



freeze fresh Fruit

Food Preservation

About Freezing and Changes in Fruit During Freezing

Selecting Fruit

Freezing is a simple, convenient, and quick way to preserve fruits. Because of extremely low temperatures, freezing fruits retards the growth of microorganisms and slows down enzyme actions (chemical changes causing browning) that cause food to spoil and affect quality (color and flavor changes and loss of nutrients like vitamin C).

Choose top-quality fruits and follow recommended methods to get high-quality, nutritious foods for year-round enjoyment.

Approximate Amount Needed to Yield 1 Pint of Frozen Fruit

<i>Fruit</i>	<i>Fresh</i>	<i>Fruit</i>	<i>Fresh</i>
Apples	1¼ to 1½ pounds	Peaches	1 to 1½ pounds
Berries	1⅓ to 1½ pounds	Pineapple	1¼ pounds
Cantaloupes	1 to 1¼ pounds	Plums	1 to 1½ pounds
Cherries	1¼ to 1½ pounds	Raspberries	1 pint
Cranberries	½ pound	Rhubarb	⅔ to 1 pound
Nectarines	1 to 1½ pounds	Strawberries	⅔ quart

Preventing Browning in Fruits

Pretreatment Procedure

Because people like the uncooked texture of fruits, they are not blanched before freezing to inactivate the enzymes that cause browning. Vitamin C (ascorbic acid) in its pure form or in commercial mixtures may be used to inactivate enzymes permanently. Other methods, such as placing fruit in citric acid or lemon juice solutions or in sugar syrup, offer temporary solutions to browning; however, these do not prevent browning as effectively as vitamin C.

- To prevent discoloration of peaches, apricots, pears, pineapple, and apples, cut fruit into a solution of 3 tablespoons bottled lemon juice to 1 quart of cold water. Drain well.
- In addition, use ascorbic acid or a commercial product to keep fruits from discoloring. Ascorbic acid solution can be made by mixing 1 teaspoon of ascorbic acid crystals, or six 500-milligram vitamin C tablets, in 1 gallon of water. Use 2 tablespoons of the mixture per each quart of fruit. Add at the last minute.

Use the commercial product according to the manufacturer's directions.

Selecting Containers for Freezing Fruit

Containers should be moisture-vapor resistant, durable, easy to handle, and *made for food storage*. Some common containers are:

- Dual-purpose glass jars (for either canning or freezing) are tapered for ease in removing frozen foods. Jars must be sterilized before use. To sterilize empty jars, put them right side up on the 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 14 minutes. Remove and drain hot sterilized jars one at a time.
- Rigid polyethylene boxes come in different sizes. Lids should fit tightly.
- Paperboard cottage-cheese-type cartons are not airtight, but they can be used if a plastic bag is used to line the carton.
- Protective cartons may be necessary if plastic bags will be moved around in the freezer.
- Boil-in-bag pouches can be used. When packaging, be sure to press out as much air as possible before sealing.
- Use ripe but not soft or mushy fruit. Wash, sort, and prepare (peel, trim, pit, halve, or slice).
- Fruit can be packed without sugar, in dry sugar, or in syrup. Different packing methods lend themselves to different uses. Experiment with all three methods to discover which you like best. Unsweetened fruits lose quality faster than those packed in sugar or syrup.
- Headspace is necessary to allow for expansion during freezing.
- Liquid pack – fruit packed in juice, syrup, sugar, or water; crushed fruit or juice.

Packaging and Headspace Requirements

Headspace Requirements in Different Types of Packing and Container Openings

Type of Pack	Containers with Wide-top Opening		Containers with Narrow-top Opening	
	Pint	Quart	Pint	Quart
Dry pack	¾ inch	1 inch	1 inch	1 inch
Liquid pack	1½ inch	1½ inch	2 inches	2½ inches

Labeling

Be sure to label containers using freezer or masking tape and felt-tipped pen or waxed pencil. Include name of product, date, type of pack, and other information you want.

Freezing Guidelines

- Freeze fruits soon after they are picked.
- Place containers in contact with freezing surfaces in coldest part of freezer.
- Set freezer dial at lowest setting so that foods will freeze at 0° F (-18° C) or below.
- Space at least 1 inch apart to promote rapid freezing. After freezing, packages can be placed close together and stored at 0° F (-18° C).
- Freeze small amounts of food at a time – not more than the amount that will freeze within 24 hours. This is no more than 2 pounds of food per cubic foot of freezer capacity per day. Overloading the freezer slows the rate of freezing. This lowers the quality of the product and promotes spoilage.

Freezing With Sugar

Most fruits maintain high quality for 8 to 10 months if stored at 0° F or below; citrus fruits keep for 4 to 6 months.

