

The magazine of modern homesteading

COUNTRYSIDE

& Small Stock Journal

Canning
e-edition

How to Start HOME CANNING

What You Can
and Can't Can

Selecting
Canning Jars

How to Use a
Pressure Canner

PLUS:
What Heat
Source is
Best?

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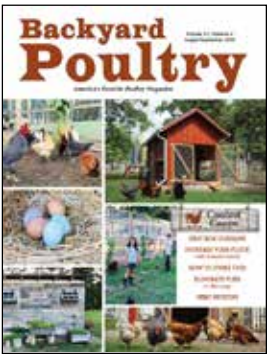
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Canning Season Memories

Canning season is always a special time of year. It brings back great memories of canning with my mom. We had our own garden and we canned everything. In fact, I didn't have store-bought jam, tomatoes or green beans until much later in life.

Canning season is such a rewarding time. You get to realize the fruits of your labors in the garden and make it last beyond the summer into the cold months of winter. And, sometimes it's just plain old fun collecting all your produce. We used to wear our bathing suits under our clothes when we went blackberry picking. We'd pick for a few hours, sampling our haul along the way, and then leave the woods for our backyard pool. We'd be sweaty and gross, but instead of going inside, we'd strip down and jump right in the pool. That's the way to cool off!

Whatever your canning memories or canning plans, I hope you enjoy this canning primer. It's full of useful knowledge to help make your efforts successful and yummy.

Happy canning!

Pam Freeman



PAM FREEMAN
Editor,
COUNTRYSIDE

Our Philosophy

At *COUNTRYSIDE*, our purpose is to inspire self-reliant living on any level.

We acknowledge that the path to self-sufficiency is as unique as the person who accepts the journey.

We strive to strengthen the homesteading movement by sharing the diverse voices and knowledge of today's practioners.

We teach our readers how to grow and raise their own food; build, fix and craft with their own two hands; and walk as gently on this planet as possible.

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MEET & GREET

Getting to Know Gail Damerow

Our Featured Contributor

Gail Damerow is the author of *The Chicken Encyclopedia*, *The Chicken Health Handbook*, *Hatching & Brooding Your Own Chicks*, *Storey's Guide to Raising Chickens*, *Fences for Pasture and Garden*, *The Perfect Pumpkin*, *Ice Cream! The Whole Scoop*, *Your Chickens*, and *Your Goats*. She is co-author of *Draft Horses & Mules* and *The Backyard Homestead Guide to Raising Farm Animals*, and is a regular contributor to *Backyard Poultry* and *Countryside* magazines.

Gail lives in Tennessee where she and her husband Allan keep Nubian dairy goats as well as poultry, tend a sizable garden, and maintain a small orchard and a large woodlot. On their diversified small farm they seek independence and sustainability by growing and preserving much of what they eat and feed their livestock.

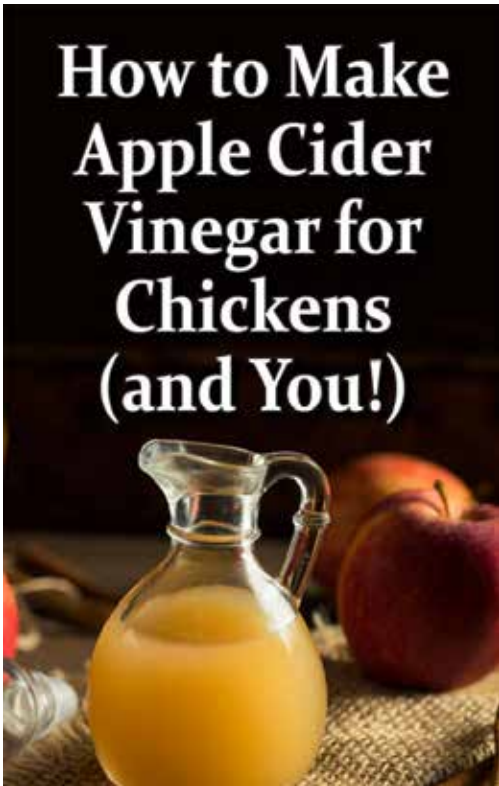
Gail's interest in gardening, canning and food preservation, and keeping poultry originated with visits to her maternal grandmother, who maintained a sizable garden and a large flock of laying hens. As a youngster Gail looked forward to having chickens of her own. At the age of 10, she thought she was realizing her dream when a department store Easter bunny handed her a small carton containing a single chick. At the time, she and her family were moving cross-country in a travel trailer, and sharing the cramped space with a chick in a cardboard box did not sit well with her parents.

When Gail came of age, she sought out a place in the country where she could indulge her passion for poultry. She has been gardening and keeping chickens and other birds for more than four decades. Over the years she has raised many different breeds of bantams and large chickens, as well as guinea fowl, pheasants, peafowl, ducks, geese, and swans. She enjoys sharing the knowledge she has acquired through the years via her blogs, books, and magazine articles. Read more from Gail here: CountrySidenetwork.com/author/gdamerow.




 Gail Damerow






How to Make Apple Cider Vinegar for Chickens (and You!)

 countrysidenetwork.com/daily/growing/herbs-natural-remedies/apple-cider-vinegar-for-chickens-and-you/



 by @cupofjoelene: We have lots and lots of bumblebee butts and butterflies, but I do believe these swaddled melons have to be THE cutest things in the garden right now.

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Why Can?

Taking the Mystery out of Home Canning

By GAIL DAMEROW

WHETHER YOU ARE A veteran home canner, or have just begun taking your first tentative steps into preserving your own homegrown food, you already know many of the reasons why anyone would bother. But if you're wondering why so many people put in so much time and effort to fill their pantries with home canned foods, let's look at some of the reasons.

- Home canned food tastes better, especially since it contains your favorite varieties of vegetables or fruits, instead of generic or substitute ingredients (such as commercially canned pumpkin containing other kinds of winter squash), and the ingredients are all fresh.

- Home canned food is better for you. When you home can produce from your garden, you know it was safely grown, safely handled after harvest, and safely processed. You know it contains no GMOs, preservatives, excess salt, high fructose corn syrup, artificial coloring and flavoring, and other undesirable ingredients.
- Unlike many commercially canned products, which are sold in cans lined with BPA-based epoxy, home canned food is free of BPA. (Information on BPA in commercially canned foods may be found at ewg.org/research/bpa-canned-food.)
- Home canning saves you money in terms of purchased canned goods and trips to the grocery store. The greatest economic return may be realized by processing enough food at a time to fill the canner.
- Home canning reduces waste, since it lets you store each season's excess produce for out-of-season use. Also, unlike food bought in cans, your canning jars are infinitely reusable (barring occasional, and inevitable, breakage).
- Home canning reduces your carbon footprint, since the food you can at home is not trucked cross country, but travels only from your garden to your kitchen and from there to your pantry.
- A lot of home canners cite self-satisfaction and self-sufficiency as important reasons why they preserve the harvest by canning.

HOW CANNING PRESERVES FOOD

Canning is a method of preserving food by sealing it in jars, cooking it in the jars to

destroy enzymes and undesirable microbes, and in the process removing air that hastens the spoilage of fresh foods. The trick is to heat the food just enough to destroy spoilage organisms without heating it so much it loses its nutritional value and flavor.

To anyone who grew up in a household where canning is not practiced, the process may seem somewhat mysterious. Too many people believe canning is complex and inherently unsafe.

But to those of us who grew up with mothers or grandmothers who canned routinely it becomes second nature. My husband Allan and I both grew up helping our mothers preserve foods by canning. Today we fill our pantry by canning much of what we grow in our own garden and orchard.

STORING HOME CANNED FOODS

After the jars have cooled, remove the metal bands. Otherwise, residual moisture between a band and the jar's threads may cause the band to rust, making it difficult to remove later and also making the band useless for reuse.

Jars removed from the canner often have food residue sticking to them. If left on the outside of the jar, this residue will eventually attract insects and mold. Clean the cooled jars by washing them in warm, soapy water. I find that if I have added a splash of vinegar to the water in the canner before the jars are processed, they are easier to wash.

Canned food keeps best in a cool, dark place. The storage area should be as dry as possible, especially if your jars are sealed with metal lids. Dampness can cause the lids to corrode, resulting in a broken seal and spoiled food.

The ideal storage area has a temperature range of between 50°F and 70°F. Our pantry, like those of both our mothers, is in the basement where the seasonal temperature fluctuation is less than

Preserve the Harvest with COUNTRYSIDE

1. Select only the freshest foods.
2. Sort out any that are not sound (bruised, diseased, or moldy).
3. Rinse produce to remove dust, insects, and residual soil.
4. Peel produce (such as potatoes) that require peeling.
5. Pit stone fruits (such as apricots and peaches).
6. Partially cook foods that must be packed into canning jars while hot.
7. Cover fruits with sweet syrup and vegetables with salted water.
8. Leave adequate head space (empty space at the top of the jar).
9. Add vinegar or lemon juice to low-acid fruits or vegetables as needed.
10. Seal the jars with canning lids held with metal bands.
11. Place jars in either a boiling water canner or a pressure canner.
12. Process jars for the prescribed amount of time.
13. Remove jars from the canner, cool, and test them for an air-tight seal.
14. Remove the metal bands, then wash and dry the jars, as well as the bands.
15. Label the jars and store them in a cool place away from light.



To anyone who grew up in a household where canning is not practiced, the process may seem somewhat mysterious. Too many people believe canning is complex and inherently unsafe.

it is upstairs in the kitchen. When Allan and I lived in a house that didn't have a basement, we stored our jars in the crawl space under the house.

Where we lived then, we didn't have freezing weather. Freezing can cause a jar's contents to expand, cracking the jar and spoiling the contents. Or freezing and thawing may cause the food to get unpleasantly soft. If you must store your jars where freezing is likely, pack them in well-insulated cartons, or in a refrigerator or freezer that isn't plugged in (locked, please, for the safety of children).

Avoid storing home canned goods where the temperature reaches 95°F or above, such as in the attic or near a furnace or other heater. Also do not store them on a windowsill or any place where they will get direct sunlight. Such conditions can cause your precious canned foods to rapidly lose quality.

Be sure to label each jar with the contents and the date. The contents may seem obvious at the time, but in the future may cause confusion. For example, Allan and I can beets both pickled and plain. The contents are used in different ways, but in the pantry the jars look identical, as I found out when I once grabbed a jar of plain beets and served them as pickles.

The date is important because you should always use your oldest jars first so they don't get out of date. In our pantry, we place the newest jars to the right of older jars, and use the jars on the left first. The USDA recommends canning no more than you can use in a year, which is basically sound advice. However, in our house we rely on canned homegrown foods to get us through the year, but we can't always rely on any particular harvest. For instance, in the summer of 2014 we had a bumper crop of tomatoes, which we use a lot of, but the summer of 2015 brought us barely enough tomatoes to enjoy fresh. Had we not diligently canned all the surplus tomatoes the year before, we'd have gone for an entire year without home canned tomatoes.

The problem with prolonged storage is not so much spoilage (provided the seal holds) but a potential reduction in quality. According to Brian A. Nummer, PhD, Food Safety Extension Specialist at Utah State University, unopened home canned foods have a shelf life of one year and should be used before two years. In this case, the ambiguous term "shelf life" does not mean that home canned food suddenly "turns bad" at the end of one year, but rather it means that

Say What?



