Answers to Questions Most Frequently Asked on
Canning Food

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Q. What causes jars to break in a canner?

A. Breakage can occur for several reasons: 1. Using commercial food jars rather than jars manufactured for home canning, 2. Using jars that have hairline cracks, 3. Putting jars directly on bottom of canner instead of on a rack, 4. Putting hot foods in cold jars, or 5. Putting jars of raw of unheated food directly into boiling water in the canner rather, than hot water (sudden change in temperature-too wide a margin between temperature of filled jars and water in canner before processing).

Thermal shock is characterized by a crack running around the base of the lower part of the jar, sometimes extending up the side. To prevent thermal breakage:

- Avoid sudden temperature changes, such as putting hot food in a cold jar, putting a cold jar in hot water, or placing a hot jar on a cool or wet surface. Keep jars in hot water until filled.
- Use a rack in the canner.
- Avoid using metal knives or spatulas to remove air bubbles or steel wool pads to clean jars.

Internal pressure break is characterized by the origin of the break on the side. It is in the form of a vertical crack that divides and forks into two fissures. To prevent pressure breaks:

- Provide adequate headspace in jars for food to expand when heated.
- Keep heat steady during processing.
- Avoid reducing canner pressure under running water or lifting the pressure control or petcock before pressure drops to zero.

Impact breaks originate at the point of impact and fissures radiate from the point of contact. To prevent impact breaks:

- Handle jars carefully. Jars that have been dropped, hit, or bumped are susceptible to breakage. Test new jars that may have been mishandled (to see if they break) by immersing them in room-temperature water, bring to a boil, and boil 15 minutes.
- Avoid the use of metal tools to remove air bubbles.
- Avoid using old jars. Jars have a life expectancy of about 10 years.

Q. How can I determine if a jar of canned food is sealed?

A. Cool jars for 12 to 24 hours, remove the screwbands, and test seals with one of the following options:

- Press the middle of the lid with a finger or thumb. If the lid springs up when you release your finger, the lid is unsealed.
- Tap the lid with the bottom of a teaspoon. If it makes a dull sound, the lid is not sealed. If food is in contact with the underside of the lid, it will also cause a dull sound. If the jar is sealed correctly, it will make a ringing, high-pitched sound.

(OVER)

- Hold the jar at eye level and look across the lid. The lid should be concave (curved down slightly in the center). If center of the lid is flat or bulging, it may not be sealed.

Q. When should lids with screwbands be tightened on the jars?

A. Before placing filled jars in the boiling waterbath canner or pressure-canner, finger tighten the screwbands. Do not tighten screwbands after processing. Tightening after processing can result in breaking the seal.

Q. How tightly should screwbands be put on when closing jars with two-piece lids?

A. Put on screwbands firmly so that they are handtight. If they are applied too tightly, the flat may buckle.

Q. What causes lids to buckle?

A. The buildup of pressure inside jars causes lids to buckle. This is a result of putting screwbands on so tightly that air can hardly escape from the jars during processing. Buckling may cause tiny pinholes in the flat. If this happens, the food should not be stored on the shelf. Within 24 hours of processing, foods can be refrigerated and used within 1 to 2 days, or reprocessed.

Q. What causes lids not to seal?

A. Failure of lids to seal may be caused by one or more of the following:
- A chip on the rim of the jar.
- Failure to follow manufacturer's directions for preparing flats.
- Presence of food particles on jar rim. Always wipe rim clean before putting on lids.
- Leaving too little headspace, letting pressure in pressure canner fluctuate, or lowering the pressure too suddenly. In all of these cases, food particles may be forced between the jar and lid, causing sealing failure.
- Leaving too much headspace may prevent sealing because the processing time was not long enough to exhaust all the air from the inside of the jar.
- Not removing air bubbles can have the same effect as leaving too much headspace.
- Putting screwbands on too tightly.
- Tightening screwbands after removing jars from canner.
- Reusing lids. Use flat metal lids only once.
- Defective lids.
- Using commercial or one-trip jars, such as for mayonnaise, peanut butter, or baby food. These jars have slightly different sizes of sealing edges and are not recommended from home canning.

