

Consumer and Family Sciences

Department of Foods and Nutrition



Freezing Vegetables at Home

Adapted by
April C. Mason, Ph.D.;
William D. Evers, Ph.D.,
RD;
and Erin Hanley, RD



Freezing is one of the simplest and least time-consuming ways to preserve many vegetables, and frozen vegetables are convenient to use. They are ready to serve on short notice because most of the pre-table preparation is done before freezing. Many vegetables can be frozen satisfactorily. However, the quality of the frozen product varies with the kind of packaging, quality of vegetable, stage of maturity, type of pre-freezing treatment, and rate of freezing. If you have doubts about how well a vegetable will freeze, test-freeze three or four packages, using the directions given in this publication. Sample the food after freezing. This test shows only the effect of the freezing process. To test the effect of storage, you would need to leave the packages frozen for a longer period of time. Try a week and then a month of storage to see if the quality of the vegetable is acceptable to you.

Selecting the right freezing container

Much of the success of home freezing depends on choosing the right freezer container or wrap. If vegetables are not properly packaged when they are put in the freezer, they will lose moisture, color, and nutritional value and develop an off-flavor. For example, the evaporation of ice crystals can produce freezer-burn, a dry, grainy, discolored area, which makes food unattractive and unappetizing. The use of proper freezing containers and packaging methods controls or prevents freezer burn.

Glass, metal, and rigid plastic containers that are made especially for freezing are excellent packaging selections because they effectively control evaporation. Bags, wrapping materials, and waxed cartons made for freezing are also sufficiently moisture- and vapor-resistant. But

ordinary waxed papers and paper cartons from purchased dairy products are not durable enough or moisture- and vapor-resistant enough to be suitable for freezer packaging.

All containers used for freezing should be leakproof and easy to seal. Packaging materials must be durable and must not become brittle enough to crack at low temperatures.

Preparing vegetables for freezing

Fresh, tender vegetables right from the garden are best for freezing. The fresher the vegetable, the better the frozen product.

Washing is the first step in preparing vegetables for freezing. Wash vegetables thoroughly in several changes of cold water. Lift them completely out of the water with each change of water so grit can settle to the bottom of the pan and be discarded following each washing.

Peel, trim, and prepare the vegetables according to the directions for each specific vegetable given in Table 1. Unless vegetables are to be cut into uniformly sized pieces, they should be sorted according to size.

Blanching or heating before packing

An important step in preparing most vegetables for freezing is heating, also called ‘blanching.’ When a vegetable is picked, the enzymes responsible for the changes during growth and ripening continue to be active. This can lead to off-flavors, discoloration, and texture changes in the picked vegetable. Heating vegetables stops this enzyme activity. If a vegetable is not heated prior to freezing, enzyme activity will continue even at freezer temperatures.

In addition, heating wilts or softens vegetables and makes them easier to pack. It also kills microorganisms, brightens the color, and helps retain nutritional value during freezing. The heating or blanching time varies with the kind of vegetable and size of pieces. Timing is important. Underblanching can stimulate the activity of some enzymes and is worse than not blanching at all. Overblanching results in loss of vitamins, minerals, flavor, and color. See the directions in Table 1 for heating times of specific vegetables.

Blanching in boiling water

There are several methods you can use to heat vegetables. The most satisfactory way to heat-treat most vegetables is in boiling water. If you do not have a blancher, you can use a large, covered kettle with a wire basket or a cheesecloth bag.

Put vegetables in a blanching basket or wire basket, or tie them in a cheesecloth bag. Lower into vigorously boiling water. Allow at least 1 gallon of boiling water for each pound of prepared vegetable. Check to be sure the vegetables are completely immersed in boiling water, put the lid on, and start timing immediately. Keep the heat on high during blanching.

The same water can be reused several times for blanching; just be sure to bring it back to a vigorous boil before adding vegetables.

Blanching by steam

Steam heating is recommended for a few vegetables. For broccoli, pumpkin, and winter squash, both steaming and boiling are satisfactory methods; for mushrooms, steaming or pan-frying is suggested.

Steam single layers of vegetables in a wire basket over boiling water. Use a steamer or a kettle with a tight lid. Start counting steaming time as soon as lid is placed on the steamer or kettle. Time carefully to prevent over- or under-heating.

