



Food Preservation

Canning Overview/Basics

Lesson 2

FNH-00562B

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Equipment

All equipment should be assembled, checked for cleanliness and working order before starting to can. Read through the recipe ahead of time and decide in advance the equipment that will be needed. This way you'll avoid searching for a needed item during the critical time when the food is being prepared and processed.

Choosing the Right Containers and Closures

Home canning may never have achieved the popularity it enjoys today had it not been for a tinsmith named John Landis Mason. Nearly a half century after N. Appert discovered the principles of canning and shortly after Louis Pasteur discovered that microorganisms cause spoilage, Mason, in 1858, patented a glass canning jar. The Mason jar had a threaded opening that could be sealed with a metal cap and a separate rubber ring for a gasket.

Before the Mason jar, glass bottles and earthenware jugs sealed with cork stoppers and wax, or tin containers sealed with solder, were used. Mason's invention greatly simplified home canning and made it easy, economical and popular.

While the term "Mason" was once a trade name, the patent on the original jar has long since expired, and "Mason" jar is now a generic term. But the basic idea developed by John Mason is still used today in several variations.

Containers

By far the most popular closure system today is the two-piece vacuum lid and cap. The set consists of a flat metal lid with a flanged edge. The underside of that lid has a rubber-like sealing compound. A threaded metal screw band fits over the rim of the jar to hold the lid in place. The manufacturer's directions should be followed to use this closure, since preparation of the flat lids sealing compounds for each brand is different.

These jars come in a wide variety of sizes and styles and are carefully made so they will seal well. The glass is tempered to withstand the heat of the steam canner. Commercial flat lids are designed for a single use only. The screw bands may be reused.



“One-trip” jars — like the ones in which you buy commercially canned mayonnaise and peanut butter — should not be used for home pressure canning.

Commercial jars are made of thin glass for use on high speed packing machines and will not withstand extreme temperatures in home canning and freezing. There might be invisible nicks or scratches which can cause jars to break, especially in the steam pressure canner.

Commercial jars often are in odd ounce measures and sometimes are not exactly the size specified in the recipe, then the processing time given will be inaccurate.

Two Ways To Fill Jars

Food may be placed into jars while it is hot or cold. Recipe directions will say which methods may be used.

Hot Pack—The hot pack method is generally preferred where the food being canned is relatively firm. This method is usually preferred for nearly all vegetables and meats and for most fruits. Precooking the food makes it more pliable, permits a tighter pack and requires fewer jars.

Generally, the food is first cooked in water, a syrup, or in the juice that is extracted. Fruit canned without sweetening is always hot packed.



Cold Pack—Foods that would be delicate after they are cooked, such as whole tomatoes,

are usually easier to handle if they are cold packed. The food is placed into the jars while it is raw. It should be packed firmly but should not be crushed.

With the cold pack method, there may be some shrinkage and some foods may float to the top.

Jar Head Space

Whether the boiling water bath or the steam pressure canner method is being used, a certain amount of “headspace” in the jar must be allowed.



Starchy foods may swell more in the container and therefore require more head space. If too little head space is allowed, food expands and bubbles when air is being forced out. The bubbling food may leave a deposit on rim of jar preventing the jar from sealing properly.

If too much head space is left, food at top is likely to discolor. The jar may not seal properly and there may not be enough processing time to drive all the air out of the jar.

As a general rule: One inch head space for beets, corn, peas and low acid foods. One-half inch head space for fruits and acid vegetables. One-fourth inch head space for juices, soft spreads, pickles and relishes. One-eighth inch head space for jellies. Recipes will give the amount of head space required for whatever you are canning.

Starting To Can

How much to can at one time may be determined by your personal preference. You may choose to can over the course of several days or all at once while everything is out. Usually, fruits and vegetables should be canned when they reach their most perfect stage for table use, and rarely do they all ripen on the same day.



Check all equipment — make sure it is in working order, and is safe and clean.