BPA. Bisphenol A, a synthetic estrogen in the epoxy coating of commercial food cans that is linked to many human health problems.

CANNER. A large vessel used for processing jars of food, which may either use boiling water or steam.

CANNING JAR. A jar specifically designed for the home processing of foods; also called a Mason jar, Ball jar, Kerr jar, or fruit jar.

CANNING LID. A specially designed disk used to vacuum seal a canning jar.

HEAD SPACE. Empty space between the top of canned food in a jar and the jar's rim.

METAL BAND. A reusable metal ring that is screwed down over a canning lid to hold it in place while jars are being processed in a canner.

— Gail Damerow

during the first year canned food has its highest nutritional value and retains its freshest flavors. ☺

Further Reading

Each food, and combination of foods, may be safely canned only according to instructions established by home canning experts. These instructions are offered on authoritative websites and in related published pamphlets and books.

Over the past few years, the specifics for safe canning have changed significantly. Many recommendations in older books and pamphlets (and passed along

by folks who have been canning for decades using methods they learned from Grandma) are now considered unsafe. The following two reliable sources are available both in print and online:

The USDA Complete Guide to Home Canning was last updated in 2009. Its 190 pages cover all the basics for canning fruits, vegetables, meat, and seafoods in an easy-to-follow format designed to instill confidence in the novice. Much the information may be found online at nchfp.uga.edu (click on

"publications" or "how do I... can?").

The Ball Blue Book Guide to Preserving has long been called the canner's bible. The 37th edition was published in 2015. Within its 200 pages are currently recommended step-by-step instructions for all types of home food preservation. Ball's website also offers a wealth of canning information at freshpreserving.com.

— Gail Damerow



How to Select Canning Jars

BY GAIL DAMEROW

CANNING JARS COME IN two main categories, depending on the diameter of the opening. A narrow mouth jar, also known as a regular or standard jar, has an opening 2-3/8 inches in diameter. The opening of a wide mouth jar is 3 inches in diameter.

Since lids for sealing canning jars come only in those two sizes, the first consideration in selecting jars for canning is to make sure their mouths are one of these two dimensions. The second consideration is to decide what foods you will be canning, because the required method of processing a particular food determines to some extent the kind of jars that are suitable.

REPURPOSED JARS

When I first started canning on my own, a lot of foods sold at the grocery store came in glass jars that fit one or the other size canning lid. I repurposed a lot of one-quart mayonnaise jars, in which I canned apple juice from our orchard. A friend, who ate a lot of oysters that came in jars, kept me supplied in a size jar I found perfect for putting up salsa.

Other foods also came, and sometimes still come, in jars that fit wide or standard lids. Such jars may be cheap or free to acquire, but they are not ideal for

canning. For one thing, the top edge tends to be thinner than the edge of a regular Mason jar, and may be rounded rather than flat, therefore offers less surface area for a lid to seal tightly against. Further, repurposed jars are not as well tempered as Mason jars, and therefore tend to break more easily, especially if they are used for canning vegetables or meats that require processing under pressure. Who wants to grow, pick, clean, and cut a canner load of green beans, only to end up with a pot full of beans floating in broken glass?

So, as time went on and I gained confidence in my canning abilities, I acquired Mason jars so I could try my hand at pressure canning. As my collection of jars grew, I weeded out the repurposed jars in favor of the more versatile Mason jars, which may be used for any processing method.

MASON JARS

The Mason jar as we know it today was invented in 1858 by a Philadelphia man named John Landis Mason. Even after early competitors like Ball, and more recent ones like Fillmore, entered the market, the jars continued to be called Mason jars, as they are to this day.

Mason jars come in several sizes. The variety may at first seem confusing, but selection becomes easy if you think about what you intend to put in them and how



Canning Code



JAR LIFTER.

A device for safely putting jars into or removing them from a canner.

JELLY JAR. A straight-sided decorative canning jar holding 4, 8, or 12 ounces.

MASON JAR. A well-tempered jar designed specifically for home canning; also called a canning jar, fruit jar, Ball jar, or Kerr jar.

NARROW MOUTH. A canning jar with a 2-3/8 inch diameter mouth; also called regular or standard jar.

WIDE MOUTH. A canning jar with a 3-inch diameter mouth.

much of that food you would normally use within a reasonable amount of time after opening a jar.

The smallest jars are four-ounce (one-half cup) so-called jelly jars. These jars are promoted as being suitable for jams, jellies, condiments, and flavored vinegars. In our house we find them ideal for canning liverwurst, since one jar holds just enough for four sandwiches.

Jelly jars come in two other sizes eight-ounce (one cup) and 12-ounce (one and a half cups). All jelly jars are straight sided and take a standard-size lid. Some brands have a quilted pattern or other decorative embossing, making them attractive for gift-giving.

Plain eight-ounce jars are also sold as half-pint, which are the same as eight-ounce jelly jars except they have no decorative pattern. I have a large collection of both styles and use them interchangeably. Plain half-pint jars also come in a squat wide-mouth version that I don't find particularly handy for routine canning.

At our house we use the regular eight-ounce size for specialty pickles, such as pickled beets or pickled green beans and relishes. For jams and jellies we find the 12-ounce jars to be the handiest size.

Pint-size Mason jars come in both standard and wide mouth. The wide-mouth jars are easier to fill and empty, but the lids are more expensive. At our house, nearly all our fruits, vegetables, soups, and stews go into one-pint jars, because that's how much my husband and I can finish in a single meal. We also put up salsa and spaghetti sauce in pint jars.

Pint-and-a-half (three cups) Mason jars come in wide mouth only. We use ours primarily for putting up pickles cut into spears, as they nicely fit vertically into these jars.

One-quart (32-ounce) Mason jars come as both wide mouth and standard. We use our wide mouth quarts primarily for canning tomatoes and our narrow mouth quarts for apple juice. Larger families than our two-person

household generally find one-quart jars more suitable than one-pint jars for canning fruits, vegetables, soups, and stews.

The largest common Mason jars are half-gallon (64 ounces) and are sold for canning acidic juices. Only the wide mouth version is currently available, but standard half-gallon jars might still be found at yard sales and flea markets. I have a few of both, but I don't use them for canning. I use the narrow mouth half-gallons for chilling iced tea, because they're easier to pour from. I use the wide mouth half-gallons to store our goat milk, because the rising cream is easier to skim than from a narrow mouth jar. I use the wide mouth also for storing dried beans and pet food.

With proper care,
Mason jars
may be used over
and over again,
and will last nearly
forever.



CARE OF MASON JARS

Before each canning session, check your Mason jars for cracks in the glass or chips around the rim. Careless handling of jars is the most common cause of cracks and rim chips, which prevent a proper seal. Cracks may also result from putting jars filled with cool food into boiling water in a canner for processing, which can cause a jar's bottom to crack. Sometimes the entire bottom drops off the jar, resulting in the loss of both the jar and the food in it.

After inspecting your jars, wash and rinse them by hand, or run them through a dishwasher. I like to use the dishwasher because it keeps the jars hot until I'm ready to fill them.

With proper care, Mason jars may be used over and over again, and will last nearly forever. Barring accidents, the jars rarely break during processing, and when properly sealed, the vacuum holds until the jar is opened.

You don't have to spend much time canning before you learn to value your canning jars and start keeping an eye out for season-end bargains and garage sale finds.

You also come to appreciate your non-canning friends who are savvy enough to return empty jars after you've gifted them with some of your home canned goodies. ☺

Sterilizing Jars

Contrary to popular belief, washing jars in a dishwasher does not sterilize them. In fact, routinely sterilizing jars is entirely unnecessary, as long as the food they contain is processed for at least 10 minutes. The main reasons for so-called sterilizing jars is: 1) a cool jar filled with hot food runs the risk of breaking; and 2) a cool jar may reduce the temperature of heated food before it reaches the canner.

For these reasons, I leave jars warming in the dishwasher until I'm ready to fill them. If I get delayed long enough for the jars to cool, I fill them with hot water to keep them warm.

Some jams, jellies, and pickles are processed for less than 10 minutes. In such cases, place clean, empty jars upright on the canner's rack, and fill the canner with hot water to cover the jars by at least an inch. Bring the water to a boil, and boil for 10 minutes (adding 1 minute for each 1,000 feet you are above an elevation of 1,000 feet). Remove, drain, and fill jars one at a time, saving the boiling water in the canner for processing the batch after all the jars are filled.

Canning books typically suggest using a jar lifter to remove empty jars from boiling water, but in my experience a jar invariably slips off the jar lifter when tilted to drain out the water. For this purpose, I instead prefer to use sturdy tongs. With one prong inside the jar, and one outside, the tongs retain a tight grip when the jar is upended for draining. Be sure to wear an oven mitt so the rising steam won't scald your hand. After each jar is filled, a jar lifter is ideal for returning it to the canner.

—Gail Damerow



Choosing and Using Canning Lids

By GAIL DAMEROW

FOR CANNING FOOD IN JARS, only lids designed for the purpose will provide a safe seal. Lids for home canning come in one of two diameters, depending on whether they fit narrow mouth jars or wide mouth jars. Narrow mouth lids, known as regular or standard lids, are 2 3/8-inch in diameter. Wide mouth lids are three inches in diameter. Both sizes are available as either single-use or reusable.

SINGLE-USE LIDS

A single-use lid consists of a flat metal disk, plastic coated on the inside, with a plastic gasket bonded around the edge. The most common lids are plain metal, often with the manufacturer's name printed on them. Sometimes they come in solid colors, or painted with attractive designs, intended for gift-giving.

When you buy jars new in the manufacturer's box, they may come with a set of these lids, along with metal bands that screw onto the jars to hold the lids in place during processing. Once the original lids have been used, you will need to purchase new lids.

Both wide mouth and narrow mouth lids come in boxes of 12, with or without metal bands. While the lids are not intended for reuse, the bands may be washed, stored dry, and used multiple times. Because this style of lid consists of a disk and a separate

band, it is sometimes referred to as a two-piece canning lid.

All brands made in the United States, including Ball and Kerr, come from one company — Jarden (newellbrands.com/brands/jarden-process-solutions) — and are BPA free. Unused lids supposedly remain usable for about five years, after which the gasket may deteriorate, causing the seal to fail.

To apply single-use lids, follow these steps:

1. Wash and rinse the lids, and set them aside on a clean towel.
2. After properly filling each jar, wipe the rim with a clean, damp paper towel.
3. Place the lid, gasket side down, on the cleaned rim.
4. Place a metal band over the lid and screw it down.
5. Using a jar lifter, place the jar in the canner for processing.

During processing, two things happen: air escapes from the jar, and heat causes the gasket to soften. As the jar cools and its contents contract, a vacuum forms and pulls the lid down and the gasket seals air-tight against the jar's rim. When the seal is properly formed, the lid pulls down with a satisfying, "Pop!" Those of us who enjoy canning listen for the sound. It may occur as the jars are being removed from the canner, or it may not occur until the jars have been cooling awhile.

When a lid pops, the center becomes depressed. You therefore can tell a seal is tight if the lid is dished downward after the jar cools. The way food settles in the jar can be another clue, but one that takes experience to learn to recognize.