Q. Can lids and screwbands be reused?

A. Lids should not be used a second time since the sealing compound becomes indented by the first use, preventing another airtight seal. Screw bands may be reused unless they are badly rusted or the top edge is pried up which would prevent a proper seal.

Q. Can food be reprocessed if it was incorrectly processed or if lids failed to seal?

A. If no more than 24 hours have gone by since the food was processed, do one of the following:

- Refrigerate the food and use it within 2 days.
- Freeze the food. Adjust the headspace to 1½ inches and freeze in the jar or place in a recommended freezer container. Drain vegetables before freezing.
- Remove the lid and check the jar-sealing surface for tiny nicks. If necessary, change the jar. Always use a new, properly prepared lid and reprocess using the same processing time. The quality of reprocessed food is poor.

If more than 24 hours have passed since the food was processed, discard it.

Q. When should jars be sterilized?

A. All jams, jellies, and pickled products processed less than 10 minutes should be filled into sterile, empty jars. To sterilize empty jars, put them right side up on a rack in a boiling-water canner. Fill the canner and jars with hot (not boiling) water to 1 inch above the tops of the jars. Boil 10 minutes. Remove and drain hot sterilized jars one at a time. Save the hot water for processing filled jars.

Empty jars used for vegetables, meats, and fruits to be processed in a pressure canner need not be presterilized. It is also not necessary to presterilize jars for fruits, tomatoes, and pickled or fermented products that will be processed 10 minutes or longer in a boiling-water canner.

Q. What is the best way to clean jars before canning?

A. Before every use, wash empty jars in hot water with detergent and rinse well by hand, or wash in a dishwasher. Detergent residue may cause unnatural flavors and colors. These washing methods do not sterilize jars. Scale or hard-water films on jars are easily removed by soaking jars several hours in a solution containing 1 cup of vinegar (5 percent acidity) per gallon of water.

Q. It is all right to let jars cool in the water in which they were processed?

A. It is important to remove jars from a boiling-water canner immediately when the processing time is up. The spores of certain thermophilic, or heat-loving bacteria, can survive boiling-water processing. Because these bacteria thrive at high temperatures, they can multiply and cause spoilage if canning jars are left in the hot water to cool slowly. When processing foods in a pressure canner, the canner is removed from the heat source when the processing time is up. Jars are left in the pressure canner until the pressure returns to zero naturally. This period of time, after removal from heat until the pressure reaches zero, is considered part of the processing time and is necessary for destruction of microorganisms. Do not rush this cooling by placing the canner under water, or by using a fan. Remove the jars immediately when the pressure returns to zero, and cool at room temperature.

Q. Why do the undersides of metal lids sometimes discolor?

A. Natural compounds in some foods, particularly acids, corrode metal and make a dark deposit on the underside of jar lids. This deposit on lids of sealed, properly processed canned food is harmless.

Q. Is open-kettle canning no longer recommended?

A. In open kettle canning, food is cooked in an ordinary kettle, then packed into hot jars and sealed without processing. The temperatures obtained in open kettle canning are not high enough to destroy all spoilage and food poisoning organisms that may be in the food. Also, microorganisms can enter the food when it is transferred from the kettle to jar and cause spoilage.

Q. Why is headspace important in canning?

A. Headspace is the distance between the surface of food and the underside of the lid. Leaving the specified amount of headspace in a jar is important to assure a vacuum seal. If too little headspace is allowed the food may expand and bubble out when air is being forced out from under the lid during processing. The bubbling food may leave a deposit on the rim of the jar or the seal of the lid and prevent the jar from sealing properly. If too much headspace is allowed, the food at the top is likely to discolor. Also, the jar may not seal properly because there will not be enough processing time to drive all the air out of the jar.

Q. Why is liquid sometimes lost from glass jars during processing?

A. The most common reasons for loss of liquid are packing jars too full, packing food too tightly into jars, fluctuating pressure in a pressure canner, or lowering pressure too suddenly. If all air bubbles are not removed from jars before processing the liquid may be lower in jars after processing.

