

Home Canning: Questions and Answers



Q. What causes jars to break?

- A. Several types of breaks can occur. Each break looks different and has a specific cause.

Thermal shock is characterized by a crack running around the base 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.

An internal pressure break begins on the side of the jar. It is in the form of a vertical crack that forks into two fissures. To prevent pressure breaks:

- Provide enough 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 start 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 break easily. Test new jars that may have been mishandled (to see if they break) by immersing them in room-temperature water, bringing to a boil, and boiling 15 minutes.
- Avoid using metal tools to remove air bubbles.
- Avoid using old jars. Jars have a life expectancy of about 10 years.



Q. How can I know 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 these 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 not sealed.

- Tap the lid with the bottom of a teaspoon. If it makes a dull sound, the lid is not sealed. If food touches 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.
- Hold the jar at eye level and look across the lid. The lid should be concave (curved down slightly in the center). If the 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 water-bath canner or pressure-canner, tightly screw down screwbands and leave in this tightened position. Do not tighten

screwbands after processing. Tightening after processing can break the seal.

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

A. Put on screwbands firmly so they are handtight. If you put them on 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. For this reason, 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.
- Not following manufacturer's directions for preparing flats.
- 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 for home canning.

Q. Can lids and screwbands be reused?

A. Do not reuse flat metal lids with sealing compound. Screwbands in good condition may be reused.

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 inch 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 do not have to be pre-sterilized. It is also not necessary to pre-sterilize 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 steam-pressure canner, you remove the canner from the heat source when the processing time is up. You leave jars in the steam-pressure canner until the pressure returns to zero naturally. This period of time, after jars are removed 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 corrode the metal and make a brown or black deposit on the underside of the lid. This deposit is harmless.

Q. What makes canned foods change color?

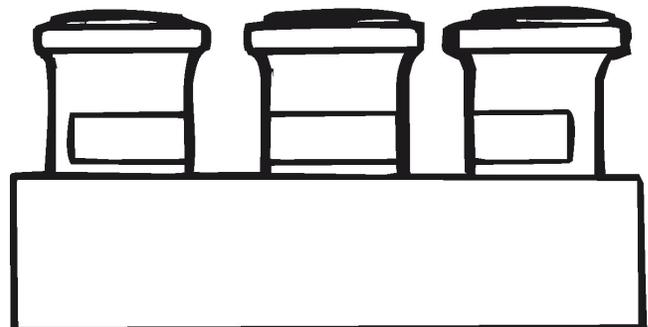
- A. Oxidation may cause foods to darken at the tops of jars. Oxidation is from air in the jars or too little heating or processing to destroy enzymes. Overprocessing may discolor foods throughout the containers. Pink and blue colors sometimes seen in canned pears, apples, and peaches are caused by chemical changes in the coloring matter of the fruit. Iron and copper from cooking utensils (or from water in some locations) may cause brown, black, and gray colors in some foods. When canned corn turns brown, the discoloring may be because of the variety of the corn, the stage of ripeness, overprocessing, or copper or iron pans. Packing liquid may dissolve coloring materials from the foods.

Q. Is it safe to eat discolored canned foods?

- A. The color changes noted do not mean the food is not safe to eat. Spoilage, however, may also cause color changes. Before you use any canned food that has an unusual color, examine it carefully.

Q. Why 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. Temperatures in



open-kettle canning are not high enough to destroy spoilage organisms that may be in food. Spoilage bacteria may also enter the food when it is transferred from kettle to jar. Open-kettle canning is not recommended.

Q. Why is headspace important in canning?

A. Headspace is the distance between the surface of food and the underside of the lid. This space lets food expand as liquid bubbles up during processing. If there is not enough headspace, some food in the container will be forced out, leaving food particles or syrup on the sealing surface and preventing a seal. When there is too much headspace, some air may remain in the jar after processing, causing food at the top of the jar to darken. Adequate headspace allows a vacuum to form during the processing of the food.

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, changing 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, never open a jar and refill with liquid (this would let in bacteria, and you would need to process again). Loss of liquid does not cause food to spoil, though food above the liquid may darken.