When a seal fails, it is most likely to occur as jars cool, giving you time to either reprocess the food or refrigerate it for immediate use. Occasionally a seal fails during storage, causing the food to spoil in the jar. Every canner needs to know the methods for testing a seal, as described under "Testing the Seal."

REUSABLE LIDS

Reusable lids consist of three pieces: a plastic disk, a separate rubber gasket, or ring, and a metal screw-on band. These lids are made by S&S Innovations and sold under the Tattler brand (reusablecanninglids.com). Commonly called Tattler lids, they are made in the United States, are BPA free, and are dishwasher safe. The lids are reusable as long as they remain undamaged. The rubber gaskets also may be reused unless they get cut or become stretched out of shape.

Tattler lids may be purchased in boxes of a dozen, or in bulk. The disks are typically white but are sometimes offered in solid colors. They come with the rubber rings, but not with screw-on metal bands, which are identical to those used for metal lids. Metal bands and replacement rings may be purchased separately.

Although Tattler lids are initially more expensive than single-use lids, being a one-time purchase makes them considerably cheaper in the long run. Exceptions would be if you are canning foods to give as gifts or offer at a farmers market, where the lids become unavailable for reuse.

Tattler lids are applied slightly differently from two-piece metal lids. If you are already using two-piece lids, the Tattler process takes a bit of getting used to. To apply a Tattler lid, follow these steps:

1. Wash and rinse lids and rings.
2. Place lids and rings in simmering water until you are ready to use them.
3. After properly filling each jar, wipe the rim with a clean, damp paper towel.
4. Place a ring and lid combination on the cleaned jar.
5. Place a metal band over the lid and screw it down.
6. Using a jar lifter, place the jar in the canner for processing.
7. When the processing time is up, turn off the burner and let the canner cool for 10 minutes.

8. After the jars are removed from the canner and food stops bubbling in the jars, firmly tighten the bands to ensure a good seal.

As with a metal lid, vacuum pressure pulls a plastic lid against the rubber gasket to form a tight seal. After the jars cool and the bands are removed, you can tell each seal is tight by lifting upward on the lid. If a seal fails, the lid will come off the jar.

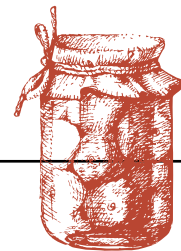
I've seen claims that Tattler lids won't seal because the plastic disk lacks flexibility, which is nonsense — Weck canning jars, with their inflexible glass lids and reusable rubber gaskets — have been safely used in Europe since the late 1800s. Sealing jars with Tattler lids works much the same way as sealing Weck jars.

ONE-PIECE LIDS

One-piece metal lids were once widely sold for home canning and still may be found. They are the same as metal lids used by commercial food processors that process food in glass jars. For home use, they are more popular for food storage than for food processing, for these reasons: you must make sure the lids are designed specifically for food processing; using them is slightly more complex than using multiple-piece lids; and once sealed, these lids can be difficult to remove intact.

They are, however, handy for use on jars that have been opened but the contents not immediately used up. Without one-piece lids, you'd be left fiddling with a lid and a band every time you wanted to refrigerate a partial jar of home canned food.

On the other hand, for food storage, metal one-piece lids have two disadvantages: they come only in the narrow mouth size and eventually they corrode. Plastic one-piece lids are available in both wide mouth and standard sizes. They may not be as appealing, but they are more durable and may be tossed in the dishwasher without concern for corrosion. Plastic one-piece lids



Canning Code

METAL BAND. A

metal ring that screws down over the threads of a canning jar to hold the lid in place during processing.

HEADSPACE. Empty space between the top of canned food in a jar and the jar's rim.

NARROW MOUTH. A lid that fits canning jars with a 2-3/8 inch diameter mouth; also called standard.

TATTLER LID. A three-piece canning lid consisting of a plastic disk and rubber ring, held in place with a metal screw-on band.

TWO-PIECE CANNING LID. A canning lid consisting of a metal disk bonded to a gasket and held with a metal screw-on band.

WECK JARS. Canning jars with rubber rings and glass lids, widely used in Europe.

WIDE MOUTH. A lid that fits a canning jar with a three-inch diameter mouth.

are for food storage only; they cannot be used for processing hot jars.

CARE OF LIDS AND BANDS

With both two-piece lids and Tattler lids, after jars have cooled for at least 12 hours, the metal band should be removed before the jars are washed and stored. If the bands are left on the jars, you might not notice if a seal has failed. Further, bands left on jars tend to rust

How Tight Is Tight Enough?

A cause of anxiety for many home canners is learning to screw metal bands onto jars with just the right amount of tension. Whether you use two-piece lids or three-piece Tattler lids, tension is usually described as “fingertip tight.” A helpful way to learn correct tension is to practice with an empty jar.

Place the jar on the counter. Place a lid on the jar. With one finger in the center of the lid for stability, use the other hand to screw down the band just to the point of resistance, which is when the jar itself starts to turn.

The band is now “fingertip tight.” If you do the same thing with water in the jar to within an inch of the top, then turn the jar sideways, a “fingertip tight” seal will prevent water from leaking out of the jar.

When tightening the band on a metal lid, turn the band until you feel resistance. Then, without using force to crank the band tight, slightly snug down the band by turning it one-quarter inch more. Some canners use Ball’s Sure Tight band tool—essentially a torque wrench for canning jars—that is designed to secure bands with precisely the right amount of torque. After the jars come out of the canner, do not retighten the bands or you will risk breaking the seal.

When tightening the band on a Tattler lid, turn the band just to the point of resistance, and then stop. After the jars come out of the canner, and food has stopped bubbling in the jars, retighten the bands to ensure a good seal. Some canners like to use a jar wrench to tighten hot bands and to loosen sticky bands after the jars cool.

and become difficult to remove later. Washed, dried, and stored where they won’t get rusty or bent, the bands may be reused any number of times.

The typical way to open a jar sealed with a single-use metal lid is with a bottle opener. To avoid damaging a reusable Tattler lid or its rubber gasket, wedge a table knife between the gasket and the jar’s rim; do not use a sharp knife, or you risk cutting the gasket

and rendering it no longer usable.

Before each canning session, examine your lids for damage, wash them in soapy water, and rinse them well. Check rubber gaskets to see that none is cut or stretched out of shape. Make sure screw-on bands are not rusty, bent, or warped. The bands need not be washed prior to reuse, provided they were stored clean. ☺



Testing the Seal

Always test each jar for a sound seal after processed jars have cooled for at least 12 hours and the metal bands have been removed. For Tattler lids, use the first method; for two-piece lids, use any or all of the following methods.

- Grasp the edge of the lid and lift upward. If a seal fails, the lid will lift off the jar.
- Press the middle of the lid with your finger. A failed seal either pops down or springs back up, and in doing so may make a popping sound.
- Tap the lid with the tip of your fingernail or the bottom of a spoon. A good seal makes a pleasant ringing sound; a failed seal makes a dull thud. (Note that food touching the bottom of the lid can also cause a thud.)
- With the top of the jar at eye level, check to see if the lid is flat or bulging upward. A good seal curves slightly downward.

A common cause of failed seals is food residue between the jar’s rim and the lid. Food residue may come from overfilling a jar (leaving too little headspace), or from not carefully wiping the jar’s rim before applying the lid. It may also come from not screwing the band down tight enough, allowing liquid to leak out of the jar during processing. On the other hand, a ring that’s screwed down too tight won’t allow air to vent from the jar, which can also cause a failed seal and may cause the jar to break during processing. ☺

At Home Canning DVD

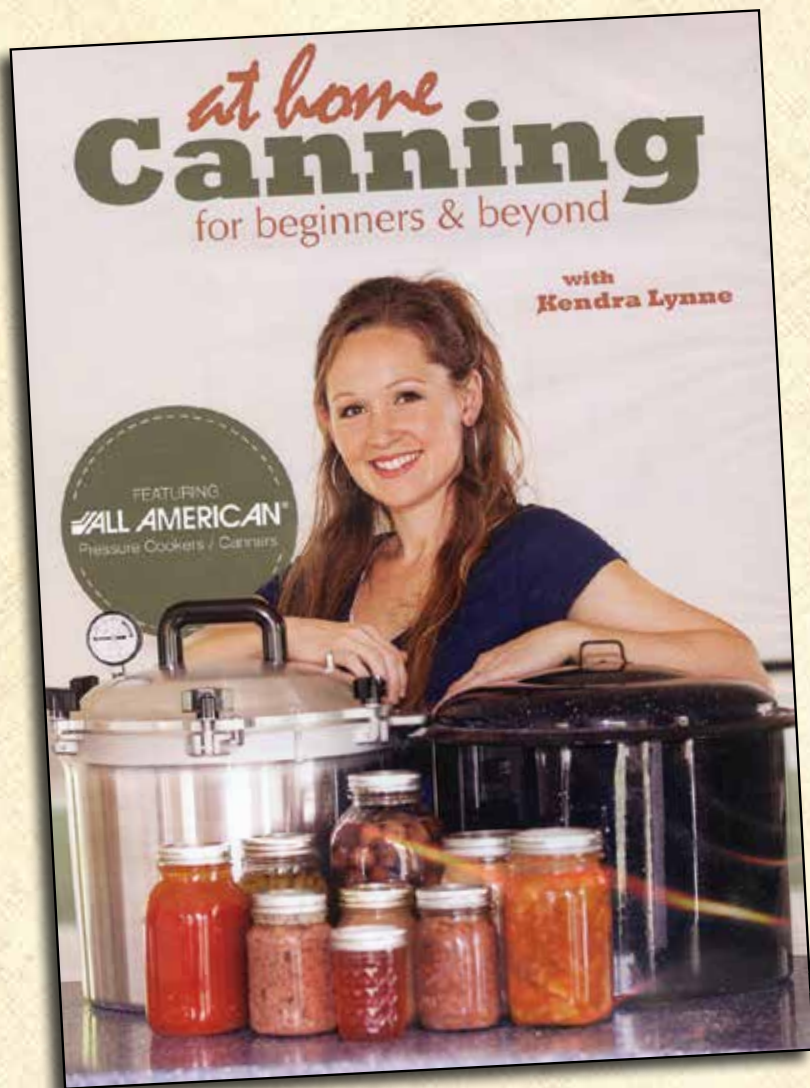
For Beginners & Beyond

WITH KENDRA LYNNE

Home canning has almost become a lost art. But with backyard gardens on the rise, and a growing movement toward eating locally grown foods, more people are seeking to rediscover ways of preserving the harvest year round.

In *At Home Canning For Beginners and Beyond DVD*, Kendra Lynne shows you safe and easy methods of canning at home, and demonstrates everything you need to know to start water bath canning and pressure canning in your very own kitchen. Whether you're completely new to the world of canning, or you need a little push to break out of your comfort zone, Kendra encourages you to have fun with your canner!

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What You Can, and Can't, Can

By GAIL DAMEROW

JUST ABOUT ANYTHING YOU WOULD GROW in your garden may be preserved by canning. Only a few foods cannot be safely canned at all, some may be canned in one form but not another, and still others don't hold up well under the prolonged heat of processing. The biggest issue when it comes to home canning is to know which foods may be safely canned in boiling water or steam, and which items must be pressure canned.

