



K-STATE
Research and Extension

PRESERVE IT FRESH, PRESERVE IT SAFE

How-to Guide to Water Bath Canning and Steam Canning

Canning food at home is a great way to preserve fresh food for later use. The key is canning food properly and safely to prevent foodborne illness.

Two types of canners can be used for high-acid foods. They are:

- Boiling water bath canner
- Steam canner

The foods that can be safely canned in these canners include:

- Fruits
- Sweet spreads
- Pickled products
- Tomatoes
- Salsa
- Some tomato products

Why Use a Water Bath Canner or Steam Canner?

A boiling water canner or steam canner will safely can high-acid foods. Acidity may be natural, as in most fruits, or added, as in pickled food. High-acid foods contain enough acid to block the growth of botulinum bacteria, or destroy them more rapidly when heated. The term “pH” is a measure of acidity; the lower its value, the more acid the food. The acidity level in foods can be increased by adding lemon juice, citric acid, or vinegar. The temperature reached in a water bath canner or steam canner is effective for destroying yeast and mold organisms.

Recommended Canners for High-Acid Foods

Boiling Water Bath Canner

Most boiling water canners are made of aluminum or porcelain-covered steel; at least one stainless steel model is also available. Boiling water canners have fitted lids and removable perforated or shaped-wire racks. The canner must be deep enough that at least 1 to 2 inches of briskly boiling water covers the tops of jars during processing.

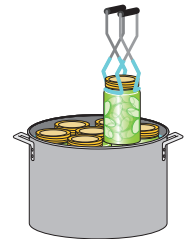
You may use a flat-bottomed stockpot with a bottom rack inserted for water bath canning. The pot used as a canner must be large enough to have lots of water boiling freely around the jars, and at least 1 to 2 inches over the tops of jars.

Steps for Successful Water Bath Canning

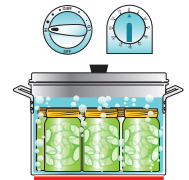
1. Fill canner at least halfway with water.
2. Preheat water to 140°F for raw-packed foods and 180°F for hot-packed foods.
3. Prepare food to be canned. Fill jars as directed for the type of food being canned. Apply lids and screw rings. Tighten rings fingertip tight.



4. Load filled jars onto the canner rack one jar at a time, using a jar lifter.
5. Add more boiling water, if needed, so the water level is at least 1 to 2 inches above jar tops.
6. Turn heat to its highest position, cover the canner with its lid, and heat until the water boils vigorously.

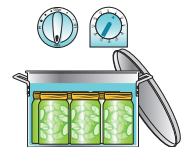


7. Set a timer for the total minutes required for processing the food. Adjust processing time for your altitude of residence. More information about adjusting processing for higher altitudes is in *What's Your Elevation?*, <http://www.bookstore.ksre.ksu.edu/pubs/MF3172.pdf>.



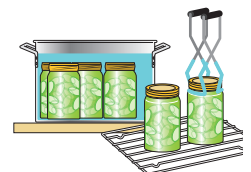
8. Keep the canner covered and maintain a boil throughout processing. The heat setting may be lowered a little as long as a complete boil is maintained the entire time. If the water stops boiling at any time during the process, bring the water back to a vigorous boil and restart the processing time.

9. Add more boiling water, if needed, to keep the water level above the jars.



10. When processing time is complete, turn off the heat and remove the canner lid. Wait 5 minutes before removing jars.

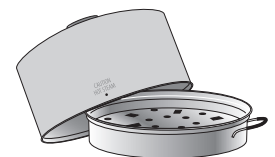
11. Remove jars with a jar lifter and place them on a towel or wire rack, leaving at least 1 inch between the jars during cooling. Let jars sit undisturbed to cool at room temperature for 12 to 24 hours.



Steam Canner

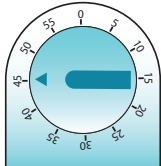
The University of Wisconsin-Madison has published research indicating that an atmospheric steam canner may be used for canning naturally acid foods such as fruits, sweet spreads such as jam and jelly, some tomato products, or acidified foods such as salsa or pickles, as long as all the following criteria are met:

- Foods must be high in acid, with a pH of 4.6 or below.
- A research-tested recipe developed for a boiling water canner must be used in conjunction with the atmospheric steam canner. The booklet accompanying an atmospheric steam



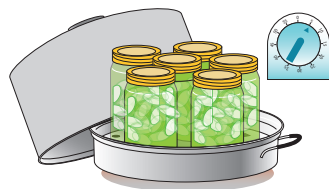
canner can't be relied on to provide safe canning instructions.