Dry sugar pack: Procedure – Place food in shallow container. Sprinkle sugar over fruit—about ½ to ¾ cup of sugar for each quart of fruit. Mix gently with a large spoon until juice is drawn from fruit and sugar is dissolved. Pack into containers and leave recommended headspace; cover with a piece of crumpled wax paper or plastic wrap.

Syrup pack – Select the syrup according to the natural sweetness or tartness of fruit. A 20% or 30% syrup is suitable for most fruits. About ½ to ⅔ cup of syrup is needed for each pint package of fruit.

Measures of Water and Sugar for Approximately 9 Pints of Fruit

Syrup Type	Approx. % Sugar	Cups Water	Cups Sugar
Very Light	10	6½	¾
Light	20	5¾	1½
Medium	30	5¼	2¼
Heavy	40	5	3¼
Very Heavy	50	4¼	4¼

Procedure: Make syrup well in advance because it must be cold before being poured over fruit. Heat water and sugar together. Bring to a boil. Let cool. Place fruit into container and then pour cold syrup over fruit; or fill container about ¼ full with syrup and slice fruit directly into syrup. Add more syrup if needed. Leave headspace as directed. Hold fruit under syrup with crumpled piece of waxed paper or plastic wrap.

Freezing Without Sugar

Tray pack – Spread a single layer of prepared fruit on shallow trays. Freeze and package immediately.

Dry pack – Pack prepared fruit in containers with no sugar, syrup, or other liquid. Some berries can be packaged this way, but their freezer life is short.

Liquid pack – Noncaloric sweeteners can be used instead of sugar. For better flavor, however, freeze with plain water or fruit juice and add the sweetener at time of serving.

Using Frozen Fruits

Thaw unopened in refrigerator or at room temperature. Texture is best when some ice crystals remain. Fruits packed in syrup are generally best for uncooked desserts. Fruits packed in granulated sugar or packed unsweetened are best for cooking purposes.

Preparation of Specific Fruits

Apples

Whole Apples:

Peel, quarter, and core. Can be frozen raw – syrup packed, dry sugar packed, or packed without sugar. Dip in lemon juice solution (see Pretreatment Procedure). Drain and add ascorbic acid solution before packing. Slices can be steamed first and then sugar packed – ½ cup sugar over a quart of sliced apples. To steam: place slices in a single layer in steamer and steam 1½ to 2 minutes. Drain and cool.

Apples

Applesauce:

Prepare with or without sugar. Cool. For better flavor, add spices just before serving the thawed product.

Berries

Blackberries, boysenberries, loganberries:

Syrup pack is preferred method for berries to be served uncooked. Whole berries can also be dry sugar packed or packed unsweetened.

Blueberries and huckleberries:

To tenderize skins, steam 1 minute. Cool and pack as directed.

Strawberries:

Remove caps. Can be used whole or sliced. Can be syrup packed or packed dry, with or without sugar. Sprinkle with 2 tablespoons ascorbic acid solution per each quart of fruit before packing.

Cherries

Sour:

Remove pits. Dry sugar pack is best for pies ($\frac{2}{3}$ cups sugar to 1 quart cherries). Add ascorbic acid solution, as directed, before packing.

Sweet:

Chill in cold water. Remove pits if desired. Pack in syrup, dry sugar, or pack with no sweetener. Add 2 tablespoons ascorbic acid solution, as directed, before packing.

Citrus: Grapefruit and Oranges

Section fruit; remove membranes and seeds. Cover with syrup, using excess fruit juice as part of liquid. For better color quality, add 2 tablespoons ascorbic acid solution to each quart of fruit.

Other

Peaches and Nectarines:

Peel and pit. For better product, peel without boiling water dip. Slice into lemon juice solution, as directed. If dry packing, sugar packing, or water packing, add ascorbic acid solution, as directed, before packing. If syrup packing, slice peaches directly into syrup and add ascorbic acid solution.

Rhubarb:

Cut in 1- or 2-inch pieces. Can be packed raw, but heating in boiling water for 1 minute and cooling promptly will help retain flavor and color. Can be syrup packed or dry sugar packed. Can be packed unsweetened.

Revised August 2011

For More Information

Credits

Reviewed and revised by Litha Sivanandan, Food Safety and Food Preservation Specialist

Contact Litha Sivanandan, 304-293-7684 or email at Litha.Sivanandan@mail.wvu.edu

Adapted from WP-103; updated and reviewed by Sheila Rye, Graduate Student, and Guendoline Brown, Ph.D., Nutrition and Health Specialist, 1999.

Programs and activities offered by the West Virginia University Extension Service are available to all persons without regard to race, color, sex, disability, religion, age, veteran status, political beliefs, sexual orientation, national origin, and marital or family status. Issued in furtherance of Cooperative Extension work, Acts of May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture. Director, Cooperative Extension Service, West Virginia University.

FH11-197