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TIPS FROM THE
RAPID RESPONSE CENTER

A New Upcoming Resource:

- The University of Georgia and the USDA are publishing a USDA Guide to Freezing Foods at Home. Stay tuned for when it will be available!

Freezing and pickling are popular forms of food preservation. Here are some tips for better frozen foods and tastier pickled products.



Crisp Carrots USDA ARS

What is Blanching?

Foods such as fruits and vegetables contain enzymes that dictate color and flavor changes. The activity of enzymes is temperature dependent. This activity can be destroyed at boiling temperatures but still be active at extremely cold temperatures. For vegetables, blanching for a brief amount of time will inactivate these enzymes and result in a higher quality food.

Vegetables, in particular, are heat blanched with water or steam. Blanching will also destroy surface microorganisms. The food will also shrink slightly for increased freezer storage. The length of time and blanching method depends on the vegetable. It is important to follow

recommended blanching times. Overblanching will result in a cooked product that will lose flavor, color and nutrients. Underblanching will encourage enzyme activity. This can be worse than not blanching at all.

After blanching, the vegetable must be cooled quickly to stop the cooking process. Plunge into ice water for the same amount of time as blanching.

Microwave blanching does not save time or energy. Microwave ovens typically have hot spots which can result in uneven enzyme inactivation. Therefore, microwave blanching is not an effective method.

Source: So Easy to Preserve, Univ. of Georgia

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*Fresh Peaches
USDA ARS*

How Do I Keep Fruit from Browning?

As with vegetables, fruits also contain enzymes. These enzymes cause cut fruits such as pears, apricots, apples and peaches to turn brown when exposed to air. The enzymes will also cause a loss in vitamin C.

Instead of heat blanching, fruit is chemically treated to stop deterioration from enzymes. Ascorbic acid (vitamin C) is used either in its pure form or in a

commercial mixture such as Fruit Fresh®. For proper use of commercial mixtures, follow package directions. Citric acid, lemon juice and sugar syrup alone are not as effective.

Fruits frozen whole, such as berries, do not require an ascorbic acid treatment. Steam blanching is an option for fruits used for cooking only.

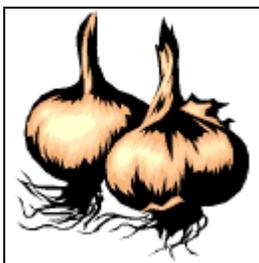
Source: So Easy to Preserve, Univ. of Georgia



Tasty Strawberries
USDA ARS



Freezing does not destroy microorganisms. Freezing slows their growth. Any microorganisms not destroyed prior to freezing can grow and multiply when the food is thawed.



Garlic bulbs

Can Artificial Sweeteners Be Used to Freeze Fruit?

In general, fruits can be frozen without sugar. Adding sugar adds sweetness and helps maintain color and texture. Some consumers use artificial sweeteners in their diet.

Artificial sweeteners can be used when freezing fruit. Simply follow the recommendations on the sweetener

package to determine amount to use in place of sugar. Artificial sweeteners will not provide good color protection or a thick syrup to protect the texture.

If freezing fruit without any sweetener, it can be added when the fruit is thawed just before serving.

Source: *So Easy to Preserve*, Univ. of Georgia

What Foods Should Not Be Frozen?

Freezing is a convenient form of food preservation. There are some foods, however, that do not freeze well. Freezing does not improve foods. The water inside the food expands when frozen causing cell walls to rupture. When these foods thaw, the water will seep out and result in a softer product. Some foods will become tough and rubbery while others become crumbly.

Here are some foods that should not be frozen:

- Leafy vegetables, cucumbers, celery, radishes*
- Baked or boiled potatoes
- Cooked pasta or rice
- Cooked egg whites
- Meringue
- Icings made with egg whites
- Cream, pudding, or custard fillings
- Milk-based sauces

- Sour cream
- Mayonnaise or salad dressing
- Cream cheese or cottage cheese
- Gelatin salads or desserts
- Some fried foods
- Deli salads and sandwich fillings

* Cucumbers and cabbage as part of a marinated slaw can be frozen. The texture, however, will not be the same as fresh slaw.