Q. Should liquid lost during processing be replaced?

A. No. Loss of liquid does not cause food to spoil, though the food above the liquid may darken. If, however, the loss is excessive (for example, if at least half of the liquid is lost), refrigerate the jar(s) and use within 2 to 3 days.

Q. Is is safe to use home-canned food if liquid is cloudy?

A. Cloudy liquid may be a sign of spoilage, but it may be caused by the minerals in hard water or by starch from overripe vegetables. If liquid is cloudy, boil the food. Do not taste or use any food that foams during heating or has an off-odor.

Q. How often should a pressure-canner gauge be checked?

A. Check dial gauges each year. Check them more often if the lid is dropped or submerged in water, the gauge glass is broken, or any parts are rusty. A weighted gauge does not get out of adjustment and does not need to be checked for accuracy. It does need to be cleaned.

Q. Can a pressure saucepan be used for home canning low-acid foods?

A. Pressure saucepans are not recommended for canning.

Q. Can a microwave oven be used for home canning?

A. A microwave oven cannot be used for home canning. Low-acid foods must be processed at 240 degrees Fahrenheit; a microwave can only reach 212 degrees Fahrenheit. Even acid foods must have the uniform heat provided by a conventional water-bath canner. Because of its uneven heating pattern, a microwave does not assure consistent heat to each jar during processing. There also is a danger of explosion of jars during heating or as the jars are removed from the oven.

Q. Can a conventional oven be used to process foods?

A. Oven canning is extremely dangerous and definitely not a recommended procedure. The risk of jars breaking during heating, when the oven door is opened, or when jars are removed form the oven is extremely great. The danger of inadequate processing can also pose a health risk. Heat transfer in the oven is uneven and the food does not reach high enough temperatures. Oven canning is dangerous and not recommended.

Q. Is a steam canner safe for canning foods at home?

A. A steam canner is not the same as a pressure canner. Steam canners are not recommended for home canning because processing times for use with current models have not been adequately researched. Because steam canners do not heat foods in the same manner as do boiling-water canners or pressure canners, their use with boiling-water process times may result in spoilage.

Q. How can spoiled, home-canned food be safely disposed of and the jars cleaned?

A. Spoiled low-acid foods, including tomatoes, may exhibit different kinds of spoilage evidence or very little evidence. Therefore, all suspect containers of spoiled low-acid foods, including tomatoes, should be treated as having produced botulinum toxin and handled carefully in one of two ways:

- If the swollen metal cans or suspect glass jars are still sealed, place them in a heavy garbage bag. Close and place the bag in a regular trash container.
- If the suspect cans or glass jars are unsealed, open, or leaking, they should be detoxified before disposal.

Detoxification process: Carefully place the suspect containers and lids on their sides in an 8-quart or larger stock pot, pan, or boiling-water canner. Wash your hands thoroughly. Carefully add water to the pot. The water should completely cover the container with a minimum of a 1-inch level above the containers. Avoid splashing the water. Place a lid on the pot and heat the water to boiling. Boil 30 minutes to ensure detoxifying the food and all container components. Cool jars and discard the containers, their lids, and the food content that have been mixed with something like coffee grounds to make undesirable to people and animals. Then place all in heavy garbage bag for disposal. Then, thoroughly scrub all counters, containers, and equipment,

including can opener, clothing, and hands that may have been in contact with the food or containers. Discard any sponges or washcloths that may have been used in the cleanup. Place them in a plastic bag and discard in the trash.

Q. If I find mold growing inside a jar of canned food, can I just scrape it off and eat the food?

A. Mold growth in foods can raise the pH of the food. In home canned products, this could mean that the high acid products could become low acid and therefore run the risk of botulism or other bacterial spoilage. Thus, any home canned product that shows signs of mold growth should be discarded. USDA and microbiologists now recommend against even scooping out the mold on jams and jelly products and using the remaining jam or jelly, even though that used to be suggested.

