



FREEZING VEGETABLES

Directions for Blanching

Blanching in boiling water is recommended. Use large amounts of water and small amounts of vegetables so that the water boils again quickly after the vegetable is added. For most vegetables, use a gallon (4 quarts) water per pound of prepared vegetable; for leafy vegetables such as spinach use two gallons of water per pound.

See timetable for length of time to blanch. Use a large kettle and wire basket or cheesecloth. Heat water to a vigorous boil. Place vegetable in basket or cloth and plunge into boiling water. Cover kettle and start counting time when water returns to boil. Keep heat high for time given. As soon as vegetable is scalded, remove from kettle and plunge in ice cold water. Cool quickly to 50°F or lower. Drain, pack and freeze. You may reuse the boiling water. Use loose or tray pack.

Packages for Fruits and Vegetables

Rigid plastic boxes – available in pints, 1 ½ pints, quarts, and larger sizes. Check lids for tight fit or use freezer tape. Leave ½” head space.

Plastic bag and box combination – If bags are used without boxes, double bagging is necessary. Also double bag when freezing large amounts of loose pack foods.

Glass freezer jars – specially tapered jars for ease in removing food and tempered to withstand wide temperature range.

Approximate Amount of Fresh Vegetable to Yield 1 Pint Frozen

Asparagus - 1 to 1 ½ pounds	Beans, green snap, wax – 2/3 to 1 pounds
Beans, lima (in pods) - 2 to 2 ½ pounds	Beets (without tops) - 1 ½ pounds
Broccoli - 1 pound	Brussels sprouts - 1 pound
Carrots (without tops) - 1 ½ pounds	Cauliflower - 1 1/3 pounds
Corn, sweet (in husks) - 2 to 2 ½ pounds	Eggplant – 1 ½ to 2 pounds
Peas (in pods) - 2 to 2-1/2 pounds	
Greens: beet tops, chard, mustard, spinach - 1 to 1-1/2 pounds	

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Freezing Basics

Freezing is the easiest, most convenient, and least time-consuming method of preserving foods. Freezing does not sterilize foods or destroy the organisms that cause spoilage; the extreme cold simply slows the growth of microorganisms and the chemical changes that affect quality or cause spoilage.

Enzymes are complex proteins, present in all living tissue, that help organisms ripen and mature. During freezing, enzyme action is slowed but not stopped. If not inactivated, these enzymes can cause color and flavor changes and loss of nutrients during freezing storage.

Blanching vegetables before freezing inactivates the enzymes. During blanching, the vegetable is exposed to boiling water or steam for a brief period of time. The vegetable is then rapidly cooled in ice water to prevent cooking. The use of microwave ovens for blanching has become popular. However, microwave blanching produces uneven results because of varied heat patterns within an oven and from one oven to another. Microwave blanching requires working with only small quantities at a time; there is no time saving when working with large quantities of vegetables.

Blanching also helps destroy microorganisms on the surface of the vegetables. When blanched, vegetables such as broccoli and spinach become more compact. Following the recommended times for blanching each vegetable is important. Overblanching results in a cooked product and loss of flavor, color, and nutrients. Underblanching stimulates enzyme activity and is worse than no blanching at all.

Enzymes in fruits can cause browning and loss of Vitamin C. Fruits, however, are not usually blanched. Instead, ascorbic acid (Vitamin C) is used to control enzymes in frozen fruits. Commercial mixtures of ascorbic acid are available for home use. Citric acid or lemon juice also may be used to prevent darkening of fruits, but they are not as effective as ascorbic acid. Packing fruit in sugar or sugar syrup also will control browning.

Freezer Storage

To maintain top quality, store frozen fruits and vegetables at 0 degrees Fahrenheit (F) or lower. Storing frozen foods at temperatures higher than 0 degrees F increases the rate of deterioration and shortens the shelf life of foods. Fluctuating freezer temperatures can cause the ice in foods to thaw slightly and then refreeze. Every time this happens, the smaller ice crystals form larger ones, further damaging cells and creating a mushier product.

Moisture loss, or ice crystals evaporating from the surface of a product, produces freezer burn – a grainy, brownish spot where the tissues become dry and tough. Freezer-burned food is likely to develop off flavors, but it will not cause illness. Packaging in heavyweight, moisture-resistant wrap will prevent freezer burn.

Containers for Freezing

Foods for the freezer must have proper packaging materials to protect their flavor, color, moisture content, and nutritive value. Select packaging materials with these characteristics:

- Moisture and vapor resistant
- Durable and leakproof
- Resistant to oil, grease and water
- Not susceptible to becoming brittle and cracking at low temperatures
- Able to protect foods from absorbing other flavors or odors
- Easy to seal
- Easy to label

Suitable packaging materials include rigid plastic containers with straight sides, glass jars made for freezing and canning, heavy-duty aluminum foil, moisture-vapor resistant bags, and paper.

Containers intended for short-term storage, such as bread wrap; cottage cheese, milk, or ice cream cartons; regular aluminum foil; or waxed paper do not provide effective protection against flavor and moisture loss or freezer burn during long-term storage.

Plastic containers designed for long-term freezer storage may or may not be suitable for direct use in a microwave oven.

Packaging Foods

Cool all foods and syrup before packing. Pack foods in quantities that are usable for a single meal.

Pack cold foods tightly into containers. Because most foods expand on freezing, allow ample headspace (space between food and closure). The amount of space needed will vary depending on the food and size of containers. When packing food in bags, press out excess air before sealing. Label and date each package. It is also helpful to list number of servings on the label.