When growing or purchasing foods for freezing, select varieties recommended for freezing. Extension publications, seed catalogs and growers are good resources. Fruits should be firm when ripe. Vegetables should be young, tender, fresh and not wilted.

Source: *So Easy to Preserve*, Univ. of Georgia

Can Spices and Seasonings Change When Frozen?

While some foods tend to absorb odors from other foods in the freezer, flavor changes may be happening to the spices and seasonings used to flavor the food. Here are some examples:

- Pepper, cloves, garlic, green pepper, imitation vanilla and some herbs can become strong and bitter.
- Onions and paprika can change flavor.
- Celery seasoning gets stronger.

- Curry can become musty.
- Salt loses flavor and can cause rancidity in fatty foods.

To reduce the occurrence of these flavor changes, season foods lightly before freezing. When ready to serve, add more seasonings to enhance the flavors.

Source: *So Easy to Preserve*, Univ. of Georgia



Are Lime and Alum Still Used in Pickling?

Current pickle recipes do not use alum as a firming agent. As long as fresh, high quality ingredients are used, it is not necessary. A safer treatment to make crisp pickles is to soak the cucumbers in ice water for 4 to 5 hours. Alum will not work for quick process pickles. It can be used in fermented pickles. When not used properly, alum can cause digestive problems and leave a bitter taste.

Lime is also known as slaked lime, lime hydrate, or hydrated lime. Its technical name is calcium hydroxide. When buying lime, use only food grade pickling lime. Do not buy agricultural or burnt lime.

Lime can be used when soaking cucumbers for 12 to 24 hours before pickling. Lime will change the acidity

of pickles. Therefore, it is critical to remove excess lime before pickling. To do this, drain the lime-water solution. Rinse the cucumbers and re-soak in fresh water for 1 hour. Repeat this soaking procedure two more times. If this step is not done, the risk of botulism increases. If using lime, do not use more than 1 tablespoon per quart of brine.

Besides lime and alum, another old method to crisp pickles is to add a grape leaf to each jar. The leaves contain a substance that inhibits enzyme activity to make pickles soft. These enzymes come from the blossom end of the cucumbers. Therefore, a recommended alternative is to cut the blossom end of the cucumber off.

Source: So Easy to Preserve, Univ. of Georgia Master Canner, Michigan State University



Pickle slices
Univ. of Georgia



Definitions

Fermented Pickles (Crock Pickles) - curing cucumbers or other vegetables in a salt brine for several weeks.

Fresh Pack or Quick Process Pickles - Not fermented. A hot vinegar and salt (maybe sugar) solution is poured over the pickles before processing. Examples are dill pickles, relishes, and beet pickles.

Refrigerator Pickles - Use only enough vinegar to be safely stored in refrigerator up to 1 month. No heat processing is needed.

Freezer Pickles - A quick method for sweet pickles. When cucumbers and onions are packed in vinegar and sugar they remain somewhat crisp. Best when served chilled. Use within 2 weeks once thawed.

Can I Use Artificial Sweeteners in Making Pickles?

Sugar is used to make sweet pickles. Besides adding sweetness, sugar will plump the pickles and keep them firm. Always use white granulated sugar unless the recipe calls for brown sugar.

Until recently, the use of artificial sweeteners in making homemade pickles was not recommended. Some artificial sweeteners become bitter during storage or are not heat stable.

Since the introduction of Splenda® as an alternative sweetener, many people have asked about using it in homemade pickles. Even though the manufacturer says Splenda® can be used in equal amounts as sugar in some foods, this is not the case with pickles. Researchers at the University of Georgia found that only about half the amount of Splenda® is needed to get a quality pickle. Therefore, they created a pickle recipe using Splenda®. The recipe is as follows:

Sweet Cucumber Pickles
(about 4 or 5 pint jars)

4 pounds cucumbers, medium-sized
4 cups cider vinegar (5% acidity)
1 cup water
3 cups Splenda®
1 Tbsp. canning salt
1 Tbsp. mustard seed
1 Tbsp. whole allspice
1 Tbsp. celery seed
2 cinnamon sticks (optional)

Wash cucumbers. Slice 1/16-inch off blossom ends and discard. Slice cucumbers into 3/16 - 1/4 inch slices. Pour boiling water over the cucumber slices and let stand 5 to 10 minutes. Drain off the hot water and pour cold water over the cucumbers. Let cold water run continuously over the cucumber slices, or change water until cucumbers are cooled. Drain well.

