. (boiling water) or higher. However, certain heat-resistant bacteria and bacterial spores such as Clostridium botulinum, which causes botulism food poisoning, will be destroyed only when the temperature of the food reaches 240° F. or higher.

Nearly 72 percent of the botulism outbreaks in this century were caused by improperly home canned food. The home canning procedures described in this bulletin are designed to destroy botulism-producing bacteria. So be sure to read these directions carefully and follow them exactly when home canning. For a detailed discussion of C. botulinum and the deadly poison it produces, see Minnesota Extension Bulletin 372, **Botulism**.

### ACID AND LOW ACID FOODS

For home canning purposes, foods are divided into two main categories:

- (1) acid foods — fruits, tomatoes and pickles\*
- (2) low acid foods — meats, poultry, fish, and all vegetables, except tomatoes.

This division is based on the fact that the higher acidity level in foods such as fruits and tomatoes inhibits the growth of botulism-producing bacteria.

**Canning acid foods** — Fruits and tomatoes permit growth of yeasts, molds, and some bacteria. The spoilage organisms likely to be present in fruits and tomatoes can be destroyed at temperatures reached in the boiling water bath (212° F.). Failure to process these acid foods in the boiling water bath may allow growth of yeasts, molds, or bacteria that cause food spoilage. Do not can these foods by the open kettle method.\*\* Acid foods may be canned in a pressure canner at 5 pounds pressure. See the timetables for directions.

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\* For detailed directions for pickle making see Food Science and Nutrition fact sheet No. 26, **Making Fresh Pack Pickle Products** and No. 27, **Making Fermented Pickles and Sauerkraut**.

\*\* Open kettle method — An improper method in which the cooked fruit or tomatoes are ladled into sterilized jars and sealed without any further processing. The food is easily contaminated during transfer to the jar and often spoils.

**Canning low acid foods** — Foods in the low acid category allow growth of yeasts, molds, and all bacteria including dangerous heat-resistant *C. botulinum*. This botulism-producing bacteria will not be destroyed unless the food is heated to 240° F. **All low acid vegetables must be heat processed at 240° F. or higher.** The boiling water bath canner never reaches a temperature higher than 212° F. and cannot be used for the safe processing of low acid foods.

A temperature of 240° F. can be reached only with steam under 10 pounds pressure in a **pressure canner**. **All low acid vegetables must be processed in a pressure canner.**

Processing times for different foods vary because the rate of heat transfer is not the same in all vegetables and fruits. Recommended processing times are based upon the length of time needed to reach the proper temperature in the slowest heating point in the container.

## **PRELIMINARY DETAILS**

**Plant** or purchase varieties of produce recommended for canning.

**Assemble and wash** equipment and containers before gathering fruits and vegetables. Examine jars and discard those with nicks, cracks, and rough edges. These defects will not permit an air tight seal on the jar, and food spoilage will result.

Use new metal lids, new rubber jar rings, and standard canning jars. Do not use empty mayonnaise, peanut butter, or other packers' jars. These jars are not heat tempered and often break during processing. Top lids and screw bands manufactured for canning jars do not always fit packers' jars and the product may not seal.

**Gather products early** when they are at their peak of quality, and gather or purchase only as much as you can handle within 2 or 3 hours. Wash the product carefully, according to the directions in the chart. The cleaner the raw foods, the more effective the canning process. Do not can decayed or damaged food items.

**Prepare** foods as you would for the table. Keep them cold until you are ready to begin the actual canning.

## **HOW TO PACK GLASS JARS**

◆ Scald the washed jars and keep them hot. This may be done in a dishwasher. It is not necessary to sterilize jars that are to be processed in a

boiling water bath or pressure canner. They will be sterilized during the processing.

◆ If you wish to add salt, be sure to add it before the vegetable. Salt, in small amounts, adds flavor but does not help in the preservation process. Salt can easily be added when the vegetable is reheated for serving.

◆ Use one of two methods for packing fruits or vegetables: hot pack or raw pack. More food can be packed into one jar when hot pack is used and this method is best for foods such as apple slices that tend to discolor during canning. Packing products raw eliminates one step in the process and for some products — green beans for example — helps retain flavor and food value. Try both ways and make your own choice.