THE ACID TEST

All foods may be categorized as being either low acid or high acid, as measured by pH. In case you missed, or forgot, this part of chemistry, here's a quick review: The acidity of any substance is measured on a pH scale, where low numbers are high in acid and high numbers indicate low acidity. The letters pH stand for power of hydrogen, so-called because the pH scale is logarithmic (in powers of 10) and measures the concentration of hydrogen ions in a water-based solution.

A pH scale typically runs from 0 to 14, with each number 10 times less acidic than the previous number. Pure water is neutral and has a pH of 7. Working

toward lower numbers, a pH of 6 is 10 times more acidic than pure water. Working toward higher numbers, a pH of 8 is 10 times less acidic than pure water. You can see, then, that a substance with a pH of 1 is strongly acidic, while a substance with a pH of 14 is weakly acidic.

In terms of canning, the line is drawn not at the neutral pH of 7, but at the acidic pH of 4.6. Any food that is below 4.6 is considered high acid, while any food that is above 4.6 is considered low acid. This distinction is important because high acid foods may be safely canned in boiling water or steam, while the only safe way to can low acid foods is under pressure. (These three canning methods — boiling water, steam, and pressure — will be discussed in detail in the next three installments of this series.)

As a general rule, most fruits are high acid foods, while most vegetables, as well as all meats, including poultry and seafood, are low acid foods. Any mixture that combines high acid and low

Examples of High Acid and Low Acid Foods

acid foods is considered to be low acid unless it is acidified through the addition of a sufficient amount of vinegar, lemon juice, or citric acid. Low acid foods also may be acidified through pickling or fermenting, as in the case of pickled beets or sauerkraut.

The low pH of high acid foods is sufficient to prevent the growth of *Clostridium botulinum*, the bacteria responsible for botulism poisoning. *C. botulinum* spores grow in low acid foods in the absence of oxygen, and are not killed at 212°F, the normal temperature of boiling water or steam. They are, however, killed at a prolonged temperature of 240°F, which may be achieved only in a pressure canner.

Although low acid foods may not be safely canned in boiling water or steam, all foods may be safely canned under pressure. The reason high acid foods are not typically canned under pressure is that the total processing time is longer, which may cause deterioration in fruit texture. Many home canners choose to process only high acid foods, because water bath canning and steam canning are easier and faster than using a pressure canner.

DON'T CAN

The list of things you shouldn't can is pretty short and amounts to common sense. For instance, you don't want to can overripe fruits. Acidity decreases as fruits ripen, and overripe fruit may not be acidic enough for safe water bath or steam canning. Further, overripe fruits tend to become bruised, moldy or damaged and therefore may contain microorganisms that make them unsafe for canning.

HIGH ACID (PH < 4.6)

Apples
Apricots
Berries
Cherries
Cranberries
Fruit Juices
Jams & Jellies
Oranges
Peaches
Pears
Pickles
Pineapple
Plums
Rhubarb
Sauerkraut

LOW ACID (PH > 4.6)

Beans
Beets
Carrots
Corn
Greens
Meat & Poultry
Mushrooms
Okra
Onions
Peas
Peppers
Potatoes
Pumpkin
Soups & Stews
Spinach





Canning Code

ACIDIFIER. An acidic ingredient such as citric acid, lemon juice, or vinegar added to decrease a food's pH to below 4.6, making it safe for water bath canning.

BOILING WATER CANNING. Processing jars of food surrounded by boiling water; also called water bath canning.

DRY PACK. Food processed in jars without added liquid.

HIGH ACID FOOD. Any food having a pH less than 4.6.

LOW ACID FOOD. Any food having a pH of 4.6 or more.

PH. A measure of acidity in which low numbers indicate higher acidity and high numbers indicate lower acidity.

PRESSURE CANNING. Processing jars of food surrounded by pressurized steam.

STEAM CANNING. Processing jars of food surrounded by steam at ambient pressure.

WATER BATH CANNING. Processing jars of food surrounded by boiling water; also called boiling water canning.

A notice in a local paper once told of two elderly sisters who died from botulism poisoning after eating their own home canned peaches. For many years I wondered how peaches, a high acid fruit, could develop botulism. I now realize those peaches must have been well overripe, and possibly bruised or otherwise damaged, to the point that their acidity fell below the level required for safe water bath canning.

Another thing not to can is any densely packed food. Even in a pressure canner, heat may not fully penetrate throughout the contents of the jar, making the food unsafe for pantry storage. Examples of densely packed foods include mashed items such as pumpkin, winter squash, potatoes, parsnips, pumpkin butter, refried beans, and pâté. Among fruit purées, the following are not recommended for canning because safe processing procedures have not been developed: Asian pear, banana, cantaloupe and other melons, coconut, fig, ripe mango, papaya, tomato. While many of these foods may not be safely canned in mashed or puréed form, most of them are perfectly safe to can as chunks covered by liquid.

Some vegetables don't maintain quality when pressure canned, so are best preserved by pickling. These include artichokes, broccoli, Brussels sprouts, cabbage, cauliflower, cucumbers, eggplant, summer squash, and olives.

Dry pack canning shelled nuts is no longer recommended. Condensation that may develop inside the jars could prove potentially hazardous.

Years ago, an Extension home economist developed specific recipes for cake in a jar, and the idea took off.

Today the internet is teeming with directions for baking cake or pie in canning jars, then sealing them as soon as they come out of the oven. USDA canning experts frown on this practice, because you can't be sure the cakes or pies are entirely free of bacteria when the jars are sealed.

Oils and fats must be handled carefully. Poultry and other meat should have as much fat removed as possible before being canned. Melted fat tends to float in the jars and may interfere with sealing. Oils that are not heat-tolerant become unhealthful when heated, and all oils are low in acid, therefore canning flavored oils is not recommended. Approved recipes for such things as marinated peppers or mushrooms contain oil, but are also acidified with vinegar and lemon juice, making them safe for water bath canning.

High on the don't-do list are using canning instructions from outdated sources and making up your own recipes for canning. Do not can any food item for which you cannot find a recently tested recipe published by a reliable source. Such sources include your local county Extension office, the National Center for Home Food Preservation (nchfp.uga.edu), the 2015 edition of *USDA Complete Guide to Home Canning* (nchfp.uga.edu/publications/publications_usda.html), and the 2015 edition of *Ball Blue Book Guide to Preserving* (available at countrysidenetwork.com/shop/ball-complete-book-of-home-preserving). These sources publish scientifically tested directions for canning specific foods using precise processing methods. For safety's sake, follow instructions exactly as they are published. ©

A Special Case for Tomatoes

Both heirloom and hybrid tomato varieties have a wide range of pH values, and within each variety, acidity varies with growing conditions and stage of maturity.

Tomatoes, tomato juice, and other tomato products are the most popular foods for home canning. And they are borderline when it comes to pH. Traditionally, tomatoes have been classified as a high acid food, making them safe for processing in a water bath or steam canner. When grown under normal conditions and harvested at optimal ripeness, most tomatoes have a pH below 4.6.

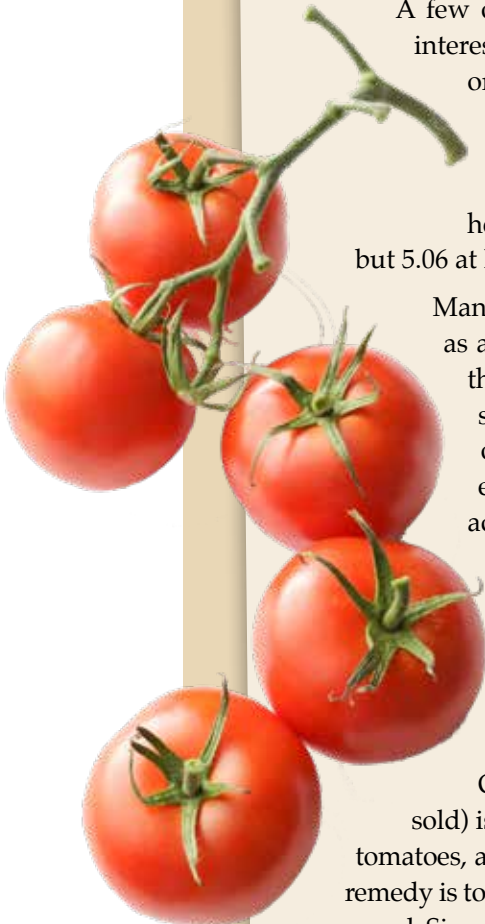
However, acidity can vary quite a bit from one variety to another. In a list I compiled of pH values derived from four reliable sources, among 118 varieties the pH ranged from a low of 3.70 for Celebrity to a high of 5.20 for Super Marzano. Among all the hybrid varieties tested, 66 percent had a pH above 4.6, compared to the heirlooms with only 8 percent having a pH above 4.6. Factoring in heirlooms with borderline values, like 4.56, ups the percentage to 15 percent. According to these statistics, hybrid varieties tend to be less acidic than heirlooms.

A few of the same varieties were tested by more than one source, and it's interesting to compare the results. The hybrid Celebrity had a pH of 3.70 in one study at the University of Utah, and 3.92 in a follow-up study the next year, while in a study at North Dakota State University the same variety had a pH of 4.93. The heirloom Opalka had a value of 4.51 in a study at the University of Illinois, but 5.08 at North Dakota State. The heirloom Super Italian Paste had a pH of 4.33 at the University of Illinois, but 5.06 at North Dakota State. Why the discrepancy?

Many conditions in the garden affect a tomato's acidity. The acidity varies as a tomato matures, being highest in unripe tomatoes and decreasing as the tomato ripens. Acidity may also be influenced by growing conditions such as extreme heat or excessive moisture, and by bruising, cracking, or other damage to the fruit including from frost, insects, or blossom end rot. Tomatoes that grow in shade or are ripened off the vine are less acidic than the same tomatoes when vine ripened in full sun. Tomatoes picked from dead vines are lower in acid than tomatoes from healthy vines. Combining different tomato varieties having different pH values affects the total pH of tomatoes in the canning jar.

Since you can't determine a tomato's acidity by looking at it or tasting it, the USDA recommends adding $\frac{1}{4}$ cup vinegar, 2 tablespoons lemon juice, or $\frac{1}{2}$ teaspoon citric acid to each quart jar before processing. Of these options, citric acid (usually available where canning jars are sold) is least likely to adversely affect flavor, although in all cases the acidified tomatoes, and any dish made with them, will be quite puckery. The recommended remedy is to add sugar to each jar or to the recipe in which acidified canned tomatoes are used. Since no method has been tested and approved for pressure canning tomatoes without acidification, the USDA recommends acidifying even tomatoes processed in a pressure canner.

Any recipe that combines tomatoes with other foods — for example, salsa or spaghetti sauce with meat — increases the total pH. Such recipes must always be processed in a pressure canner. ©





Water Bath Canners

BY GAIL DAMEROW

TWO CANNER STYLES ARE suitable for processing high acid foods: water bath canners and steam canners. Either type is a good starting place for anyone just learning to put up home canned foods; both are easier to use than a pressure canner (required for processing low acid foods). In subsequent issues, we'll examine steam canners and pressure canners. Here we'll look at water bath canners, also called boiling-water canners. In choosing a water bath canner, consider such things as the size you need for the amounts of food you plan to can, the size and style that best fits your cooktop, and the canner's construction in relation to its durability and price.