Check jars for nicks, cracks, or rough edges. These will keep the jars from having an airtight seal. Wash jars in hot soapy water and rinse well. Don't use wire brushes, steel wool or washing soda for cleaning jars; they are likely to damage the glass. If you are doing a hot pack, leave the jars in hot water until they are ready to use. If a dishwasher is used, leave the jars in the machine until you are ready to use them or keep them hot in the water heating in the canner. The jars should be kept hot to prevent breakage when they are filled with hot product. If you are raw packing foods, the jars need not be heated.

Jars should be sterilized that are to be processed for less than 10 minutes. This can be done by boiling them for 10 minutes.

In handling the jars, care should be taken that they do not crack or break due to sudden changes of temperature.

Closures should also be washed in hot soapy water and rinsed well. Manufacturer's directions should be followed closely in using the various closures.

When it is time to choose the food you will can, you will want to consider the following points:

- Pieces should be same relative size so the heat will penetrate evenly.
- Product should be completely ripe.
- Don't use blemished produce. It may produce a product of very low quality. Small blemishes can be trimmed carefully away.
- Wash well.
- Only enough food for one canner load at a time should be prepared.

Measure head space carefully. If food is in liquid, remove air bubbles by running a wooden spoon or rubber spatula around between the food and the jar. Don't use a table knife, it may damage your jar.

Wipe top of jars with damp cloth. Particles of food that remain can prevent a tight seal.

Follow manufacturers' directions carefully for placing closures on jars.

Food should be processed immediately after jars are closed to minimize the possibility of microorganisms multiplying in the food. After processing, the jars should be removed promptly from the canner. Foods allowed to remain in a boiling water bath canner for too long a period will be over-processed and will lose some of their vitamins and minerals.

If food has boiled out of the tops of the jars during processing, do not attempt to read-

just the lids, since this will probably break the seal. After the jars have cooled, wipe the residue away. If, for any reason the jar has failed to seal, repack the jar and use a new lid, reprocessing the full length of time called for in the recipe. Or the food can be refrigerated and eaten within normal refrigerator holding periods. Reprocessing may result in lesser quality, because it has been over-processed.

Jars from the canner should be placed on cloths or wire rack to cool. They should be kept out of drafts to avoid breakage. The jars should be placed a few inches apart to facilitate cooling. Jars should be allowed to cool for 12 to 24 hours before storing. After cooling, check jars to make sure they are sealed. Most jars seal with a “pop” sound when cooling. When completely cool, test the lid. It should be curved downward and should not move when pressed. Remove rings from jar and wipe jar with a damp cloth to remove any residue. Label, date and store. Wash and dry rings for reuse. Jars are safe to store without rings.

Methods To Avoid

Only the boiling water bath and the pressure canner methods are researched based and therefore recommended for canning. Recently, some older methods of preserving food are being revived. Some of these were unreliable to begin with and that’s why they are not recommended.

Open Kettle—It is impossible for the food to reach temperatures necessary for killing molds, enzymes, and bacteria. Proper seal may not be obtained.

Aspirin—Don’t use aspirin as a substitute for processing. While aspirin contains a weak germicidal agent that acts as a preservative. it is not adequate for preventing spoilage.

Dishwasher—There is no way to control the temperature or the processing time.

Microwave Oven—Microwave ovens do not heat evenly, therefore, jars do not reach the same temperature. In order to measure internal temperature, the lids must be left off and a thermometer inserted. With the lids off, contamination can enter.

Oven Canning—This method is dangerous. Jars may explode when the oven door is opened. Also temperature of the food does not become hot enough to destroy bacteria. The temperature of dry air at 212°F is not as hot as moist air at 212°F.

Adjustments For Altitude

Time must be increased when boiling-water bath is used at an altitude of 1,000 feet or more. For each 1,000 feet above sea level, add 2 minutes to processing time if time called for is 20 minutes or less. If time called for is more than 20 minutes, add four 4 minutes for each 1,000 feet.

When pressure canner is used at an altitude of 2,000 feet or more, pressure must be increased by 1 pound for each 2,000 feet of altitude.