◆ Make sure to leave the recommended amount of headroom or empty space at the top of the jar as indicated in the charts. Some foods that expand during processing (corn) require extra headroom. **Too little headroom**, caused by filling the jars too full, will result in the contents bubbling out during heat processing. Solids or seeds may be caught under the sealing compound and prevent an air tight seal from forming.

**Too much headroom** or empty space at the top of the jar also can prevent the jar from sealing if the processing time is not long enough to exhaust all the excess air in the jar.

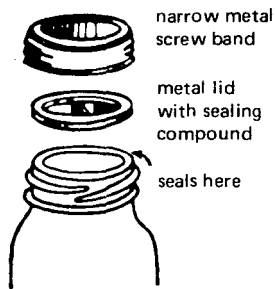
◆ Cover food pieces with liquid to prevent discoloration or darkening.

Before applying lids, wipe off the rims of the jars with a clean, damp cloth. Any foreign matter such as food particles, seeds, sugar, syrups, or brines on the rims of the jar may prevent an air tight seal from forming. If the jar does not seal, the food will be contaminated by substances carried by the entering air.

Keep jars hot after filling them by placing them in either a boiling water bath canner or a steam pressure canner. Process, following Timetables 1 or 2 in this pamphlet.

## COMMON TYPES OF CLOSURES

**Self-seal closure.** This is a two piece device consisting of a metal disk or lid with sealing compound and a narrow metal screw band. Various sizes of sealing lids and screw bands are available for different size canning jars. The self-seal two piece closure, the most popular type of canning jar sealing device, is used by 95 percent of all home canners.

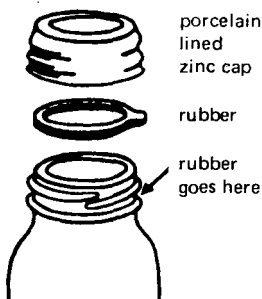


narrow metal  
screw band

metal lid  
with sealing  
compound

seals here

When putting the lid on a jar of food, pick up the lid with tongs and dip in boiling water — unless the manufacturer's directions state otherwise. Place lid on filled jar, center it carefully, and hold in place with finger. Then screw the band down firmly. Do not use great force. As the jar cools after processing, a vacuum will form and this creates the air tight seal. **Do not tighten the screw band after removing jars from the canner.** You may break the seal, prevent a vacuum from forming, and contaminate the contents of the jar. After the jar is cold (12 hours), remove the screw band. Screw bands are unnecessary once the jars are sealed, and may rust if left on the jars. Screw bands may be used over and over but the metal lid may be used only once.



porcelain  
lined  
zinc cap

rubber

rubber  
goes here

**Zinc cap** with porcelain lining and removable jar ring (fits any standard mason jar). Place wet jar ring on shoulder of jar. Make it lay flat by pressing with side of knife blade. Screw cap down tightly, and turn it back  $\frac{1}{4}$  inch. When processing is complete, tighten the cap again as soon as jar is taken from the canner. The rubber rings should not be used again.

Many non-standard canning lids and seals such as plastic lids or plastic wraps were marketed in 1975. New ones will continue to appear in 1976. Some of these new lids did not withstand pressure processing. Check with your county extension office before using unusual types of canning lids.

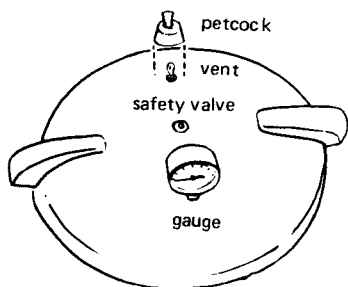
## PROCESSING METHODS

### Pressure Canner Method

Pressure canners have either dial or weight gauges. The petcock or pressure regulator controls the build-up of pressure in the canner. In newer models, it is a separate device put over the vent. In older model pressure canners, it is attached to the lid of the canner. It is a good idea to read your canner instruction booklet at the beginning of each canning season.