For quick freezing, spread packages among already frozen foods. Leave a small space between packages and add only the amount of unfrozen food to the freezer that will freeze within 24 hours, about 2 to 3 pounds of food to each cubic foot of freezer capacity.

Freezing Pointers

1. Freeze food at 0 degrees F or lower. To freeze foods rapidly, set the temperature control at -10 degrees F or lower 24 hours in advance.
2. Freeze foods when they are packaged and sealed.
3. Do not overload your freezer with unfrozen food. Overloading slows down the freezing rate, and foods that freeze too slowly may lose quality.
4. Place packages in contact with refrigerated surfaces in the coldest part of the freezer.
5. Leave a little space between packages so air can circulate freely. Then, when the food is frozen, store the packages close together.

What to Do If Your Freezer Stops

Keep the freezer closed. If it looks like the freezer will be stopped or more than 24 hours, use dry ice (if you can get it) or move the food to another freezer. Thawed fruits that smell and taste good can be refrozen. Thawed fruits can be used in cooking, baking, or making jams and jellies. Vegetables containing ice crystals or at 40 degrees F or below can be refrozen. Thawed vegetables in good condition can be cooked in soups, stews, or casseroles and then frozen.

Examine meats and poultry for color changes or off odors. Only refreeze packages that still contain ice crystals or are cold to touch (40 degrees F or below). Repackage in moisture and vapor-proof wrap. Discard any thawed meat or poultry. Ground meat cold to touch should be cooked before refreezing.

Recommended Books on Freezing

Ball Blue Book (Vol. 1) (1995). Ball/Alltrista Corporation. Muncie, Indiana.

Kerr Home Canning and Freezing Guide (1996). Published by Kerr Glass Manufacturing Corporation, P.O. Box 76961, Los Angeles, California 90067.

So Easy to Preserve (Third Ed.) (1993). Cooperative Extension Service, University of Georgia, College of Agriculture, Athens, Georgia.

References

Your Freezer Stopped! Nancy Layman and Sharon L. Mader, County Extension Agents, Home Economics, Cooperative Extension Service, the Ohio State University.

So Easy to Preserve (Third Ed.) (1993). Cooperative Extension Service, University of Georgia, College of Agriculture, Athens, Georgia.

VEGETABLES: How to Prepare for Freezer Storage

First carefully wash the vegetable and discard all material not up to standard, then follow directions given below	BLANCHING		
	Quantity of vegetable	Amount of boiling water	Time in water
Asparagus Discard tough stalks. Cut tips either into lengths to fit the cartons or into pieces 1 inch long then blanch.	1 lb.	6 qt.	3 mins.
Beet greens Use tender young leaves. Wash thoroughly and blanch.	1 lb.	6 qt.	2 mins.
Beets Use tender beets not more than 2 inches in diameter. After blanching (actually cooking in this instance) cool, remove skins and slice or dice.	1 lb.	3 qt.	25-30 mins.
Broccoli Use heads and tender portions of stalks. Cut through stalks so that pieces of heads are not more than 1 inch across, then blanch.	1 lb.	5 qt.	3-4 mins.
Brussels sprouts Select fairly small, solid sprouts of good quality. Halve larger ones before blanching.	1 lb.	5 qt.	4 mins.
Cauliflower Divide flowerlets into pieces about 1 inch long and ¾ to 1 inch in diameter, then blanch.	1 lb.	6 qt.	4 mins.
Corn Use sweet corn in the milk stage. Remove husk and silks. Cut corn from cob after blanching.	8 medium ears	5 qt.	4 mins.
Dandelion greens Use only tender young leaves. Wash thoroughly, then blanch.	1 lb.	8 qt.	3 mins.
Lima beans Hull green lima beans of even maturity, then blanch.	1 lb.	4 qt.	3 mins.

Mushrooms Use tender button or medium-size mushrooms. Wash in 2% salt solution (1 ½ level tablespoons of salt to 1 qt. water). Cut off ends of stems. Brown lightly in butter 3 to 5 mins. or blanch button size for 3 mins., medium size for 5 mins.	1 lb.	4 qt.	3-5 mins.
Peas Hull sweet, tender peas, then blanch.	1 lb.	4 qt.	1 ½ mins.
Rhubarb Use tender stalks, cut into ¾ inch pieces, then blanch.	1 lb.	2 ½ qt.	1 ½ mins.
Snap beans Choose young, tender, stringless beans. Remove ends, cut into 1 inch pieces or lengthwise strips, then blanch.	1 lb.	4 qt.	3 mins.
Soybeans Use green soybeans of edible variety. Blanch in pods, then cool and hull.	1 lb.	2 qt.	5 mins.
Spinach Select tender green leaves and stalks. Wash thoroughly and blanch.	1 lb.	5 qt.	1-2 mins.
Squash, summer Choose young tender squash. Slice and cut into pieces, then blanch (or cook as for serving). Put through sieve, cool, and package for freezing.	1 lb.	5 qt.	4 mins.
Squash, winter Halve, remove pits, peel, and cube. Steam or boil until tender. Put through sieve, cool, and package for freezing.	XX	XX	XX
Swiss chard Use tender, young leaves. Wash thoroughly and blanch.	1 lb.	4 qt.	2 mins.
Tomato juice Wash tomatoes, quarter, and simmer for ten minutes. Strain off juice and add ½ teaspoon salt for each pint.	XX	XX	XX