Fruits and Vegetables

Q. Why should a pressure canner be used for canning vegetables?

A. Higher temperatures are required to destroy botulinum bacteria in low-acid food such as meats, fish, poultry, and all vegetables except tomatoes. The only safe way to can these foods is by using a pressure canner, which provides temperatures (240 degrees Fahrenheit) higher than those of boiling water (212 degrees Fahrenheit).

Q. Is it safe to can without salt and sugar?

A. Salt and sugar are not necessary for safe processing of fruits and vegetables. The salt in recipes for pickled products and sugar in jams, preserves, and jellies should not be reduced since the measures given are needed to provide good quality.

Q. Why does canned fruit sometimes float in jars?

A. Fruit may float because pack is too loose or syrup too heavy, or because some air remains in tissues of the fruit after heating and processing.

Q. Is it a good practice to puree and home can foods for infants?

A. If you have time and the food, this may be a worthwhile activity – except for carrots, beets, and spinach. These three vegetables are more difficult to clean and sterilize than are others and they may pick up soil nitrates. The intestinal tracts of infants are unable to handle these soil nitrates properly. Procedures used in commercial canning of carrots, beets, and spinach for infants make these foods unquestionably safe.

Chunk-style or pureed fruit with or without sugar can be canned. Pack in half-pint, preferably, or pint jars and process for 20 minutes in a boiling-water canner.

Do not attempt to can pureed vegetables, red meats, or poultry meats, because proper processing times for pureed foods have not been determined for home use. Instead, can and store these foods unpureed using the

standard processing procedures; puree or blend them at serving time. Heat the blended foods to boiling, simmer for 10 minutes, cool, and serve. Store unused portions in the refrigerator and use within 2 days.

Q. Why do tomatoes need to be acidified before canning?

A. Tomatoes usually are considered an acid food, but the results of some growing conditions have put pH values only slightly above the safe pH level. If they are to be canned as an acid food they must be acidified. To acidify, add 2 tablespoons of bottled lemon juice or ½ teaspoon of citric acid per quart of tomatoes. For pints, use 1 tablespoon bottled lemon juice or ¼ teaspoon citric acid. Acid should be added directly to the jars before filling with product. Add sugar to offset acid taste, if desired. Four tablespoons of a 5-percent acidity vinegar per quart may be used instead of lemon juice or citric acid. However, vinegar may cause undesirable flavor changes. Do not use fresh lemon juice since its acidity varies.

Q. What are important factors in preparing tomatoes for home canning?

A. Use ripe, juicy tomatoes. Never use overripe tomatoes, because tomatoes lose acidity as they mature. Tomatoes with soft or decayed areas are not suitable for canning. Be careful to remove all of the stem and green parts. Acidify each jar according to the procedure above.

Q. Does ascorbic acid help keep fruits and vegetables from darkening?

A. Yes. Adding ¼ teaspoon of crystalline ascorbic acid (vitamin C) to a quart of fruit or vegetable before it is processed retards oxidation, which is one cause of canned foods darkening. Ascorbic acid preparations containing sugar can be used with fruits in proportions suggested by manufacturer.

Q. Can fruit be canned with artificial sweeteners?

A. Canning with artificial sweeteners or sugar substitutes is not recommended. Artificial sweeteners may lose some of their sweetening power when heated and may become bitter. Can fruit in water or unsweetened juice and add the sugar substitute when serving.

Jellies, Jams, and Preserves

Q. Why does fruit float in jam?

A. Fruit was not fully ripe, was not thoroughly crushed or ground, was not cooked long enough or was not properly packed in jars. To help prevent floating fruit, remove pan from heat as soon as jam is cooked; then alternately stir and skim the jam for 5 minutes.

Q. Is it necessary to process jams and preserves in a boiling-water-bath canner?

A. Yes. This prevents growth of molds and yeasts that could cause food spoilage and quality changes.

Q. Why do crystals form in jelly?

A. Crystals throughout the jelly may be caused by too much sugar in the jelly mixture or by cooking the mixture too little, too slowly, or too long. Evaporation of liquid causes crystals that form at the top of jelly that has been opened and allowed to stand. Crystals in grape jelly may be tartrate crystals. (To prevent tartrate crystals in grape jelly, let juice stand in a cool place over night, then strain through two thicknesses of damp cheesecloth to remove crystals).