Get your pressure canner in good condition before the canning season starts. Have pressure gauge and safety valve tested, all parts cleaned, and broken or missing parts replaced.

The Minnesota Department of Agriculture will test gauges and safety valves throughout the year



as a service to Minnesotans. Allow 2 weeks for this service. The Department's equipment can be used only for testing dial gauges. (Weighted gauges cannot be tested; they need only to be cleaned

thoroughly.) When sending parts for testing, remove the pressure gauge and safety valve from the cover, place in a small sturdy box, and wrap carefully. Be sure to send the gauge in a box. The box you send will be used to return it to you. **Insure the package.** In an attached envelope, enclose a minimum of \$1.25 in **stamps** for return postage and insurance. Write your name and address plainly. Please remember that the laboratory **cannot** accept currency or checks for postage and insurance. Stamps must be enclosed to insure prompt return of your gauge. Send the package to Minnesota Department of Agriculture, Division of Laboratory Services, Room 510, State Office Building, St. Paul, Minnesota 55155.

If you plan to bring your gauge in person to the Minnesota Department of Agriculture, call ahead of time for an appointment.

Do not send or bring damaged or rusted pressure gauges for testing. Such gauges should be replaced. Order new parts from a manufacturer or hardware dealer. Gauges, safety valves, and petcocks are usually interchangeable among different makes of pressure canners, but make sure before you buy.

Follow the manufacturer's instructions for opening and closing the pressure canner. Follow pressure and timetables given in this folder.

Have 2 to 3 inches of boiling water in pressure canner. Stand the jars on a rack so they are not touching each other or sides of the canner. Fasten lid to pressure canner.

Turn heat on until steam flows from vent in a steady stream (10 minutes or more after it first appears). At first a mixture of steam and air will be released as a white vapor or cloud. When air is all driven out, the steam from the vent will become nearly invisible for 1 to 2 inches. It is then