How To Count Processing Time

It is necessary to process foods for the exact time given in the recipes. Too little time may result in the food spoiling; too much time will cause the food to be overcooked.

Boiling Water Bath Method

- Raw packed — jars placed in hot water.
- Hot packed — water in canner boiling.
- Water should be an inch or two over tops of the jars.
- Cover and bring water to a rolling boil.
- Start counting processing time at point the rolling boil begins. Boil gently but steadily for the time required.

Adjustments for Altitude

Fruit	Jar Size	0–1000 ft	1000–2000 ft	2000–3000 ft	3000–4000 ft
Plums	pint	20 minutes	22 minutes	24 minutes	26 minutes
	quart	25 minutes	29 minutes	33 minutes	37 minutes
Peaches	pint	20 minutes	22 minutes	24 minutes	26 minutes
	quart	25 minutes	29 minutes	33 minutes	37 minutes
Apples	pint/quart	20 minutes	22 minutes	24 minutes	26 minutes
	pint	15 minutes	17 minutes	19 minutes	21 minutes
Cherries	quart	20 minutes	22 minutes	24 minutes	26 minutes

- Add boiling water if needed to keep tops of jars covered.
- Remove jars immediately when processing time is up.

Steam Pressure Canner

- Put 2 to 3 inches of hot water in canner. Check your canner instructions for exact depth of water.
- Place jars in canner so that steam can flow freely around each jar.
- Fasten canner lid securely.
- Exhaust canner. Leave vent (petcock) open and allow steam to escape 10 minutes. Close vent or place weighted gauge on steam valve.
- When gauge registers recommended pressure, start counting processing time.

After Canning

After jars of food have thoroughly cooled, they should be checked to see if a proper seal has been obtained.

**Your local Extension office
can check gauges of your pressure
canner for accuracy.**

With two-piece vacuum lids, a slight pinging noise maybe heard as the jar cools, this means its sealed.

Push down in the center of the lid. If it does not push down, it is sealed. If the lid pushes down, but then springs up, the jar is not sealed. Food must be reprocessed, refrigerated and used within 7 days, or frozen for later use.

Label each jar with the date it was canned, type and variety of food, recipe used, method used either hot or cold packed, and any other information. This kind of information can help in the future to duplicate successes and eliminate failures.

Food that has been properly canned will keep indefinitely, but after a year some chemical changes may occur. This may result in a lower quality product. Properly canned food has a RECOMMENDED shelf life of approximately one year.

Canned goods should be kept in a cool, dark, dry place. Light hastens the oxidation and destroys certain vitamins; also foods may fade in color. A cool place is necessary to slow down the loss of their nourishing quality. Damp

storage can cause metal lids and closures to corrode or rust and endanger the seal.

Signs Of Spoilage

Before tasting, check the food for signs of spoilage. Indications that food has spoiled are:

- Broken seal
- Seepage
- Mold
- Gassiness
- Disagreeable odors
- Spurting liquid when the jar is opened
- Sliminess
- Cloudiness

If it doesn't look or smell right, do not use it.

Remember steps to successful canning are:

1. Know and understand the “basics” of canning.
2. Check all equipment — clean, good working order — jars not chipped or cracked.
3. Select only the best product. Wash and rinse thoroughly.
4. Follow recipe closely.
5. Pack food in jars — leave recommended headspace. Remove air bubbles. Wipe top and threads of jar.

6. Attach closures. Follow manufacturers' instruction.
7. Process using proper method and length of time.
8. When processing time is completed, remove jars, stand on cloth or rack, out of drafts and with space between.
9. After 12–24 hours, test seals.
10. Store in dark, dry cool place.

References

USDA Complete Guide to Home Canning.

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Print version (\$18): <https://mdc.itap.purdue.edu/item.asp?itemID=19265&ListType=&subcatID=68&catID=26>.

So Easy to Preserve. \$18. University of Georgia Cooperative Extension Service: www.uga.edu/setp.

Ball Blue Book. Ball Corporation, Consumer Products Division, Consumer Affairs, 345 S. High, Muncie, IN 47305-2326.

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