Q. Is it 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.

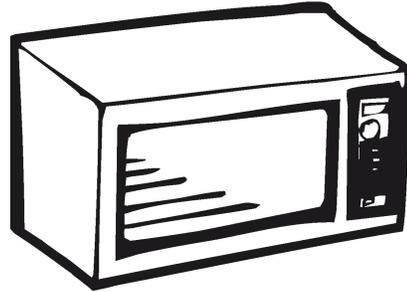
Q. How often should I check a pressure-canner gauge?

A. Check dial gauges each year. Check them more often if the lid is dropped or submerged in water, if 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 I use a pressure saucepan for home canning low-acid foods?

A. Pressure saucepans are not recommended for canning.



Q. Can I use a microwave oven for home canning?

A. No. Low-acid foods must be processed at 240 °F. A microwave can reach only 212 °F. 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 that jars will explode during heating or as you remove the jars from the oven.

Q. Can I use a conventional oven 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 you remove jars from 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

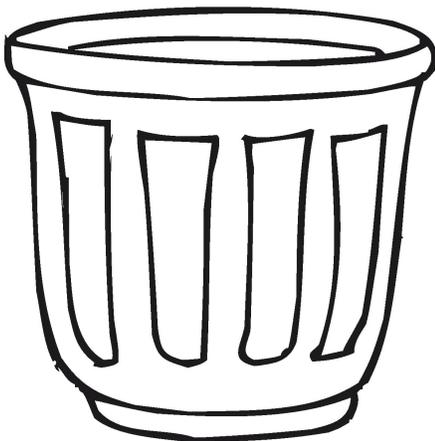
boiling-water canners or pressure canners, using them with boiling-water process times may result in spoilage.

Q. How can I safely dispose of spoiled, home-canned food and clean the jars?

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

- If the swollen metal cans or suspected glass jars are still sealed, place them in a heavy garbage bag. Close and place the bag in a regular trash container or bury in a nearby landfill.
- If the suspect cans or glass jars are unsealed, open, or leaking, you should detoxify them before throwing them away. To detoxify: 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 at least 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 and discard the containers, their lids, and food in the trash, or bury in the soil. 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 wash cloths you used in the cleanup. Place them in a plastic bag and discard in the trash.



Q. How long will canned food keep?

A. Properly canned food stored in a cool, dry place will retain optimum eating quality for at least 1 year.



Canned food stored in a warm place near hot pipes, a range, a furnace, or in indirect sunlight may lose some of its eating quality in a few weeks or months, depending on the temperature. Dampness may corrode cans or metal lids and cause leakage so the food will spoil.

Q. Can I process two layers of jars in a canner at one time?

A. Yes, you can process two layers at one time, in either the boiling water bath or pressure canner. Place a small wire rack between the layers so water or steam will circulate around each jar. Make sure the water covers the tops of all jars by 1 inch in a boiling water bath canner. The pressure canner should have 2–3 inches of water in the bottom.

Q. Is it necessary to exhaust a pressure canner?

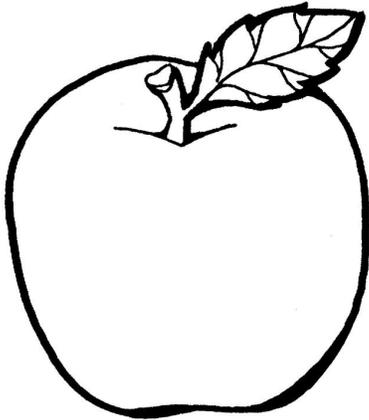
A. Yes, it is very important to let steam escape for 10 minutes before closing the valve or placing the weight on the vent. If the canner is not exhausted, the inside temperature may not correspond to the pressure on the gauge.

Q. Can I can bread or cake in a jar?

A. These products are not recommended for canning; choose recipes that you can freeze. In fact, most of these products are not really “canned.” The directions call for baking in the jar and then closing with a canning lid. Many recipes for quick breads and cakes are low-acid and can support the growth of a bacteria like *Clostridium botulinum* if it is present inside the closed jar.