# Timetable 1 — Processing Low Acid Vegetables

PRODUCT	Work rapidly. Raw pack or hot pack foods following directions, adding if desired ½ teaspoon salt for pints and 1 teaspoon for quarts. Place jars on rack in pressure cooker containing 2 to 3 inches of boiling water. Follow directions under pressure canner.	USE 10-POUND PRESSURE	
		PRESSURE CANNER	
		Glass jars	
		Pints	Quarts
Asparagus	<b>Raw Pack</b> Wash asparagus; trim off scales and tough ends and wash again. Cut in 1-inch pieces. Pack asparagus tightly as possible without crushing to ½ inch of top. Cover with boiling water leaving ½ inch at top.	min.	min.
	<b>Hot Pack</b> Prepare as for raw pack; then cover with boiling water. Boil 2 or 3 minutes. Pack asparagus loosely to ½ inch of top. Cover with boiling water leaving ½ inch at top.	25	30
Beans, dry with tomato or molasses sauce	<b>Hot Pack</b> Sort and wash dry beans. Cover with boiling water; boil 2 minutes, remove from heat and let soak 1 hour. Heat to boiling and drain, saving liquid for sauce. Fill jars ¾ full with hot beans. Add small piece of salt pork, ham, or bacon. Fill to ½ inch of top with hot tomato or molasses sauce. (Recipes in folder)	65	75
	<b>Raw Pack</b> Shell and wash beans. Pack loosely small type to 1 inch of top of jar for pints and 1½ inches for quarts; for large beans fill to ¾ inch of top for pints and 1¼ inches for quarts. Fill jars to ½ inch of top with boiling water.	40	50
Beans, fresh lima	<b>Hot Pack</b> Shell the beans, then cover with boiling water, and bring to boil. Pack beans loosely in jar to 1 inch of top. Cover with boiling water, leaving ½ inch headspace at top.	40	50
	<b>Raw Pack</b> Wash beans. Trim ends and cut into 1 inch pieces. Pack tightly in jars to ½ inch of top. Cover with boiling water, leaving ½ inch at top.	20	25
Beans, snap	<b>Hot Pack</b> Prepare as for raw pack beans. Then cover with boiling water and boil 5 minutes. Pack beans in jars loosely to ½ inch of top. Cover with boiling-hot cooking liquid and water, leaving ½ inch at top.	20	25
	<b>Raw Pack</b> Wash and scrape carrots. Slice, dice, or leave whole. Pack tightly in jars to 1 inch of top. Fill to ½ inch of top with boiling water.	25	30
Beets	<b>Hot Pack</b> Sort beets for size. Cut off tops, leaving 1 inch stem, also root; and wash. Boil until skins slip easily. Skin, trim, cut, and pack into jars to ½ inch of top. Cover with boiling water, leaving ½ inch at top.	30	35
	<b>Raw Pack</b> Wash and scrape carrots. Slice, dice, or leave whole. Pack tightly in jars to 1 inch of top. Fill to ½ inch of top with boiling water.	25	30
Carrots	<b>Hot Pack</b> Prepare as for raw pack, then cover with boiling water and bring to boil. Pack carrots in jars to ½ inch of top. Cover with boiling-hot cooking liquid and water, leaving ½ inch at top.	25	30
	<b>Raw Pack</b> Husk corn and remove silk. Wash. Cut from cob at about ⅔ the depth of kernel. Pack corn loosely to 1 inch of top. Do not shake or press down. Fill to ½ inch of top with boiling water.	95	†
Corn — cream style pints only	<b>Hot Pack</b> Prepare as for raw pack. Add 1 pint boiling water to each quart of corn. Heat to boiling. Pack hot corn to 1 inch of top.	85	†
	<b>Raw Pack</b> Husk corn and remove silk. Wash. Cut from cob at about ⅔ the depth of kernel. Pack corn loosely to 1 inch of top and fill to within ½ inch of top with boiling water.	55	85§
Corn — whole kernel	<b>Hot Pack</b> Prepare as for raw pack. To each quart of corn add 1 pint of boiling water. Heat to boiling. Pack loosely to 1 inch of top with mixture of corn and liquid.	55	85§
	<b>Raw Pack</b> Shell and wash peas. Pack peas loosely in jars to 1 inch of top. Cover with boiling water, leaving 1 inch at top.	40	40
Peas, green	<b>Hot Pack</b> Prepare as for raw pack. Cover with boiling water and bring to boil. Pack peas loosely in jars to 1 inch of top. Cover with boiling water, leaving 1 inch at top.	40	40
	<b>Hot Pack</b> Wash pumpkin or winter squash, remove seeds, and pare. Cut into 1 inch cubes. Add just enough water to cover. Bring to boil. Pack cubes in jars to ½ inch of top. Cover with hot cooking liquid and water, leaving ½ inch at top. For strained pumpkin, pour off liquid and mash before using.	55	90
Pumpkin* or Winter Squash cubed	<b>Raw Pack</b> Wash but do not pare. Trim ends. Cut squash into ½ inch slices; halve or quarter to make uniform pieces. Pack into jars to 1 inch of top. Cover with boiling water, leaving ½ inch at top.	25	30
	<b>Hot Pack</b> Prepare as for raw pack. Add water to cover. Bring to boil. Pack hot squash loosely to ½ inch from top. Cover with boiling-hot cooking liquid. Leave ½ inch space at top.	30	40
Summer Squash including Zucchini	<b>Hot Pack</b> Pick over and wash thoroughly. Cut out tough stems and midribs. Place about 2½ pounds of spinach in cheesecloth bag and steam about 10 minutes or until well wilted. Pack loosely to ½ inch of top. Cover with boiling water, leaving ½ inch at top.	70	90
	<b>Raw Pack</b> Pick over and wash thoroughly. Cut out tough stems and midribs. Place about 2½ pounds of spinach in cheesecloth bag and steam about 10 minutes or until well wilted. Pack loosely to ½ inch of top. Cover with boiling water, leaving ½ inch at top.	70	90
Spinach and other greens	<b>Hot Pack</b> Pick over and wash thoroughly. Cut out tough stems and midribs. Place about 2½ pounds of spinach in cheesecloth bag and steam about 10 minutes or until well wilted. Pack loosely to ½ inch of top. Cover with boiling water, leaving ½ inch at top.	70	90

§ The State Department of Agriculture recommends all corn be canned in pints rather than quarts since processing time required for quarts tends to darken it.