Q. What causes jelly to be too soft?

A. One or more of these may be the cause: Too much juice in the mixture. Too little sugar. Mixture not acid enough. Making too big a batch at one time.

Q. What can be done to make soft jellies firmer?

A. Soft jellies can sometimes be improved by recooking according to the directions. It is best to recook only 4 to 6 cups of jelly at one time.

To remake with powdered pectin. Measure the jelly to be recooked. For each quart of jelly, measure ¼ cup sugar, ¼ cup water, and 4 teaspoons powdered pectin. Mix the pectin and water and bring to boil, stirring constantly to prevent scorching. Add the jelly and sugar. Stir thoroughly. Bring to a full, rolling boil over high heat, stirring constantly. Boil mixture hard for ½ minute. Remove jelly from the heat, skim, pour into hot containers, seal, and process.

To remake with liquid pectin. Measure the jelly to be recooked. For each quart of jelly, measure ¾ cups sugar, 2 tablespoons lemon juice, and 2 tablespoons liquid pectin. Bring jelly to boiling over high heat. Quickly add the sugar, lemon juice, and pectin and bring to a full rolling boil; stir constantly. Boil mixture hard for 1 minute. Remove jelly from the heat, skim, pour into hot container, seal, and process.

To remake without added pectin. Heat the jelly to boiling and boil for a few minutes. Test to determine just how long to cook it. Remove jelly from the heat, skim, pour into hot container, seal, and process.

Q. What makes jelly syrupy?

A. Too little pectin, acid, or sugar. Excess sugar can also cause syrupy jelly.

Q. Are molds on jelly safe to eat?

A. No, some molds are harmless, but recent knowledge indicates that some mycotoxins from mold growth are harmful. Once mold has started to form , to be safe, throw out the jelly.

Q. What causes weeping jelly?

A. Too much acid. Storage place was too warm or storage temperature fluctuated.

Q. What makes jelly too stiff?

A. Too much pectin (fruit was not ripe enough or too much pectin added); overcooking.

Q. What causes fermentation of jelly?

A. Too little sugar or improper sealing.

Q. Why does mold form on jelly or jam?

A. Because an imperfect seal has made it possible for mold and air to get into the container.

Q. What causes jelly or jam to darken at the top of the container?

A. Stored in too warm a place, or a faulty seal allows air to leak in.

Q. What causes jelly and jam to fade?

A. Too warm a storage place or too long storage. Red fruits (such as strawberries and raspberries) are especially likely to fade.

Q. What makes jelly cloudy?

A. One or more of these may cause cloudy jelly: Pouring jelly mixture into jars too slowly. Allowing jelly mixture to stand before it is poured. Juice was not properly strained and contained pulp. Jelly set too fast, usually the result of using too-green fruit.

Q. What makes jelly gummy?

A. Overcooking.

Q. Can commercial canned or frozen fruit juice be used for making jelly?

A. It is best to use commercially canned or frozen fruit juice only in recipes with added pectin. Because fully ripe fruit is used, the amount of pectin in commercial juice may be too low to get a satisfactory gel without added pectin.

Q. If you are making jelly or jam with liquid pectin, when do you add it?

A. Liquid pectin is added to the cooked juice or fruit and sugar mixture immediately after it is removed from the heat.

Q. If you are making jelly or jam with powdered pectin, when do you add it?

A. Powdered pectin is added to the unheated fruit juice or crushed fruit.

Q. How do I prepare paraffin for sealing jelly?

A. Paraffin is no longer recommended for sealing jellies or any other sweet spread because of the potential for mold growth. All sweet spreads should be sealed with two-piece, self-sealing lids and processed for 5 minutes in a boiling-water canner.