- Jars must be heated before filling, and filled with hot liquid (raw or hot pack).
- Jars must be processed in pure steam at boiling water temperature. The canner must be vented before processing until a full column of steam appears.
- Processing time must be modified for elevation as required by a tested recipe.
- **Processing time must be limited to 45 minutes or less, including any modification for elevation.** The processing time is limited by the amount of water in the canner base. When processing food, do not open the canner to add water. Regulate heat so the canner maintains a temperature of boiling water.



Tips for Successful Steam Canning

1. If your steam canner does not have a temperature indicator, insert a stem thermometer into the vent hole. Boiling water temperature must be maintained throughout processing.
2. Do not open the lid during processing to add more water. Steam will escape and jars will not be at the correct temperature.
3. The water does not need to boil vigorously throughout the processing time. Adjust heat enough to maintain the proper temperature.
4. When processing time is complete, turn off heat and remove canner lid. Wait 5 minutes before removing jars.
5. The steam and water will be hot! Use extreme caution while using a steam canner.



Know Your Cooktop

With the advancement of kitchen technology, the smooth cooktop has brought some challenges for canning. Follow the manufacturer's recommendations for your smooth cooktop. Here are some issues:

1. The canner bottom must be completely flat. Some types of water bath canners are **NOT** recommended to use on smooth cooktops because of uneven bottoms. Always follow the manufacturer recommendations.
2. Excessive heat reflecting down on the surface can damage the cooktop. Examples are discoloration, burner damage, cracked glass tops, or metal fused to the glass top.
3. Many of these cooktops have burners with automatic cut-offs when heat gets excessive. If the burner shuts off during processing, food can be under-processed.

Storing Your Canner

After canning season is done, clean and maintain your canner. The darkened inside surface can be cleaned by filling it above the darkened line with a mixture of 1 tablespoon cream of tartar or vinegar to each quart of water. Place the canner on the stove, heat water to a boil, and boil covered until the dark deposits disappear. Stubborn deposits may require the addition of more cream of tartar. Empty the canner and wash it with hot soapy water, rinse, and dry. (Hint: reduce hard water stains by adding ¼ cup of white vinegar to the water in the canner while processing jars.)

Store the canner in a clean, dry location with crumpled clean paper towels inside the canner. This will help absorb moisture and odors. Place the lid upside down on the canner for ventilation. Never put the lid on the canner and seal it.

Sources:

National Center for Home Food Preservation, <http://nchfp.uga.edu>

Dr. Barbara Ingham, Professor, University of Wisconsin-Madison Extension, "Home Processing of Acid Foods in Atmospheric Steam and Boiling Water Canners," *Food Protection Trends*, Vol. 35, No. 3, pp. 150-160

Prepared by:

Karen Blakeslee, Extension Associate and Rapid Response Center Coordinator, kblakesl@ksu.edu

Reviewed by:

Linda Beech, Ellis County Family and Consumer Science Agent, lbeech@ksu.edu

Brand names appearing in this publication are for product identification purposes only. No endorsement is intended, nor is criticism implied of similar products not mentioned. Publications from Kansas State University are available at: www.ksre.ksu.edu
Publications are reviewed or revised annually by appropriate faculty to reflect current research and practice. Date shown is that of publication or last revision. Contents of this publication may be freely reproduced for educational purposes. All other rights reserved. In each case, credit Karen Blakeslee, *How-to Guide to Water Bath Canning and Steam Canning*, Kansas State University, August 2015.

Kansas State University Agricultural Experiment Station and Cooperative Extension Service

MF3241

August 2015

K-State Research and Extension is an equal opportunity provider and employer. Issued in furtherance of Cooperative Extension Work, Acts of May 8 and June 30, 1914, as amended. Kansas State University, County Extension Councils, Extension Districts, and United States Department of Agriculture Cooperating, John D. Floros, Director.