† not recommended  
\* for strained pumpkin, mash before using.

## Timetable 2 — Processing Fruits, Tomatoes, Pickled Vegetables

PRESSURE CANNER  
BOILING WATER BATH 5 POUNDS PRESSURE

PRODUCT	Raw pack or hot pack foods following directions. Put filled glass jars into canner containing hot or boiling water: For raw pack have water in canner hot but not boiling; for all other packs have water boiling. Add boiling water to bring water 1 inch or two over tops of jars but don't pour boiling water directly on glass jars. Put on cover of canner. Count processing time when water in canner comes to a rolling boil.	GLASS JARS		GLASS JARS	
		Pints	Quarts	Pints	Quarts
Apples	<b>Hot Pack</b> 1. Pare, core, cut into pieces. To keep from darkening, place in water containing 2 tablespoons each of salt and vinegar per gallon. Drain, then boil 5 minutes in thin sirup or water. Pack apples in jars to ½ inch of top. Cover with hot sirup or water, leaving ½ inch at top.	min. 15	min. 20	min. 8	min. 8
	2. Make apple sauce, sweetened or unsweetened; pack hot to ½ inch of top.	25	25	8	8
Beets, pickled	<b>Hot Pack</b> Cut off beet tops, leaving 1 inch of stem and root. Wash beets, cover with boiling water and cook until tender. Remove skins and slice. For pickling sirup use 2 cups vinegar to 2 cups sugar. Heat to boiling. Pack beets in jars to ½ inch of top. Add ½ teaspoon salt to pints, 1 teaspoon to quarts. Cover with boiling sirup, leaving ½ inch at top.	30	30		
Berries, except strawberries	<b>Raw Pack</b> Wash berries and drain. Fill jars to ½ inch of top, shaking berries down gently. Cover with boiling sirup (thin or medium recommended) leaving ½ inch at top.	10	15	8	8
	<b>Hot Pack</b> Wash berries and drain well. Add ½ cup sugar to each quart fruit. Cover pan and bring to boil. Pack berries to ½ inch of top.	10	15	8	8
Cherries	<b>Raw Pack</b> Wash; remove pits if desired. Fill jars to ½ inch of top, shaking cherries down gently. Cover with boiling sirup (thin or medium) leaving ½ inch at top.	20	25	8	8
	<b>Hot Pack</b> Wash; remove pits if desired. Add ½ cup sugar to each quart of fruit. Add a little water to unpitted cherries. Cover pan and bring to boil. Pack hot to ½ inch of top.	10	15	8	8
Fruit juices	<b>Hot Pack</b> Wash; remove pits if desired and crush fruit. Heat to simmering. Strain through cloth bag. Add sugar if desired—about 1 cup to 1 gallon juice. Reheat to simmering and fill jars to ½ inch of top.	10	10	5	5
Fruit puree	<b>Hot Pack</b> Use sound, ripe fruit. Wash; remove pits if desired. Cut large fruit in pieces. Simmer until soft, add a little water if needed. Put through strainer or food mill. Add sugar to taste. Heat to simmering and pack to ½ inch of top.	25	25	5	5
Peaches or Apricots	<b>Raw Pack</b> Wash peaches or apricots and remove skins. Remove pits. To keep from darkening place in solution (same as apples). Drain, pack fruit in jars to ½ inch of top. Cover with boiling sirup (light or medium) leaving ½ inch at top.	25	30	8	8
	<b>Hot Pack</b> Prepare fruit as for raw pack. Heat fruit through in hot sirup. If fruit is very juicy you may heat it with ½ cup of sugar to 1 quart of raw fruit adding no liquid. Pack fruit to ½ inch of top.	20	25	8	8
Pears	Peel, cut in halves, and core. Follow directions for peaches either raw pack or hot pack using same timetables.				
Plums	<b>Raw Pack</b> Wash. To can whole, prick skins. Freestone varieties may be halved and pitted. Pack fruit in jars to ½ inch of top. Cover with boiling sirup, leaving ½ inch space at top.	20	25	8	8
	<b>Hot Pack</b> Prepare as for raw pack. Heat to boiling in sirup or juice. If fruit is very juicy, you may heat it with sugar, adding no liquid. Pack hot fruit to ½ inch of top. Cover with boiling sirup, leaving ½ inch at top.	20	25	8	8
Rhubarb	<b>Hot Pack</b> Wash and cut into ½ inch pieces. Add ½ cup sugar to each quart rhubarb and let stand to draw out juice. Bring to boiling. Pack hot to ½ inch of top.	10	10	5	5
Tomatoes	<b>Raw Pack</b> Use only slightly underripe to ripe tomatoes. Scald just long enough to loosen skins; plunge into cold water. Drain, peel, and core. Leave tomatoes whole or cut in halves. Pack tomatoes to ½ inch of top, pressing gently to fill spaces. Add ½ teaspoon salt to pints and 1 teaspoon to quarts.	40	50	10	10
	<b>Hot Pack</b> Quarter peeled tomatoes. Bring to boil and pack to ½ inch of top. Add salt as for raw packed tomatoes.	35	45	8	8
Tomato juice	<b>Hot Pack</b> Use underripe to ripe tomatoes. Wash, remove stem ends, cut into pieces. Simmer until softened and put through strainer. Add 1 teaspoon salt to each quart juice. Reheat to just boiling. Fill jars with juice to ½ inch of top.	35	35	5	5