CANNER CONSTRUCTION

Water bath canners may be made of stainless steel, aluminum, or steel coated with porcelain enamel. Stainless steel is the most expensive, but is also the most durable and the most versatile, as it may double as a stockpot. An aluminum canner is less expensive than one made of stainless steel, but I wouldn't use it for anything other than canning food in sealed jars, because of the possibility of aluminum leaching into the food. Also the really cheap canners made of low gauge aluminum dent rather easily.

Porcelain enamel coated steel is the traditional looking canner — the one you might remember Grandma using. It is usually black or dark blue with white speckles, although modern ones come in other colors. The chief disadvantage to enameled steel is that you have to be super careful with this type of canner, because a ding easily causes a chip of enamel to break off, and where the enamel is missing, the steel rusts. Eventually, the pot will rust through and sprout a leak. I have successfully salvaged such canners by sealing leaks with an epoxy steel hardener called J-B Weld, but I wouldn't use a patched vessel for any other purpose than to can food in jars.

Stainless steel and aluminum canners usually have smooth bottoms, while enameled canners generally have ridged bottoms. If you have a gas or electric coil cooktop, both types of bottom work equally well. If you have a smooth cooktop, you must use a canner with a flat bottom for even distribution of heat, and if your smooth cooktop is the induction type, the canner must be stainless steel. A canner should have a lid. The tighter the lid, the less steam will escape when the water boils, and the less heat you'll need to keep the water boiling. Some canners have a glass lid that conveniently lets you see when the water comes to a boil so you will know when to start your timer.

A canner also comes with a removable rack that keeps your jars from touching the bottom of the canner, so boiling water can circulate underneath. The typical canning rack is made of heavy-gauge wire and has handles that may be hooked over the rim of the pot. As you fill your jars, you set them into the rack; when the rack is full you unhook the handles from the pot's rim and lower the jar-filled rack into the boiling water in the canner. A disadvantage to this type of rack is that it may not easily accommodate smaller size jars. Some canners come with a flat perforated rack, which is handier because it is suitable for jars of any size.

You don't actually need a special pot to use as a water bath canner. A regular stockpot or any large pot will do, provided it's tall enough to cover the food-filled jars with two inches of hard-boiling water and has a rack to hold the jars off the bottom of the pot. A variety of replacement canning racks are available on line, some of which should be the right size to fit whatever pot you might want to use for canning. A round cake cooling rack might also fit.

An alternative to a water bath canner is an atmospheric steam canner.

SIZE MATTERS

Water bath canners come in several sizes. The standard size holds seven quart- or pint-size jars. Don't be fooled by the stated capacity, which would be something like 21 quarts. That's how much water the canner holds, not how many jars may be canned at once. The water bath canner needs to be deep enough to cover your canning jars with one to two inches of water at a rolling boil, with at least two more inches of air space to prevent vigorously boiling water from slopping out of the canner.

Canners come in sizes that are smaller or larger than the standard size. I have a canner that holds

seven narrow-mouth pint jars or three wide-mouth pints, but isn't sufficiently tall to hold enough water to cover quart jars. I also have a jumbo size canner that will process nine quart or pint-size jars at a time.

Over the years I have accumulated several canners of varying sizes. To keep track of how many jars each one holds, I made a table listing all my canners in the first column, followed by four additional columns for jar sizes: quart, wide mouth pint, narrow mouth pint, and half pint. In these columns I noted how many of each size jar each canner will hold. If I'm putting up seven quarts of tomatoes, for instance, the table tells me to use my regular size stainless steel canner. If I have eight quarts, I use my larger aluminum canner. If I have nine quarts, I use the jumbo enamel canner.

Of course, if you aren't sure how many jars you will fill, it doesn't hurt to use a too-large canner (other than wasting energy boiling extra water). You may occupy the empty space with unsealed jars full of water. But it's discouraging to have a canner full of hot water and ready to process your jars, only to discover that you filled one more jar than the canner will hold.

If you have only one water bath canner, you might adjust your recipe quantities to fill the number of jars your canner holds. In my canning notebook, for instance, my tomato page indicates that 19 pounds of tomatoes will fill seven quarts, the amount a standard-size canner will accommodate at one time.

WATER BATH PROCEDURE

To use a water bath canner, follow these steps:

1. Put fresh water in the canner until it is about half to two-thirds full and start warming the water. If you aren't sure how much water will be needed to cover the size and number of jars you will be canning, warm a second pot of water. If the amount of water in the canner isn't enough to cover the filled jars by



Canning Code

CANNER RACK. A shallow rack that allows boiling water to circulate underneath jars being processed.

HOT PACK. Cooked or preheated food used to fill canning jars for processing.

HIGH ACID FOODS. Pickles, fruits, jams, jellies, juices, and other foods having a pH less than 4.6.

JAR LIFTER. A device for safely putting jars into or removing them from a hot canner.

RAW PACK. Fresh produce that has not been cooked or preheated before being placed in jars for processing; also called cold pack.

WATER BATH CANNER. A large vessel in which jars of food are processed in boiling water.

Water Bath is for High-Acid Foods Only

Only high acid foods may be safely canned by the water bath method. High acidity in this case is defined as having a pH less than 4.6. Acidity at this level prevents the growth of toxic botulism (spores of the bacterium *Clostridium botulinum*), which cannot be killed at the temperature of boiling water. High acid foods include pickles and most fruits, fruit juices, jellies, jams, and pie fillings. Examples of high acid foods are: apples, apricots, berries, cherries, grapes, peaches, pears, pineapple, and rhubarb.

Tomatoes are a borderline case, since their acidity is right at the safety line. Current recommendations are that if you can tomatoes by the boiling water method, ensure adequate acidity by adding 2 tablespoons of bottled lemon juice or ½ teaspoon citric acid per quart.

Low acid foods — those with a pH greater than 4.6 — must be pressure canned.

Keep It Boiling

The water surrounding jars in the canner must continuously boil throughout the entire processing time. Three things can reduce boiling: turning the heat source too low, lifting the lid while jars are being processed, and adding more water to keep the jars covered.

If the water boils so hard it slops out of the canner, you may need to turn the heat down a tad. Just make sure enough heat is being applied to maintain a full boil.

Reasons for lifting the lid are to see if the water is boiling, to make sure the jars remain covered in boiling water, and to add more water if too much has steamed or boiled off. Here's where a canner with a glass lid comes in mighty handy.

With a little experience you can learn to tell the water is boiling by the sound, and sometimes by seeing steam coming out around the lid. Experience will also tell you how much water to put in the canner initially so it won't steam or boil off before the processing time is up.

If the jars do not remain covered during the entire processing time, you will need to add more water, which must be first brought to a boil. Pouring even a small amount of cool water into the canner during processing can cause the canner water to stop boiling. If boiling stops, bring the temperature back up until the water returns to a full boil and reset your timer to the full processing time.



Elevation Table

If you are at this elevation:	Add to processing time:
1,001 – 3,000 feet	5 minutes
3,001 – 6,000 feet	10 minutes
6,001 – 8,000 feet	15 minutes
8,001 – 10,000 feet	20 minutes

You can find your elevation by entering your zip code at this website: www.daftlogic.com/sandbox-google-maps-find-altitude.htm

at least an inch, you'll need to add water. Since you don't want to cool the heated water by adding cold water, you'll be glad to have extra water already heated. If, on the other hand, the amount of water in the canner is so much it overflows when you put in the filled jars, scoop out some of the water with a ladle or small saucepan.

2. Heat the water in the canner, but don't bring it to a boil yet. Doing so may cause the cooler jars to crack when they are lowered into the boiling water. Rapidly boiling water may also cause jars to tip over when you start putting them into the canner.

3. Fill hot, clean jars according to the recipe you are following for the specific type of food you are canning. Reliable recipes booklets come with most canners, or may be found online at such sites as nchfp.uga.edu and freshpreserving.com, which among other things will tell you whether the food may be raw packed or must be hot packed (heated before being processed).

4. Hook the handles of the canner rack over the top edge of the canner and load it with jars as they are filled and fitted with lids and bands. When all the jars are on the rack, lower the rack into the hot water. If your rack is the flat perforated type, drop it into the bottom of the canner and use a jar lifter to place jars one by one into the water.

5. If necessary, adjust the water level in the canner so the tops of the jars are covered by at least one inch of water for a processing time of less than 30 minutes. If the processing time is greater than 30 minutes, cover the jars by two inches of water, since more water will evaporate during the longer processing period.

6. Put the lid on the canner, turn the heat to the highest setting, and bring the water to a vigorous boil.

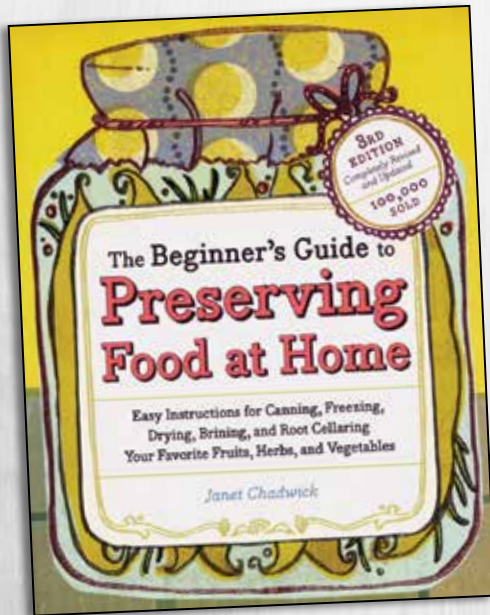
7. As soon as the water comes to a full rolling boil, adjust the heat to maintain the full boil and set your timer for the amount of processing time recommended for the food you are canning. If your elevation is above 1,000 feet, be sure to adjust the time according to the Elevation Table below.

8. When the time is up, turn off the heat, remove the lid from the canner, and leave the jars in the hot water for 5 minutes more.

9. Using your jar lifter, remove the jars one by one, without tilting them to remove residual water floating on top of the lids. Place the jars, one inch apart, on a rack or thick towel away from drafts.

10. Let the jars cool for at least 12 hours before removing the bands and testing the seals. If you finish canning in the afternoon, for instance, let the jars cool until the next morning before washing them and storing them in the pantry. ©

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A Guide to Using Steam Canners

BY GAIL DAMEROW

STEAM CANNERS HAVE BEEN AROUND since at least the early 1900s, but for many years the United States Department of Agriculture maintained that steam canning is unsafe until recently. Here's the latest scoop on steam canners and how to use one.

ATMOSPHERIC STEAM

A steam canner, also called a steamer, is a vessel that processes food in jars by surrounding them with steam, which has the same temperature (212°F) as boiling water. Steam canning differs from pressure canning in occurring at ambient atmospheric pressure, rather than under increased pressure. To differentiate steam canning from pressure canning, the former is sometimes called atmospheric steam canning.

In a steam canner, the bottom is filled with a few inches of water, the jars are placed on a rack or a platform that elevates the jars to the water line, and a cover with one or more vent holes is placed on top of the canner. When the water in the canner comes to a boil, it evaporates as steam that surrounds and thoroughly heats the jars at a safe temperature for processing home canned foods.