Other ways to blanch

Pumpkin, sweet potatoes, and winter squash may be heated in a pressure cooker or in the oven before freezing. Mushrooms may be heated in a small amount of fat in a frying pan.

Cooling after heating

After vegetables are heated, they should be quickly and thoroughly cooled to stop the cooking process. To cool blanched or steam-heated vegetables, plunge them into a large quantity of cold water — 60° F or below — as soon as heating is completed. Keep the chilling water ice cold! If you use ice, you'll need about 1 pound of ice for each pound of vegetables.

It will take about as long to cool a vegetable as it did to heat it. When the vegetable is thoroughly cooled, remove it from the water and drain thoroughly.

To cool vegetables heated in the oven, pressure cooker, or frying pan, set the pan of vegetables in ice water, and change water often to speed cooling.

Packing vegetables

Pack your vegetables in containers without liquid. Dry packing is recommended for all vegetables because it makes preparation for freezing and serving easier. The following tips will help you in the final steps of packing vegetables.

- Pack cooled vegetables into meal-sized containers. Do not add salt.
- Pack vegetables tightly to cut down on the amount of air in the package.
- If you pack vegetables in bags, press air out of the unfilled part of the bag. Press firmly to prevent air from getting back in. Seal immediately.

Table 1. Preparation and Blanching Time for Freezing Vegetables

Vegetable	Preparation	Water Blanching Time (In minutes)
Asparagus (young, tender stalks; compact tips)	Leave whole or cut into desired lengths. Alternate tips and stems when packaging. Leave no head space.	Small stalks ... 2 Medium stalks ... 3 Large stalks ... 4
Beans, lima (well-filled pods containing green, young, tender beans)	Shell and sort.	Small beans or pods ... 2 Medium beans or pods ... 3 Large beans or pods ... 4
Beans: snap, green, wax (young, tender, stringless)	Cut in 1- or 2-inch pieces, or slice lengthwise into strips.	3
Broccoli (compact dark green heads; tender stalks)	Soak in salt water (4 teaspoons salt/gallon water) for 30 minutes to drive off insects. Cut stalks to fit lengthwise, leaving about 1- to 1½-inch flowerets with each stalk for more uniform blanching. Leave no head space.	(May steam for 5 minutes)
Brussels sprouts (firm, compact heads of green color)	Remove coarse outer leaves. Leave no head space.	Small heads ... 3 Medium heads ... 4 Large heads ... 5
Carrots (small, tender)	Leave small carrots whole. Slice, dice, or cut larger carrots into strips.	Whole ... 5 Sliced, diced, or strips ... 2
Cauliflower (compact, white, tender heads)	Break into flowerets about 1-inch in diameter. Soak in salt water 30 minutes to drive off insects (4 teaspoons salt/gallon water). Rinse in clear water, and drain. Work rapidly to prevent discoloration. Leave no head space.	In salt water (4 tsp. per gallon) ... 3
Corn, whole sweet (plump, tender kernels at optimum maturity)	Husk, remove silks, trim ends, blanch, and chill. After blanching and chilling, cut corn from cob about ⅔ depth of kernel.	4
Corn, on-cob (same as whole corn)	Husk, remove silks, wash, and sort according to size. Blanch and chill. Package into containers, or wrap in moisture- and vapor-resistant material. Small ears are less than 1¼ inches in diameter. Large ears are over 1½ inches in diameter.	Small ears ... 7 Medium ears ... 9 Large ears ... 11
Greens (young, tender leaves)	Remove tough stems, and discard all infected leaves. Cut leaves into pieces as desired.	Collard ... 3 Most others ... 2 Very tender leaves ... 1½

- Allow ample space between the product and the top of the container. This is called “head space.” When using the dry pack, allow ½ inch of head space. Vegetables that pack loosely, such as broccoli and asparagus, require no head space.
- Keep sealing edges free from moisture or food, so that you can make a good closure. Seal carefully.

- Label packages plainly. Include the name of vegetable, date of pack, and any special treatment given the vegetable. Use gummed labels, colored tape, crayons, or waxed pens made especially for labeling frozen food packages.