Q. How do I can oil with herbs? Is it possible to can pesto?

A. Herbs and oils are both low-acid and together can support growth of the disease-causing *Clostridium botulinum* bacteria. You may flavor oils with herbs if you make them up for fresh use, store them in the refrigerator, and use within 2 to 3 days. There are no canning recommendations. Fresh herbs must be washed well and dried completely before you store them in the oil. You must use the very best sanitation and personal hygiene practices. Pesto is an uncooked seasoning mixture of herbs, usually including fresh basil, and some oil. It may be frozen for long-term storage; there are no home canning recommendations.



Fruits and Vegetables

Q. Why should I use a steam-pressure canner 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 °F) higher than that of boiling water (212 °F).

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

A. Salt and sugar are not necessary for safe processing of fruits and vegetable. 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 the pack is too loose or syrup too heavy or because some air remains in tissues of the fruit after heating and processing.

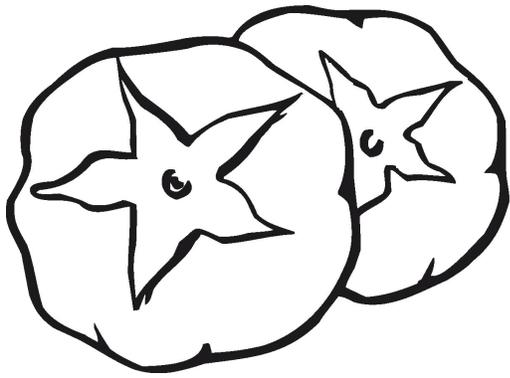
Q. Is it a good practice to puree and home can foods for infants?

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 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 you are canning them as an acid food, you must acidify them. To acidify, add 2 tablespoons of bottled lemon juice or ½ teaspoon citric acid per quart. Add acid directly to the jars before filling with product. Add sugar to offset acid taste, if desired. You may use 4 tablespoons of a 5 percent acidity vinegar per quart 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 darkening. You can use ascorbic acid preparations containing sugar with fruits in proportions suggested by the manufacturer.

Q. There is mold on the surface of my home-canned tomatoes, applesauce, and jelly. Is it all right to remove the mold and use the food?

A. Discard any home-canned food with mold on or in the food. It could be dangerous. It is possible for mold growing on the surface to lower the acidity of the food. If the food becomes low enough in acid, botulism-producing bacteria can start to grow and produce toxin. Even if you scrape the mold off the surface, the toxin remains in the food. Molds, too, produce toxin, so you should discard the food.

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.

Q. Can fruits and vegetables be canned without heating if aspirin is used?



A. No. Aspirin should not be used in canning. It cannot be relied on to prevent spoilage or to give satisfactory products. Adequate heat treatment is the only safe procedure.

Q. Is it safe to can green beans in a boiling water bath if vinegar is used?

A. No. You must use recommended processing methods to assure safety. You cannot shorten recommended processing times if you use vinegar in canning fresh vegetables (this does not refer to pickled vegetables).

Q. Should I precook all vegetables before canning?

A. For best quality, yes. However, some vegetables can be packed raw or cold into jars before being processed in the pressure canner.

Q. What vegetables expand instead of shrink during processing?

A. Corn, peas, and lima beans are starchy and expand during processing. You should pack them loosely.

Q. What causes corn to turn brown during processing?

A. This occurs most often when too high a temperature is used, causing caramelization of the sugar in the corn. It may also be caused by some minerals in the water used in canning.

Q. Why is canning summer squash or zucchini not recommended?

A. Recommendations for canning summer squashes, including zucchini, have been withdrawn because of uncertainty about processing times. Squashes are low-acid vegetables and require pressure canning for a known period of time that will destroy the bacteria that cause botulism. It is best to freeze summer squashes, but you may also dry them.

Q. Can I can my own salsa recipe?

A. Salsas are usually mixtures of acid and low-acid ingredients; they are an example of an acidified food. The specific recipe, and sometimes preparation method, will determine if a salsa can be processed in a boiling water canner or a pressure canner. A process must be scientifically determined for each recipe.



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

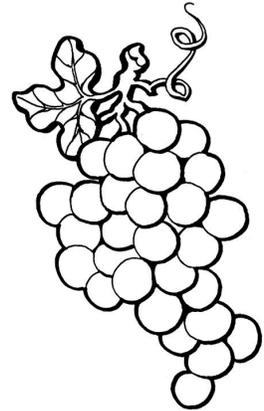
enough, or was not properly packed in jars. To help prevent floating fruit, remove pan from heat as soon as jam is cooked; then alternately stir and skim the jam for 5 minutes.