Compared to water bath canning, steam canning uses considerably less water — only 2 to 3 quarts versus up to 4 gallons in a water bath canner. The water therefore heats up faster than in a water bath canner, requiring less energy, as well as less of your time waiting for water to boil.

Because it uses less water and energy, a steam canner reduces expenses for water and fuel, and won't heat up your kitchen as much, which can be a big plus on a hot summer day. Proponents of steam canning like to point out as another advantage that the water won't boil over onto your stovetop. On the other hand, a steam canner may run dry if you fail to precisely follow prescribed procedures.

Any foods that may be safely processed in a water bath canner may be safely processed in a steam canner. These are high-acid foods — having a pH of less than 4.6, such as most fruits, jams, and pie fillings — for which tested recipes have been approved by such reliable sources as *The National Center for Home Food Preservation* (nchfp.uga.edu) and *Ball* (freshpreserving.com). Processing times are the same for steam canning as for water bath canning.

The one restriction for the type of high-acid foods that may be steam canned is that the required processing time cannot be greater than 45 minutes, including any necessary adjustment for elevation. Otherwise the steam canner may run dry, in which case the food

will not be properly processed, the canner could be ruined, and even your cooktop may be damaged.

Most high acid products that require more than 45 minutes for processing involve tomatoes, and for those you would need to use a water bath canner. One steamer, the Victorio multi-purpose canner, doubles as a water bath canner. It comes with a reversible rack that looks like a regular water bath jar rack, but when flipped upside down becomes a steamer rack. The boiling water feature lets you process recipes requiring more than 45 minutes, while the steam feature is suitable for all others.

STEAMER CONSTRUCTION

Steam canners come in two basic styles, both of which will process seven one-quart jars at a time. One style is offered by both Victorio (victorio.info) and Back to Basics (westbend.com/steam-canner.html). It is an aluminum unit consisting of a shallow base, or water pan, coupled with a tall cover, or steam dome. In the side of the dome, one small hole (Victorio) or two (Back to Basics) serve as vents to release steam. A rack in the water pan elevates the jars above a few inches of water.

The second style is Victorio's multi-use canner, which comes in either aluminum or stainless steel. It looks much like a stock pot, except it has steam vents in a glass lid, and comes with a reversible jar rack that may be used for both steam canning and water bath canning.

With their flat bottoms, multi-use canners may be used on a smooth radiant heat cooktop, but only the stainless steel version is suitable for use on an induction cooktop. Dome-top steamers, being aluminum, are not suitable for induction cooktops. And, since they have ridged bottoms, they won't work efficiently on a radiant heat cooktop, but may be used with any standard electric coil or gas range. (Heat sources suitable for canning will be discussed in detail in the May/June 2017 issue.)

To monitor temperature during processing, all Victorio models

have a built-in thermal sensor in the cover, which provides assurance that steam is maintaining the correct processing temperature. With the Back to Basics canner you must either rely on seeing steam coming from the vents or purchase a thermometer to periodically insert into a vent hole. For this purpose, Professor of Food Science Barbara Ingham, of the University of Wisconsin, recommends using a tip sensitive digital thermometer, not a dial stem thermometer, because the latter must be inserted farther into the canner and the jars inside would interfere.

Among tip sensitive digital thermometers, a thermocouple thermometer will give you the fastest reading and may be calibrated for accuracy. A thermistor style thermometer is slightly slower and some brands cannot be calibrated. Unless you have other uses for one, a quality thermometer of either style will run you more than a canner with a built-in thermal sensor. An alternative to using a thermometer is to put a nickel in the water pan. Boiling water will cause the nickel to bounce. As long as you hear the coin rattle steadily, the water is boiling.

STEAMER PROCEDURE

Using a steam canner involves these basic steps:

1. Keep your washed canning jars warm until they are filled for processing.
2. Put the rack in the canner and add the amount of water recommended for your model, typically 2 to 3 quarts.
3. Heat the water in the canner, but don't bring it to a boil yet.
4. Fill the hot, clean jars according to the recipe you are following for the specific type of food you are canning. You may use any reliable recipe intended for water bath canning, provided the processing time is not greater than 45 minutes. Reliable recipes may be found online at official sites such as nchfp.uga.edu and freshpreserving.com.
5. Regardless of whether the recipe you are following calls

Canning Code

HOT PACK. Cooked or preheated food used to fill canning jars for processing.

HIGH-ACID FOODS. Pickles, fruits, jams, jellies, juices, and other foods with a pH less than 4.6.

JAR LIFTER. A device for safely putting jars into or removing them from a hot canner.

MULTI-USE CANNER. A vessel that may be used for both steam and water bath canning.

RAW PACK. Fresh produce that has not been cooked or preheated before being placed in jars for processing; also called cold pack.

SIPHONING. The leaking of liquid from jars during processing, usually resulting from a too rapid change in temperature.

STEAM CANNER. A large vessel in which jars of food are processed surrounded by atmospheric steam.

STEAM CANNER RACK. A platform that holds jars above boiling water so steam can circulate around them during processing.

VENT. A hole in the side or top of a steam canner through which excess steam is released.



for hot pack (in which the food is preheated or raw pack, cover the food in the jars with hot liquid.

6. To keep jars from cooling until processing starts, place the jars on the rack in the warming water pan as they are filled and fitted with lids and bands.

7. Put the cover on the canner, turn the heat to the highest setting, bring the water to a vigorous boil, and watch for steam to stream through the canner's vent(s). Use either the canner's built-in thermal sensor or a tip sensitive digital thermometer to monitor temperature.

8. Start your timer when the temperature reaches 212°F and a steady column of steam flows freely from the canner vent(s). Processing times for steam canning are the same as those published for water bath canning. If your elevation is above 1,000 feet, adjust the processing time according to the Elevation Table on this page.

9. Gradually reduce the heat to maintain a steady 6- to 8-inch column of steam without letting the water boil vigorously, which may cause your jars to leak liquid (called siphoning) or break, and may also cause the canner to run dry. Do not open the canner at any time during processing.

10. When the time is up, turn off the heat, remove the lid from the canner (open the lid away from you to avoid being burned by steam), and leave the jars in the canner for 5 minutes more.

11. Using your jar lifter, remove the

jars one-by-one and place them, one-inch apart, on a rack or thick towel away from drafts.

12. Let the jars cool for at least 12 hours before removing the bands and testing the seals. 🔄

Elevation Table

If you are at this elevation:	Add to processing time:
1,001 – 3,000 feet	5 minutes
3,001 – 6,000 feet	10 minutes
6,001 – 8,000 feet	15 minutes
8,001 – 10,000 feet	20 minutes

You can find your elevation by entering your zip code at this website: www.daftlogic.com/sandbox-google-maps-find-altitude.htm

Keep It Steaming

During steam processing, the jars in the canner must be continuously surrounded by steam throughout the entire time in order to maintain an adequate temperature for safe food storage. Three things can reduce the flow of steam: turning the heat too low, lifting the canner's cover while jars are being processed, or boiling the canner dry.

Water that boils too hard during processing may evaporate before the processing time is up. Total evaporation can occur in as little as 20 minutes. Once a vigorous boil has been reached, indicating that the steamer has reached the proper temperature, gradually turn the heat down until the water reaches a slow rolling boil — enough to maintain a steady, unbroken column of steam emitted through the vent hole(s). Use either your canner's thermal sensor or a tip sensitive digital thermometer periodically inserted into a vent hole to verify that the temperature is correct.

As long as you see steam steadily coming through the vent(s), you should have no reason to open the canner until the processing time is over. If you are the sort who can't resist looking to see what's going on inside, consider using a steamer with a glass lid. For an audible clue, put a nickel in the bottom of the canner; it will bounce and rattle as long as the canner contains water and the water is boiling.

If the water stops boiling at any time during processing, the correct temperature will not be maintained and the jars will not process properly. Increase the heat until venting resumes, then reset your timer to the full processing time. If the canner runs dry before the time is up, stop, replenish the water, and start over again. When using a steam canner to process one batch after another, always check the water level and replenish it as needed between batches.

How to Successfully Use a Pressure Canner



BY GAIL DAMEROW

LOW-ACID FOODS MUST BE PROCESSED at a temperature that is hotter than boiling water. Compared to water bath canning or steam canning, which processes jars at 212°F, a pressure canner processes at 240°F, the necessary temperature for destroying food spoilage organisms in foods with a pH greater than 4.6. Such low-acid foods include poultry, seafood, meats, and most vegetables. Although a pressure canner is more expensive, it is more versatile because it may be used for boiling water canning and for pressure canning.

CANNER CONSTRUCTION

Three of the four major pressure canner brands — Granite Ware, Mirro, and Presto — are lightweight, relatively inexpensive, and made in China. The All

American brand is considerably heavier, and therefore more durable as well as more expensive, and is made in the United States. All models are made of aluminum, which is an excellent conductor of heat.

The bad news for anyone who uses an induction cooktop is that aluminum is not magnetic, therefore is not suitable for use on an induction cooktop. Pressure canning may be an issue for any smooth surface cooktop, because of the canner's weight and the high temperature a pressure canner generates.

ALL PRESSURE CANNERS FEATURE:

- 1) Securely locking cover.
 - 2) Vent pipe coming through the cover.
 - 3) Weighted pressure regulator that fits over the vent pipe.
 - 4) Overpressure safety device that automatically releases steam (should the vent pipe get clogged and fail to function).
 - 5) Most pressure canners also come with either a flat perforated metal rack or the same type of wire rack used for water bath canning. The rack elevates jars above the canner bottom to prevent breakage and to allow steam to circulate during processing.
- The goal of all pressure canners is to produce pressurized steam that generates a high enough temperature for the safe home processing of low-acid foods. The mechanics, however, differ among the brands, which is potentially confusing for the first-time buyer. To complicate things, canners made before about 1970 differ slightly

from modern canners. If you acquire an older pressure canner, may you be lucky enough to also acquire its instruction manual.

Canners are sized according to the capacity of the amount of water they'll hold. How many jars the canner will process at one time depends on the canner's diameter and height. The smallest pressure canner is the All American 10-quart model, which will process four one-quart jars and five to seven pint jars, depending on whether the pints are wide or narrow mouth.

The most popular models have a capacity of between 15 and 21 quarts, and will process seven one-quart jars at a time, or eight or nine pints. Some canners are tall enough for double stacking, meaning they will process two layers of pint-size jars, one on top of the other. If you're looking at a tall canner, and the clearance above your range is limited, check to make sure the canner will fit. The largest pressure canner — designed for really serious canning — is the All American 41-quart model. It is 19 inches tall and the only model that may be used to double stack quart-size jars. In one load it will process 19 quart jars, or 32 to 36 pints.

For double stacking, a flat perforated metal jar rack must be placed on top of the first layer of jars before the second layer is added. The rack stabilizes the second layer so the jars can be staggered for good steam circulation and so they will remain upright throughout the canning process; the perforations allow steam to circulate freely. Some pressure canners come with a flat perforated rack, and such racks are readily available in a range of sizes. You might also repurpose something similar, such as a round cake cooling rack.

COVER SEAL

All low-cost pressure canners use a rubber or silicone gasket to form a tight seal between the canner and the cover. The gasket, also called a sealing ring, should be removed from the cover, washed, and inspected at the beginning of each canning season and after each use. Most manufacturers recommend periodically lubricating the gasket to keep it pliable.