time to put on or close the petcock or pressure regulator. All air must be exhausted from the canner to make certain the internal temperature of the pressure canner reaches 240° F.

Raise pressure rapidly to 2 pounds less than required, reduce heat, and bring up the last 2 pounds slowly to avoid overpressure. Fluctuating pressure is one cause of liquid loss from jars, so hold the pressure steady at 10 pounds.

When processing time is up, remove the canner from heat and allow the pressure to return to zero. **Do not** attempt to cool the pressure canner with cold water.

When the pressure registers zero, remove or open the petcock or pressure regulator. Wait 10 minutes before unfastening the cover. This will help to prevent loss of liquid from the jar. Unfasten the cover and tilt the far side up so that steam escapes away from you. Remove each jar with the jar tongs or lift them out in the wire basket.

If the canner is not opened a few minutes after the pressure has dropped to zero, a vacuum may form inside the cooker. This may draw liquid from the jars and seal the lid to the canner.

Remove jars from canner and follow directions under cooling the jars.

### **Boiling Water Bath Method**

(Use only for acid products, such as fruits and tomatoes, and pickled vegetables.)

Any large deep pot with a rack in the bottom and a good fitting cover can be used as a boiling water bath canner. The pot should be deep enough to allow jars standing on a rack to be covered with 1 to 2 inches of briskly boiling water.

Have the water ready in the water bath. Boiling for hot pack — hot for raw pack. Lower the jars quickly. The bubbling around the rim of each jar is caused by air being forced out of the jar. Cover the boiling water bath. Count the process time when the water returns to a boil and keep the water at a rolling boil. Keep the level of the boiling water at least one inch over the jar tops. When the process time is complete, remove jars and follow directions under cooling the jars.

### **Cooling the jars**

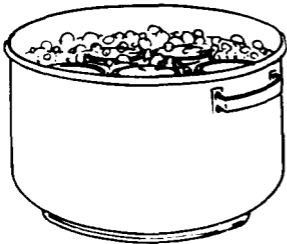
Place the jars **upright** on a perfectly dry non-metallic surface. Towels, boards, or newspapers may be used. Space the jars for free air circulation.

A ringing metal sound after the jars are removed from the canner is caused by a vacuum inside the jars. This is a sign the jars will seal.

Test for seal after the jars have cooled. The "self seal" lids are sealed if the lid is curved down and if the center of the lid is down and will not move when pressed with a finger.

Label the jars with product name and date of pack. Store where cool and dry. Do not allow to freeze. For best nutritive value, use within one year.