Table 1. Preparation and Blanching Time for Freezing Vegetables (continued)

Vegetable	Preparation	Water Blanching Time (In minutes)
Herbs: basil, dill, marjoram, mint, parsley, rosemary, sage, tarragon	Wash, drain, trim, or chop. Use in cooked dishes, because herbs become limp when thawed. Add frozen herbs directly to food being cooked.	No heat treatment required.
Mushrooms (young, firm, free from spots and decay)	Mushrooms more than 1 inch across should be sliced or cut in quarters. For better color soak for 5 minutes in a solution of 1 teaspoon lemon juice or 1½ teaspoons of citric acid and 1 pint of water prior to blanching.	Steam: Whole ... 5 Buttons or quarters ... 3½ Slices ... 3 or Heat in fry pan with a small amount of fat until almost done.
Onions (top quality, fully matured)	Freezing may affect texture. Peel, chop, slice, or leave whole. Wrap in amount used most often (e.g. ¼ to ½ cup). Place small packages in another container. Use in 2 or 3 months.	No heat treatment required.
Peas, green (bright green, plump, firm pods with sweet, tender peas)	Wash pods. Shell a few at a time; delay between shelling and freezing toughens skins.	1½
Peppers, sweet (green, firm, crisp, thick-walled)	Trim; cut out stems and seeds. Heat treatment is not necessary for peppers used in uncooked foods. Heated peppers are easier to pack and good for use in cooking. Leave no head space.	Halves ... 3 Slices ... 2
Potatoes, whole	Remove bruises and green-colored surface. Cut into ¼- to ½-inch cubes. French fries: Peel potatoes, and cut into thin, ¾-inch strips. Rinse in cold water to remove surface starch, and dry thoroughly with towel. Partially fry in hot fat, at 360° F until very light golden brown. Prepare just enough potatoes at one time to cover the bottom of the basket. Drain well, and chill.	(Depending on size) 3-5
Pumpkin (full-colored, mature) and Winter squash (firm, mature)	Cut into quarters or small pieces. Remove seeds. Cook until tender by heating in boiling water, in steam, in a pressure cooker, or in the oven. Remove from rind, and mash.	No additional heating required.
Summer squash (young, small seeds; tender rind)	Cut in ½-inch slices.	3
Sweet potatoes (medium or large, mature, cured)	To prevent darkening, dip for 5 seconds into a solution of 1 tablespoon citric acid or ½ cup lemon juice to 1 quart of water before heating. Cook, following directions for pumpkin. Then cut in halves or slices or mash. Add 2 tablespoons orange or lemon juice to each quart of mashed sweet potatoes to prevent darkening during freezing.	No additional heating required.

Directions for freezing vegetables

Prepare vegetables for freezing according to the directions in Table 1. Proper containers, blanching, and cooling will improve the quality. Allow adequate head space for expansion in the container during freezing. Again, this is usually $\frac{1}{2}$ inch unless otherwise indicated in directions. Seal and freeze immediately.

Table 2. Timetable for Cooking Frozen Vegetables in Water*

Vegetable	Minutes
Asparagus	5-10
Beans (lima):	
Large type	6-10
Baby type	15-20
Beans (snap, green, or wax):	
1-inch pieces	12-18
Julienne	5-10
Beet greens	6-12
Broccoli	5-8
Brussels sprouts	4-9
Carrots	5-10
Cauliflower	5-8
Chard	8-10
Corn:	
Whole-kernel	3-5
On-the-cob	3-4
Kale	8-12
Mustard greens	8-15
Peas (green)	5-10
Spinach	4-6
Squash (summer)	10-12
Turnip greens	15-20

* After water returns to boil

Loading the freezer

Freeze vegetables as soon after they are packed as possible. Put no more unfrozen food into a home freezer than will freeze within 24 hours. This is usually 2 or 3 pounds of food for each cubic foot of freezer space. Slow freezing causes a poor quality frozen product and possible spoilage. For quickest freezing, place packages against freezing plates or coils, and leave a little space between packages so air can circulate freely.

After packages are frozen, you may rearrange them so they are close together. Most vegetables maintain high quality for 12 to 18 months at 0° F. Longer storage will not make food unfit for use, but may lower quality.

It is a good idea to keep an up-to-date inventory of foods in your freezer. List the foods as you put them in, and check them off as you remove them from the freezer.

Using frozen vegetables

Cook frozen vegetables until just tender, so that their nutritional value, bright color, and fresh flavor will be preserved. Frozen vegetables may be cooked in a small amount of water in a saucepan, in a pressure saucepan, by baking, or by pan-frying. The following directions will help you cook frozen vegetables to perfection.