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 overnight, then strain through two thicknesses of damp cheesecloth to remove crystals.)



Q. What causes jelly to be too soft?

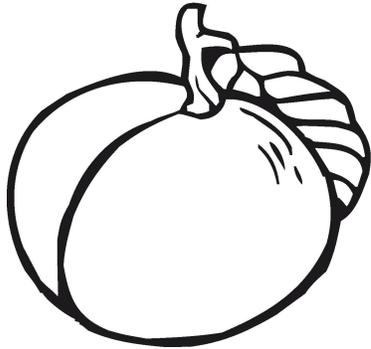
A. One or more of these may be the cause: Too much juice in the mixture. Too little sugar. Mixture not acid enough. Making too big a batch at one time.

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

A. You can sometimes improve soft jellies by recooking according to the directions. It is best to recook only 4–6 cups of jelly at a time.

To remake with powdered pectin: Measure the jelly to be recooked. For each quart of jelly, measure $\frac{1}{4}$ cup sugar, $\frac{1}{4}$ cup water, and 4 teaspoons powdered pectin. Mix the pectin and water and bring to a 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 $\frac{1}{2}$ minute. Remove jelly from the heat, skim, pour into hot containers, seal, and process 5 minutes.

To remake with liquid pectin: Measure the jelly to be recooked. For each quart of jelly, measure $\frac{3}{4}$ cup sugar, 2 tablespoons lemon juice, and 2 tablespoons liquid pectin. Bring jelly to a boil 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 containers, seal, and process 5 minutes in a water bath canner.



Q. What makes jelly syrupy?

A. Too little pectin, acid, or sugar. Too much sugar can also cause syrupy 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) or 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 I use commercial canned or frozen fruit juice to make jelly?

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

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

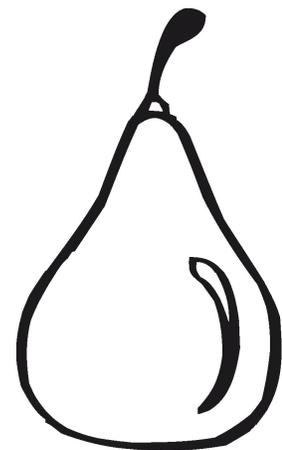
A. You add liquid pectin to the cooked juice or fruit and sugar mixture immediately after you remove it from the heat.

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

A. You add powdered pectin 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 I double a recipe for jam or jelly?

- A. Never double a jelly or jam recipe. If you cook a double batch of jelly or jam 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 I use for making pickles?

- A. Use utensils of unchipped enamelware, stainless steel, aluminum, or glass for heating pickling liquids. 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 I safely change a pickle or relish recipe?

- 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 these:
- 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 the fleshy area around the seeds. Taste a small portion of the stem end before preparing cucumbers. If bitterness is present, often you can remove it by cutting a larger portion off the stem end and by peeling more deeply than usual. Although you cannot use peeled cucumbers to make pickles, you could chop them and use them to prepare relishes.
 - Using a salt substitute for pickling could also cause bitterness. Use only canning or pickling salt.



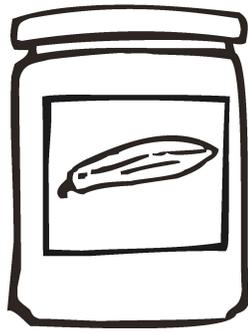
Q. What causes pickles to be hollow?

- 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 microbes, which cause spoilage. Once a pickle becomes soft, it cannot be made firm. Microbes may be caused by too little salt or acid, cucumbers not covered with brine during fermentation,

or scum scattered throughout the brine during fermentation. Other causes are not enough heat, 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 softening of pickles.



Q. Why do some pickles turn dark?

A. Using ground spices, too much spice, iodized salt, overcooking, using iron utensils, and minerals in water, especially iron, may cause 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 pickling. In making very sweet or very sour pickles, you should start with a dilute solution and increase it gradually to the desired strength. Overcooking or overprocessing also causes shriveling.