Eventually, the gasket will need to be replaced because it has stretched, dried out, cracked, cut, or is otherwise damaged. Replacing the gasket at the end of each canning season, or at least keeping a spare on hand, is always a good idea.

The gasket that came with my first pressure canner lasted many years. Eventually, it stretched so much I couldn't insert it back into the cover, so I bought a new gasket. That one didn't last through a single season, leaving me in the middle of a canning job with no readily available gasket. So I learned the hard way to keep a spare.

All American canners are gasket-free. The cover clamps directly to the canner by means of a series of wing nuts, creating a metal-to-metal seal — no gasket to fail at the worst time. Since our family relies on homegrown and home-processed foods, I decided to get one of these canners. Initially, I had trouble removing the cover from my new canner. Then I read the instructions and learned the canner rim should be lubricated with petroleum jelly to keep the cover from sticking. From then on I had no more trouble removing the cover.

PRESSURE REGULATION

The cover of every pressure canner has a vent pipe, also called a vent port or steam vent. It's a short tube that extends through the canner cover and above the cover. Its purpose is to vent air from the canner to allow the canner to pressurize. Once the canner has been vented, the vent pipe is closed with a pressure regulator placed on top to slow the escape of steam.

Most canners have an adjustable pressure regulator, sometimes called a weighted gauge, that may be set for a pressure of five, 10, or 15 pounds per square inch (psi). At sea level, 10 psi will result in the canning temperature of 240°F necessary for the safe processing of low-acid foods. At elevations above 1,000 feet, water boils at a lower temperature, requiring a psi of 15 to achieve a minimum canning temperature of 240°F.

Veteran home canners call the pressure regulator a jiggler. When the correct pressure is reached and maintained,

the regulator periodically releases small amounts of air and steam, causing it to jiggle and make that characteristic sound. Your model's manual will tell you if the jiggler should rock steadily throughout the canning process or if it should jiggle a certain number of times per minute.

The pressure regulator on a Presto canner is not adjustable. To distinguish it from an adjustable regulator, it's sometimes called a counterweight. Its purpose is to release pressure above 15 psi, at which time the regulator will warn you by jiggling. Pressure is measured by a pressure gauge that has a dial with an indicator pointing to the canner's internal pressure. The amount of pressure is adjusted entirely by the amount of heat applied to the canner — the higher the heat, the greater the pressure.

When using a Presto or a canner that is entirely regulated with a pressure gauge, at sea level the pointer on the dial should be at 10.5 psi to achieve a safe canning temperature of 240°F, although 11 psi is often recommended because it's easier to read on the dial. At elevations above 2,000, the pressure must be increased by one pound per additional 2,000 feet to maintain the same temperature.

All American brand canners have both an adjustable pressure regulator and a pressure gauge. The regulator controls the pressure and the gauge provides assurance that the pressure is correct. The real advantage to the gauge is, at the end of each canning session, you can tell when the canner has been completely depressurized, so you can safely remove the regulator and open the cover. Do not unscrew the wing nuts until the dial reads zero pressure, which takes about 30 minutes for pints or 45 minutes for quarts. Then remove the pressure regulator before loosening the wing nuts.

Granite Ware, Mirro, and Presto canners have cover locks that prevent the cover from being lifted while the canner is under pressure. Because all three brands are thinner than All American canners, they cool faster and depressurize more quickly.

Every pressure canner has an over-pressure safety device, sometimes

called a fuse, that releases excess pressure if the vent pipe gets clogged or otherwise isn't working properly. Most canners have a simple overpressure plug consisting of a rubber stopper that pops up when it needs to release steam. The overpressure plug should be replaced whenever it gets hard, deformed, or cracked. If the canner has a gasket, replace the overpressure plug whenever you replace the gasket. The Granite Ware canner, instead of having an overpressure plug, has two metal overpressure valves, one whistles a warning.

PRESSURE PROCEDURE

Before processing food, in a new pressure canner, do a trial run with just water (no jars) in the canner — bring up the pressure, note what it takes to keep the pressure steady on your range, and then depressurize — so you can become familiar with how your particular canner operates. Each brand of pressure canner has a specific recommended procedure to follow. Refer to your owner's manual for details. In general, pressure canning involves the following steps:

1. Put the canner on the burner, place the rack in the bottom of the canner, and add the amount of water specified in the recipe, usually about three inches. Turn the burner on low to keep the water hot, but not boiling; setting a glass jar into boiling water may cause the jar to crack.
2. Fill hot, clean jars according to the recipe. Reliable recipe booklets filled with food preservation examples come with most canners, or may be found online at such sites as nchfp.uga.edu and freshpreservingstore.com. Use your jar lifter to place filled jars, fitted with lids and bands, on the rack in the canner.
3. Place cover on the canner and fasten securely. Do not put the pressure regulator on the vent pipe.
4. Turn the heat to the highest setting until steam flows freely from the open vent pipe. You should be able to see steam being released and hear it hiss. Leaving the heat on high, set your timer for 10 minutes while the canner vents to exhaust air from the canner, as indicated by steam steadily flowing through the vent pipe.
5. After 10 minutes, place the pressure regulator on the vent pipe. If your canner has an adjustable pressure regulator and you are at an elevation of 1,000 feet or less, set the regulator to 10 psi. If your elevation is above 1,000 feet, set the regulator for 15 psi.
6. Adjust the heat to maintain adequate pressure. If your canner has no pressure gauge, rapidly heat the canner until steam begins to escape from the pressure regulator, causing the regulator to jiggle or hiss, then reduce the heat just enough to maintain a steady pressure. If your canner has a pressure gauge, when the dial reaches two pounds less than the desired pressure, turn the heat down so the pressure gradually rises to the required setting. Any rapid or wide variation in pressure can cause liquid to leak from jars, called siphoning, which results in failed seals.
7. Within three to 10 minutes, depending on the size of the canner and how many jars you are processing, the correct pressure will be reached. When the pressure is holding steady — as indicated by the sound of the pressure regulator on the vent pipe, or by the needle on the dial gauge — set your timer according to the required processing time for the specific food you are canning. If at any time during processing, the pressure in the canner goes below the recommended amount, bring the pressure back up and reset your timer for the full processing time to ensure safe processing.
8. When the processing time is up, turn off the heat. Most instructions recommend removing the canner from the burner. I don't because I can't lift a full canner. And sliding a canner across the stove can ruin the cooktop or a burner.

The most popular models have a capacity of between 15 and 21 quarts, and will process 7 one-quart jars at a time, or 8 or 9 pints.

Testing Your Pressure Gauge

Although many canning manuals suggest you periodically have your gauge checked, you'll have a hard time finding anyone to do it. But you can test your own gauge.

For a Presto, put a quart of water into the canner, vent the canner, and bring the pressure up until the pressure regulator jiggles. If the needle on the dial is pointing to 15 psi, it's accurate. If the gauge is off by less than two psi in either direction, you can compensate by adjusting the pressure during processing (increase if the gauge reads low, decrease if it reads high). If the gauge is off by more than two psi, replace it.

The main function of the pressure gauge on an All American canner is to show when the canner has been depressurized at the end of processing. The processing pressure is accurately controlled by the three-way pressure regulator, which does not need testing or replacement.

Canning Code

COUNTERWEIGHT - A pressure regulator that is not adjustable.

DOUBLE STACKING - Processing two layers of jars at a time, also called double decking.

GASKET - A flexible rubber or silicone ring that fits inside the canner cover and forms a pressure-tight seal between the canner and the cover during processing; also called a sealing ring.

OVERPRESSURE DEVICE - A rubber plug or safety valve in the canner cover that automatically releases steam if excess pressure cannot be released normally through the vent pipe; also called a safety fuse.

METAL-TO-METAL SEAL - A pressure canner cover that does not use a gasket to create a tight seal.

PRESSURE CANNER - A pressurized vessel that raises the temperature to 240°F (28°F above the temperature of boiling water) for the safe canning of low acid foods.

PRESSURE REGULATOR - A weighted device placed over the vent pipe to allow pressure to increase inside the canner, and which periodically releases small amounts of steam and air to maintain the pressure.

PSI - Pounds per square inch, the unit used to measure pressure in a canner.

SIPHONING - The leaking of liquid from jars during processing, usually resulting from a too rapid drop in pressure either as the canner reaches pressure and heat is turned down too low, or the time is up and the canner cools too fast.

VENTING - To release air from the pressure canner and jars so the canner can pressurize; also called exhausting.

VENT PIPE - A short tube through the cover of a pressure canner that releases air from inside the canner to allow the canner to pressurize; also called a vent port or steam vent.

WEIGHTED GAUGE - An adjustable pressure regulator.



9. Here's the hard part: Walk away and let the canner naturally cool until it has fully depressurized. Do not attempt to speed up cooling, and do not remove the pressure regulator from the vent until the pressure is all the way down. The canner has fully depressurized when the overpressure plug has dropped, the cover lock (if your canner has one) has released, the dial on the pressure gauge (if your canner has one) points to zero, and no steam escapes when you gently nudge the pressure regulator on the vent pipe.

10. After the canner has completely depressurized, remove the pressure regulator from the vent pipe. Wait another 10 minutes before unfastening and removing the cover. Do not wait for the canner to cool completely or you may have trouble removing the cover. Always lift the cover away from your face to avoid getting burned by rising steam.

11. Use your jar lifter to remove the jars one by one without tilting them. Place the jars, one inch apart, on a rack or thick towel away from drafts.

12. Let the jars cool for at least 12 hours before removing the bands and testing the seals.

PRESSURE CANNER CARE

Wash and dry your pressure canner after each use. Leaving food residue in the canner may cause it to absorb odors and can pit the aluminum. Before and after each use, wash and dry the cover, paying close attention to the edges of the cover, the vent, and the safety plug or valves.

If your canner has a pressure gauge, take care not to get water into the dial. Do not immerse the gauge in water, and do not set the cover upside down while it is wet (including when you first open the canner after each processing session).

If your canner has a gasket, remove it from the cover, wash and dry it, and inspect it for damage. Also make sure the vent pipe is free of obstruction by holding the cover up

to a window or light and looking from the inside of the cover through the vent pipe hole. Clear the vent pipe of any obstruction if necessary.

At the end of each season, thoroughly wash and dry the canner before storing it. Do not seal the cover on the canner, but instead place it upside down on the canner so air can circulate and, if the canner has a gasket, to prevent the gasket from remaining compressed during storage.

If your canner has a pressure gauge, do not set the cover upside down at any time the inside cover is wet.

PRESSURE CANNER AS WATER BATH OR STEAM CANNER

If your pressure canner is tall enough to hold a sufficient amount of water to cover jars by at least two inches, with another two to three inches of air space to prevent water overflow, you may use your pressure canner as a water bath canner for processing high-acid foods. Simply follow your recipe directions exactly as you would process the high acid food in a boiling water canner, but do not put the pressure regulator on the vent pipe at any time during processing. Also, do not lock down the pressure canner's cover on all brands except the All American. For the All American, keep the cover in place by screwing down two opposite wing nuts.

Bring the water inside the canner to a full boil. When the water is boiling, as indicated by steam flowing steadily from the vent pipe, set your timer for the correct processing time specified for whatever high acid food you are canning. As long as steam is streaming from the vent, the water is boiling.