Cooking in a saucepan

Most vegetables are cooked without thawing. Leafy vegetables cook more evenly if thawed enough to separate the leaves before cooking. Corn on the cob should be partially thawed before cooking, so that the cob will be heated through by the time the corn is cooked. Holding corn after thawing or cooking causes sogginess.

For most vegetables, boil about $\frac{1}{2}$ cup of lightly salted water for each pint of frozen vegetable. The exceptions are lima beans, which require 1 cup of water per pint of beans, and corn on the cob, which requires water to cover. Put the frozen vegetables in the boiling water, and cover the pan. The frozen vegetable will lower the water temperature. It is important to bring the water back to a boil quickly. There is no need to boil vigorously; a gentle boil will do. Cook until the vegetable is just tender (see Table 2 for cooking times for specific vegetables). Add seasonings if desired, and serve immediately.

Cooking in a pressure saucepan

Follow the manufacturer's directions for cooking frozen vegetables in your pressure saucepan.

Baking

Partially defrost vegetables to separate pieces, and put them into a greased casserole, adding seasonings if desired. Cover, and bake until just tender.

For most vegetables, baking time is approximately 45 minutes at 350° F (moderate oven). Slightly more time may be required if other foods are being baked at the same time or if the vegetable is in large pieces. To bake corn on the cob, partially thaw the ears first. Brush with melted butter and salt, and roast at 400° F (hot oven) for about 20 minutes.

Pan frying

Place about 1 tablespoon of fat in a heavy fry pan, and add 1 pint of partially thawed frozen vegetable. Cover and cook over moderate heat, stirring occasionally. Season to taste, and serve immediately.

Peas, asparagus, and broccoli require about 10 minutes to pan-fry, mushrooms, 10 to 15 minutes, and snap beans, 15 to 20 minutes.

Other ways to prepare frozen vegetables

Precooked frozen vegetables need only to be heated and seasoned. Cooked frozen vegetables can be used in many dishes. They may be creamed, scalloped, served au gratin, or added to soufflés, soups, or salads. Frozen pumpkin may be thawed and used in pie fillings.

Frozen french fries may be deep fat fried at about 400° F until golden brown. Single layers of frozen french fries may be heated in a 450° F oven until thoroughly heated, about 15-20 minutes.

This publication was originally prepared by Betty Rehfeld, Ph.D., former Extension Specialist, Foods and Nutrition, Cooperative Extension Service, Purdue University.

Related publications

Contact the Extension office in your county for copies of the following related publications, or download pdf files directly from the World Wide Web.

CFS-583-W, *Let's Preserve Tomatoes*

www.ces.purdue.edu/extmedia/CFS/CFS-583-W.pdf

CFS-592-W, *Let's Preserve Leafy Greens*

www.ces.purdue.edu/extmedia/CFS/CFS-592-W.pdf

CFS-593-W, *Let's Preserve Peppers*

www.ces.purdue.edu/extmedia/CFS/CFS-593-W.pdf

CFS-594-W, *Let's Preserve Snap Beans*

www.ces.purdue.edu/extmedia/CFS/CFS-594-W.pdf

CFS-595-W, *Let's Preserve Sweet Corn*

www.ces.purdue.edu/extmedia/CFS/CFS-595-W.pdf

CFS-596-W, *Let's Preserve Pickles*

www.ces.purdue.edu/extmedia/CFS/CFS-596-W.pdf

CFS-610-W, *Let's Preserve Sauerkraut*

www.ces.purdue.edu/extmedia/CFS/CFS-610-W.pdf

You also can order publications from:

Ag Comm — MDC

Purdue University

1187 Service Building

West Lafayette, IN 47907-1187

Order by e-mail to Media.Order@ces.purdue.edu or by fax to Ag Comm-MDC at (765) 496-1540 or by telephone to (765) 494-6794 or 888-EXT-INFO (398-4636)

REVIEWED 12/01

It is the policy of the Purdue University Cooperative Extension Service, David C. Petritz, Director, that all persons shall have equal opportunity and access to the programs and facilities without regard to race, color, sex, religion, national origin, age, marital status, parental status, sexual orientation, or disability. Purdue University is an Affirmative Action employer.

This material may be available in alternative formats.

1-888-EXT-INFO

<http://www.agriculture.purdue.edu/AgComm/>