### **Use of pressure canner as a boiling water bath canner**



Your pressure canner may be used as a boiling water bath canner if it is deep enough to allow the jars on the rack to be covered by 1 inch of briskly boiling water. Put the cover on the canner but **DO NOT fasten or lock the lid into place.** Leave the pet-

cock wide open so that steam escapes and pressure does not build up inside the canner.

### **Use of pressure canner for processing fruit**

Pressure canners may be used for processing fruits and tomatoes. These acid foods may be processed at either 5 or 15 lbs. pressure. The times for processing fruits and tomatoes are listed in Time-table 2.

A new method for processing fruits and tomatoes at 15 lbs. pressure was developed at the University of Minnesota. Pack the fruit or tomatoes as directed in table 2. Put jars in canner. Bring canner to 15 lbs. pressure. Turn off burner when canner reaches 15 lbs. and allow the pressure to return to 0 lbs. Remove canner from heat. Remove the petcock or pressure regulator. After 10 minutes, take the top off the canner and remove the jars.

With this new procedure for acid foods, it is not necessary to exhaust the canner for 10 minutes.

## **SYRUPS TO USE IN CANNING FRUITS**

Most fruits have better color, flavor, and texture when canned with sugar or syrup, but sugar is not necessary to prevent spoilage of properly processed fruit. Low calorie canned fruits can be prepared at home by omitting the sugar and canning the fruit in water. Directions for canning fruits with sugar substitutes are available from the manufacturers of these products.

To prepare syrups, add sugar to water or to water mixed with juice extracted from fruit. Then bring to a boil and boil for 5 minutes. Skim if necessary.

Type of syrup	Sugar	Water or juice	Yield of syrup
Thin .....	2 cups	4 cups	5 cups
Medium .....	3 cups	4 cups	5½ cups
Heavy .....	4¾ cups	4 cups	6½ cups

## SAUCES USED IN CANNING BEANS

**Tomato Sauce:** Mix 1 quart tomato juice; 3 tablespoons sugar; 2 teaspoons salt; 1 tablespoon chopped onion; and ¼ teaspoon mixture of ground cloves, allspice, mace, and cayenne. Heat to boiling.

Or mix 1 cup of tomato catsup with 3 cups of water or soaking liquid from beans and heat to boiling.

**Molasses Sauce:** Mix 1 quart water or soaking liquid from beans, 3 tablespoons dark molasses, 1 tablespoon vinegar, 2 teaspoons salt, and ¾ teaspoon powdered dry mustard. Heat to boiling.

## Be on Guard Against Spoilage

Don't use canned food that shows any sign of spoilage. Examine containers before opening them. Unsealed jar lids or leakage may indicate that the food has spoiled. When you open containers look for other signs — an off odor, spurting liquid, or mold.

It is possible for canned vegetables to contain C. botulinum toxin, which causes botulism food poisoning without showing signs of spoilage. To avoid any risk of botulism, boil home canned vegetables before tasting. Bring vegetables to a rolling boil; then cover and boil for at least 10 minutes. Boil corn and spinach for 20 minutes. If the food looks spoiled, foams, or has an off odor during heating, destroy it.

Burn spoiled vegetables or dispose of the food so that it will not be eaten by humans or animals.

Fruits and tomatoes need not be reheated but should be discarded if mold or fermentation appears.

## IMPORTANT TIPS

1. **The home canning methods described in this publication are reliable and have been tested carefully for product safety.** Some "new" methods for home canning have not been researched thoroughly and may result in food spoilage and even botulism food poisoning. **Check with your county extension office before using any "new" methods of home canning.**

2. **DO NOT process or can food in the oven.** Jars may explode. The temperature of the food in the oven is not high enough to destroy botulism producing bacteria in vegetables and may not

destroy spoilage agents in fruits. Oven canning is a dangerous method.

3. Aspirin and boric acid should **never** be used in canning of food. These compounds are drugs and not preservatives

4. Use ascorbic acid compounds to prevent the darkening of fruits such as apples and peaches. Purchase preparations intended for use in home food preservation and follow the manufacturer's directions.

## **CANNING TOMATOES—CAUTION**

1. Do not use overripe tomatoes for canned tomatoes or tomato juice.

2. Do not dilute tomatoes or tomato juice with water prior to processing.



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