When the processing time is up, turn off the heat and let the canner cool down until steam no longer hisses from the vent pipe. Then remove the cover and continue as you normally would when using a standard water bath canner.

If your pressure canner is large enough, jars may be double stacked for water bath canning the same as for pressure

canning. The reason it's not commonly done in standard water bath canners is that the canners are generally not tall enough to accommodate two layers of jars with sufficient water to cover plus air space to prevent water from boiling over onto the stovetop.

Can a pressure canner be used for atmospheric steam canning? The jury is still out. Although home canners are doing it, no one official has deemed it safe. According to professor Barbara Ingham, who led the University of Wisconsin team that proved the safety of steam canning, approval of the use of a pressure canner for steam canning requires researching both steam distribution within the canner and the ability of the canner to effectively vent out air. More to the point would be to determine a suitable and safe procedure for using a pressure canner as a steam canner. ©

Elevation Table

If you are at this elevation:	Add to processing time:
1,001 – 3,000 feet	5 minutes
3,001 – 6,000 feet	10 minutes
6,001 – 8,000 feet	15 minutes
8,001 – 10,000 feet	20 minutes

You can find your elevation by entering your zip code at this website: www.daftlogic.com/sandbox-google-maps-find-altitude.htm

Web Resources

All American: allamericancanner.com

Granite Ware: graniteware.com/graniteware-canning

Mirro: wearever.com

Presto: gopresto.com

A dandy website where you can see and compare all the major pressure canner models in one place is www.pressurecooker-outlet.com/Pressure-Canners.htm. This site also offers a full line of replacement parts, including flat perforated racks in various sizes, and provides answers to many common questions about pressure canning.

The National Center for Home Food Preservation includes a page on pressure canning at nchfp.uga.edu/publications/uga/using_press_canners.html

A Pressure Cooker is Not a Canner!

Although several pressure cooker brands are promoted as being suitable for canning, a pressure cooker is not the same as a pressure canner. A pressure cooker, sometimes called a pressure saucepan, similarly uses steam under pressure to cook meals fast but is generally smaller than a pressure canner. The USDA recommends that a vessel large enough for safe pressure canning must hold at least four quart-size canning jars, which requires a liquid capacity of 10 to 12 quarts compared to the standard six to eight-quart pressure cooker. (A pressure canner certainly may be used as a pressure cooker.)

The larger size of a pressure canner allows the canner to attain stable processing times, temperatures, and pressures that are suitable for the safe preservation of vegetables, meats, and other low acid foods. The amount of time required for the canner to reach processing pressure and the amount of time needed to cool naturally and return to zero pressure are necessary aspects of safe pressure canning. Because a pressure cooker contains less metal and holds less water, it reaches pressure and reduces pressure more rapidly than occurs in a pressure canner, potentially resulting in under processed and therefore unsafe canned foods. Further, a pressure cooker is typically cooled under running water to get the pressure down quickly, which never should be done with a pressure canner. Not only does such rapid cooling result in unsafe processed food, but it may permanently damage your canner.

Unlike aluminum pressure canners, some pressure cookers are made of stainless steel. As tempting as it might be to have a multi-purpose cooker/canner made of non-reactive steel, aluminum is a much better conductor of heat and therefore is more suitable for pressure processing food in jars. On the downside, an aluminum canner is non-magnetic, making it inappropriate for use on an induction cooktop.



Exploring Heat Source Options for Canning

Find Out What Heat Source is Best for Your Electric Water Bath Canner

BY GAIL DAMEROW

WHETHER YOUR KITCHEN HAS all the modern conveniences or you live off the grid, for canning purposes, some heat sources work better than others. When I bought the cooktop I use now, most of the manufacturers I contacted didn't furnish information about their product's suitability

for canning. With today's focus on home food production, the scene has changed dramatically. Now most manufacturers offer recommendations concerning the use of their units for canning. Other sources, like a portable electric burner, can come in handy as an auxiliary heat source.

SMOOTH COOKTOP

The big issue for many home canners is whether or not canning may be done on a ceramic glass cooktop. Some manufacturers recommend not canning at all on this type of top. Ignoring that recommendation may void the warranty. Since smooth cooktops vary in their stability for canning, the most sensible plan is to follow the manufacturer's advice.

One possible issue with smooth cooktops is a canner's weight. Older glass cooktops were relatively thin and likely to crack under the weight of a full canner. Some newer glass cooktops are reinforced or otherwise thick enough to hold up under the weight.

Another issue occurs if the canner bottom is ridged or concave, rather than flat. On a smooth cooktop, a canner with a non-flat bottom won't efficiently and evenly distribute heat. As a result, the canner may fail to maintain a full boil (in a water bath canner) or full steam (in a steam canner) sufficient to surround the jars.

Yet another issue is the intense heat reflecting back from the canner onto the cooktop surface, which may damage the top. To avoid this problem, manufacturers specify a maximum recommended canner diameter in relation to burner size, which may be as little as one inch. The diameter of a typical canner is about 12 inches.

Depending on the size of your cooktop's burners, and on the manufacturer's recommendation,

Portable gas stoves are popular with canners who live off the grid, don't want to heat up the kitchen on an already hot summer day, or have smooth cooktops not rated for canning.

finding a canner of suitable size may then be an issue. A pot that is too small for proper canning may come to a boil too rapidly, reducing the total amount of processing time and causing the jars to be under-processed, rendering the food in them unsafe to eat.

Using a canner that is larger than the recommended diameter reflects excessive heat back onto the cooktop, possibly resulting in damage to the burner, a cracked glass surface, or the metal canner fusing to the cooktop. To prevent the smooth top from overheating, many glass cooktops have a protective feature that automatically turns off a burner if it gets too hot. When that happens during a canning session, the food will be under-processed and unsafe. The automatic heat cut-off especially is a problem with a pressure canner, which operates at a higher temperature than a water bath or steam canner. If your smooth cooktop has an automatic cut-off, it may not be at all suitable for canning.

A smooth cooktop is either radiant heat or induction. A radiant top has electric heating elements beneath the glass surface, functioning much the same as a regular electric cooktop with coil burners.

An induction cooktop has copper elements beneath the glass that generate an electromagnetic field that transmits energy to the canner, causing it to heat up. Some induction tops automatically adjust energy output according to the canner's diameter. For an induction cooktop to work, the canner must be magnetic, meaning a magnet will stick to it. Stainless steel canners are magnetic; aluminum canners are not.

Some people attempt to overcome this problem by putting an induction interface disk between the aluminum canner and the cooktop. The flat magnetic disk

conducts heat from the induction cooktop to the canner, making the cooktop less efficient. It can also overheat the cooktop.

An enameled canner — constructed of porcelain enamel coated steel — poses a unique issue for induction cooktops. Although the steel is magnetic, the enamel coating can overheat, melt, and ruin the cooktop.

Even using a recommended type canner on a smooth cooktop that is rated for canning, sliding a full and heavy canner across the top may scratch the glass surface. And, of course, you want to be careful not to drop the canner onto the surface. If you can on a smooth cooktop, the best approach is to place the canner on the cooktop before filling it and heating it, then leave it in place until the processed jars are removed from the canner — thus minimizing the potential of damaging your smooth ceramic glass cooktop.

ELECTRIC COIL

An electric coil that is suitable for canning should be no more than four inches smaller than the diameter of the canner. For heating a typical 12-inch diameter canner, the coil must be at least eight inches in diameter.

If the coils on your electric cooktop are too small for your canner, you might opt to use a portable electric burner. Some home canners use such portable electric burners for many other reasons: their smooth cooktop is not rated for canning;

they want to operate the canner where it won't heat up the kitchen; their garden yields produce faster than the kitchen's cooktop alone has the capacity to process.

A portable electric burner used for canning should pull at least 1500 watts. And, as with any electric coil, the portable electric burner should be no more than four inches in diameter less than the canner bottom, meaning the canner extends no more than two inches beyond the burner all around.

If you use the portable electric burner on your countertop, to prevent heat damage to the counter the unit must allow for sufficient air circulation underneath. The unit must also be stable enough to accommodate a heavy canner while remaining level. A restaurant supplier would be a good source for a quality portable electric burner that's sturdy enough for canning and made of heat-resistant cast iron and stainless steel.

GAS COOKTOP

When my farm kitchen was remodeled I opted for a propane cooktop as being the most suitable type for the considerable amount of canning I do. In terms of heat regulation, it is much more responsive than the old electric range. Also, the sturdy iron protective grate over the burners supports a canner of any size, and I can slide a canner along the grate without causing damage to the cooktop or the pot. Another big plus is that, given the



unpredictability of power outages, gas is more reliable than electricity.

The four burners on my cooktop are rated for 5,000, 9,000, 11,000, and 12,000 BTU respectively. For canning, I most often use the 12,000 BTU burner. Gas burners rated higher than 12,000 BTU are not recommended for use with low-cost canners made of thin aluminum. Higher heat could warp and ruin a thin-wall aluminum canner.

Portable gas stoves are popular with canners who live off the grid, don't want to heat up the kitchen on an already hot summer day, or have smooth cooktops not rated for canning. For outdoor canning, the unit must be operated in a protected area where the temperature won't fluctuate because of breezes. Some people set up a wind break. Others use a covered porch or open garage that offers

wind protection while providing plenty of necessary ventilation.

Some authorities discourage canning on outdoor gas stoves because of the danger of tipping and spills, especially where frisky pets and boisterous children might be involved. It goes without saying that kids and pets should play at a distance.

A portable gas unit used for canning must be stable enough to accommodate a heavy canning pot without tipping over. Both tabletop and stand-alone units have been successfully used by home canners. As with portable electric burners, the selection and use of outdoor gas stoves for successful canning are discussed in detail by many online groups.

ELECTRIC CANNERS

One of the latest innovations

in canning appliances is the Ball FreshTech electric water bath canner and multi-cooker, which may be used to process 7 one-quart jars, eight pints, or 12 half-pints at a time. Ball claims this appliance is 20 percent more efficient in energy use than canning on an average electric stove. As a multi-cooker, the unit may also be used as a stockpot or a vegetable steamer.

For canning, this appliance works essentially the same as a stove top water bath canner, with a couple of exceptions. One is that it comes with a diffuser rack that is placed on top of the jars during processing. The rack is designed to diffuse boiling evenly throughout the pot and reduce water splatter. Another difference is that, when the processing time is up and the appliance is turned off, after a cooling period of five minutes, the water is drained from the canner (through a built-in spigot) before the processed jars are removed.

The Ball water bath canner may be used to process any reliable high-acid food recipe.

Ball produces a smaller electric home canner that holds three one-quart jars, five pints, or six half-pints. It has a digital touch pad with easy-to-use food category buttons for, respectively, jams and jellies, fruits, tomatoes, salsas, pickles, and sauces. This appliance does not double as a cooker but is designed only for canning specific recipes provided with the unit or published by Ball Canning under the "auto canner" category on their website.

Similar-looking appliances are widely advertised as pressure cookers that double as pressure canners. Some even have buttons labeled "canning" or "steam canning." Pressure cooking is not at all the same as pressure canning. For many reasons, using an electric pressure cooker as a canner does not ensure safe processing of food sealed and stored in jars. Why take the chance? ©