Q. Can a recipe for jam or jelly be doubled?

A. Never double a jelly or jam recipe. If a double batch of jelly or jam is cooked for the usual time, it will be undercooked – which means the jelly or jam will be soft and runny. If boiled longer, it will have a caramelized flavor and dark color.

Pickles and Relishes

Q. What kind of container should be used for making pickles?

A. Use utensils of unchipped enamelware, stainless steel, aluminum, or glass for heating pickling liquid. Do not use copper, brass, galvanized, or iron utensils. These metals may react with acids or salts and cause undesirable color changes in pickles or form undesirable compounds. Do not store pickling liquid in stainless steel or aluminum utensils. Pitting will occur.

Use a crock or stone jar, unchipped enamel-lined pan, or large glass jar, bowl, or casserole for fermenting or brining. Stainless steel containers are not recommended for brining pickles because pitting of the container will occur over time because salt in the brine is corrosive.

Q. Can alterations in a pickle or relish recipe be made safely?

A. The level of acidity in a pickled product is as important to its safety as it is to taste and texture. Do not alter vinegar, food, or water proportions in a recipe or use a vinegar with unknown acidity. Use only recipes with tested proportions of ingredients. There must be a minimum, uniform level of acid throughout the mixed product to prevent the growth of botulinum bacteria.

Q. What causes pickles to taste bitter?

A. There are several possible causes for bitter-tasting pickles, including:

- Growing conditions.
- Variety: some varieties are more bitter than others. Use a variety specifically for pickling.
- The short soaking in a salt brine, called for in many recipes, will help draw out bitter juices.
- The bitter taste is usually more concentrated at the stem end of the fruit rather than the blossom end and in the skin or directly beneath the skin, not in a fleshy area around the seeds. Taste a small portion of the stem end before preparing cucumbers. If bitterness is present, it can often be removed by cutting a larger portion off the stem end and by peeling more deeply than usual. Although peeled cucumbers could not be used to make pickles, they could be chopped and used to prepare relishes.
- Use of a salt substitute for pickling could also cause bitterness. Use only canning or pickling salt.

Q. What causes pickles to be hollow?

A. Hollowness in pickles usually results from poorly developed cucumbers, keeping cucumbers too long before pickling, too rapid fermentation, or too strong or too weak a brine during fermentation.

Q. What causes soft or slippery pickles?

A. These generally result from microbial action, which causes spoilage. Once a pickle becomes soft, it cannot be made firm. Microbial activity may be caused by too little salt or acid, cucumbers not covered with brine during fermentation, and scum scattered throughout the brine during fermentation. Other causes are insufficient heat treatment, a seal that is not airtight, and moldy garlic or spices. Blossoms, if not entirely removed from the cucumbers before fermentation, may contain fungi or yeasts responsible for enzymatic softening of pickles.

Q. Why do some pickles turn dark?

A. Use of ground spices, too much spice, iodized salt, overcooking, use of iron utensils, and minerals in water, especially iron, may causes darkness in pickles.

Q. What causes shriveled pickles?

A. Shriveling may result from using too strong a vinegar, sugar, or salt solution at the start of the pickling process. In making very sweet or very sour pickles, it is best to start with a diluted solution and increase it gradually to the desired strength. Overcooking or over processing also causes shriveling.

Q. Why should pickles be processed in a boiling-water-bath canner?

A. Pickle products require heat treatment to destroy organisms that cause spoilage and to inactivate enzymes that may affect flavor, color, and texture. There is always danger of spoilage organisms entering the food when it is transferred from kettle to jar. Adequate heating is best achieved by processing in a boiling-water-bath canner.

Q. Why does sauerkraut turn dark?

A. Darkness in sauerkraut may be caused by unwashed and improperly trimmed cabbage, insufficient juice to cover fermenting cabbage, uneven distribution of salt, exposure to air, high temperatures during fermentation, processing and storage, and long storage period.

Q. What contributes to an undesirable softness in kraut?

A. Softness in kraut may result from insufficient salt, temperatures too high during fermentation, uneven distribution of salt, and air pockets caused by improper packing.

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