Q. Why should I process pickles 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 you transfer it 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, no enough 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 not enough salt, temperatures too high during fermenta-

tion, uneven distribution of salt, or air pockets caused by improper packing.

Q. When making quick process pickles, can I store any leftover pickling solution for future use?

A. If the pickling solution is fresh and you have not used it to make pickles, cover it and store it in the refrigerator to use later. If you have used the pickling solution, you can store it in the refrigerator and reuse it in 1 or 2 days for barbeque sauce, coleslaw dressing, or marinade. If mold growth occurs, throw it out.

Q. Why did the liquid in my dill pickles turn pink?

A. Using overmature dill may cause this. If so, the product is still safe. However, yeast growth could also cause this. If yeast growth is evident, discard the pickles. Yeast growth may also make pickles cloudy or slimy.

Q. I don't have the type of dill my recipe calls for. How can I substitute what I have?

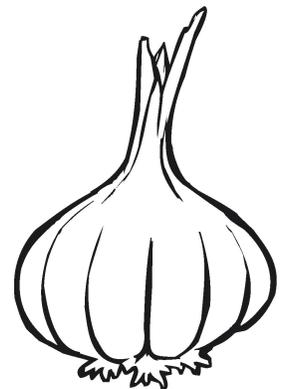
A. For each quart, try three heads of fresh dill or 1–2 tablespoons dill seed (dill weed = 2T).

Q. Can I use burpless cucumbers for pickling?

A. Burpless cucumbers are not recommended for use in fermented pickles. This is because at their normal mature size, they produce a softening enzyme that causes the pickles to soften during fermentation. However, if you use smaller burpless cucumbers (those with small seeds), they may be suitable for making fresh pack pickles. The skins on burpless cucumbers may be tough.

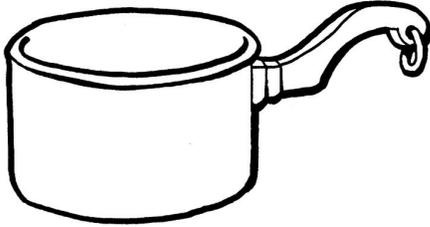
Q. I have an old recipe that calls for adding a grape leaf to each jar of pickles. Why?

A. Grape leaves contain a substance that slows the enzymes that make pickles soft. However, removing the blossom ends (the source of undesirable enzymes) will make adding grape leaves unnecessary.



Q. Why did the garlic cloves in my pickles turn green or bluish green?

- A. This reaction may be because of iron, tin, or aluminum in your cooking pot, water, or water pipes reacting with the pigments in the garlic. Or, the garlic may naturally have more bluish pigment, and it is more evident after pickling. Immature bulbs should be cured 2–4 weeks at 70 °F. The pickles are safe to eat.



Q. I accidentally limed my pickles in an aluminum pan. Will they be safe to eat?

- A. Aluminum is not recommended for use with lime because the lime can pit the container, increasing the aluminum content of the finished product. This is not a procedure you would want to do each time you made pickles. However, one batch of pickles should not cause health problems. If the container, however, is badly pitted, the best option would be to discard it.

Q. I would like to make sweet pickles, but I am diabetic. Can I use an artificial sweetener?

- A. The best approach is to take dill pickle slices, rinse to remove the salty flavor, and sprinkle with artificial sweetener. Allow these to sit in the refrigerator at least 30 minutes before use. Substituting artificial sweeteners for the sugar in sweet pickle recipes is not recommended.

Publication 993 (POD-01-16)

Distributed by Brent Fountain, PhD, RD, LD, Associate Extension Professor, Food Science, Nutrition, and Health Promotion.



Copyright 2016 by Mississippi State University. All rights reserved. This publication may be copied and distributed without alteration for nonprofit educational purposes provided that credit is given to the Mississippi State University Extension Service.

Produced by Agricultural Communications.

We are an equal opportunity employer, and all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, national origin, disability status, protected veteran status, or any other characteristic protected by law.

Extension Service of Mississippi State University, cooperating with U.S. Department of Agriculture. Published in furtherance of Acts of Congress, May 8 and June 30, 1914. GARY B. JACKSON, Director