Mix vinegar, 1 cup water, Splenda®, and seasonings. Bring to boil; place drained cucumber slices into the boiling liquid. Return to a boil. Pack hot cucumber slices into hot canning jars, leaving 1/2-inch headspace. Fill jars to 1/2 inch from top with boiling pickling liquid. Placing cinnamon sticks in jars is optional. Remove air bubbles and re-adjust headspace if needed. Wipe jar rims. Adjust two-piece metal canning lids. Process 10 minutes in a **Boiling Water Canner**.
Univ. of Georgia, August 2001

Dill substitutions per quart of pickles

3 heads of fresh dill = 1 to 2 tablespoons dill seed or 2 tablespoons dill weed



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How Much Salt is needed in Pickles?

Many consumers are reducing their sodium intake for health reasons. If they enjoy pickles, they will consume a high amount of sodium. There are some low sodium pickles available to allow these consumers to enjoy pickles.

Why is salt needed in pickles? Salt is the active ingredient in the fermentation process of converting a cucumber to a pickle. It allows the growth of favorable lactic acid bacteria. Salt is a preservative to stop the growth of bacteria, yeast and mold. Using the wrong amount of salt can result in an unsafe pickle. During fermentation, salt changes the acid level which results in color and tissue changes. The bright green cucumber becomes olive or yellow-green. The tissue changes from chalky white and opaque to translucent.

Pickling or canning salt is recommended in making pickles because it is pure salt. All current canning and pickling recipes use this salt. Other salts may contain anti-caking ingredients which can produce a cloudy brine. Iodine will darken the pickles. Other pure salts that could be used are Kosher salt or dairy salt. Be aware that because of differences in granular size, it is best to weigh the amount of salt needed in the

recipe. For example, 1 cup canning or pickling salt weighs 7 ¾ ounces. Kosher flaked salt at that same weight (7 ¾ ounces) is equal to 1 ½ cups.

Plain table salt, iodized salt, sea salt, and salt substitutes are not recommended for fermented pickles. They can be used in quick process pickles, but quality may be compromised. Salt substitutes contain potassium chloride. This compound does not function like sodium chloride in fermentation.

Do not use ice cream salt, rock salt or solar salt. These salts are not food grade and contain impurities to cause defects.

Proper brine strength is important for safe fermentation. The chart below details recommended brine strengths. Do not alter the amount of salt in any recipe. As the fermentation process progresses, the cucumbers soak up salt. Therefore, more salt is added to keep the brine strong. Properly fermented cucumbers will break when bent and become crisp and tender.

*Source: Homemade Pickles and Relishes, Univ. of Wisconsin
The Technology of Food Preservation, 4th ed.*

Recommended Brine Strengths

Brine Strength % salt	Salt per gallon water	Use
5 %	¾ cup (5.8 oz)	Short-term brining of cucumbers, green tomatoes, green beans
10 %	1 ½ cups (11.6 oz)	Starting concentration for brining cucumbers and cauliflower
15 %	2 ¼ cups (19.2 oz)	Final brine strength for cucumbers and cauliflower

Source: Homemade Pickles and Relishes, Univ. of Wisconsin

What Kind of Cucumbers Should Be Used for Pickles?

Recommended cucumber varieties in Kansas for pickling include Earli-pik, Pioneer, Liberty, and others. Pickling cucumbers are firm, blocky in shape, and mild in flavor. Pickles are typically made for 3 to 5 inch cucumbers. Gherkins are 1 to 2 inches. They can be left whole or sliced lengthwise into spears or crosswise into slices.

Slicing varieties and "burpless"

cucumbers are not recommended for fermented or fresh pack pickles. They can be used in relishes or quick process bread and butter pickles. Wax-coated cucumbers are not recommended because of the variety and the pickling solution cannot soak through the skin.

*Source: Homemade Pickles and Relishes, Univ. of Wisconsin
Cucumbers and Melons, KSU, MF668*