

Freezing Vegetables

Fact Sheet No. 9.330

Food and Nutrition Series | Preparation

by P. Kendall*

Freezing is an excellent way to preserve fresh vegetables. The quality of frozen vegetables depends on the quality of the fresh products and how they are handled from the time they are picked until they are ready to eat. It is important to get the product from the garden to the freezer in as short a time as possible. It is important, also, to start with high-quality vegetables, as freezing will not improve the product's quality.

Blanching and prompt cooling are necessary steps in preparing practically every vegetable, except herbs and green peppers, for freezing. The reason is that heating slows or stops the enzyme action. Enzymes help vegetables grow and mature. After maturation, however, they cause loss of quality, flavor, color, texture and nutrients. If vegetables are not heated enough, the enzymes continue to be active during frozen storage and may cause the vegetables to toughen or develop off-flavors and colors. Blanching also wilts or softens vegetables, making them easier to pack. It destroys some bacteria and helps remove any surface dirt.

Selecting Freezing Containers

Select containers best suited to the vegetable. Square or rectangular flat-sided containers make the best use of freezer space. Good quality moisture- and vapor-proof packaging materials made of glass or rigid plastic are best. They prevent drying of the food during freezer storage. Moisture- and vapor-resistant bags and waxed cartons designed for freezing also retain satisfactory quality.

*P. Kendall, Ph.D., R.D., Colorado State University, associate dean of research, food science and human nutrition. 1/2013

Selecting and Preparing Vegetables

Use vegetables at peak flavor and texture. When possible, harvest in the cool part of the morning and freeze within two hours. Wash vegetables thoroughly in cold water, lifting them out of the water as grit settles to the bottom of the washing container. Sort by size for blanching and packing.

Blanching Vegetables

Most vegetables may be blanched in boiling water or steam.

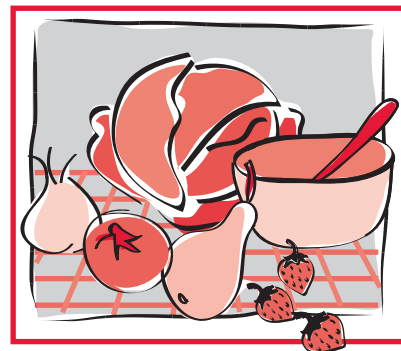
Blanching in Boiling Water

To blanch vegetables in boiling water, bring at least 1 gallon of water to a rapid boil in a blancher or large kettle with a lid. Lower a pound of prepared vegetables placed in a metal basket or cheesecloth bag into the boiling water and cover with a lid. Start counting time as soon as the vegetables are in the boiling water. Keep heat on high for the total blanching time specified in Table 1.

Follow the recommended blanching time for each vegetable. Under-blanching may stimulate enzyme activity and could be worse than no blanching. Prolonged blanching causes loss of vitamins, minerals, flavor and color.

Steam Blanching

Heating in steam is another way to blanch vegetables. Steam blanching takes somewhat longer than water blanching but helps retain water-soluble vitamins. Steam-blanching times are given in Table 1 for those vegetables that steam most successfully.



Quick Facts

- The quality of frozen vegetables depends on the quality of the fresh produce.
- Blanching and prompt cooling are essential in preparing most vegetables, except herbs and green peppers, for freezing.
- Blanch vegetables by placing them in boiling water or steam.
- There are two basic packing methods recommended for frozen vegetables: dry pack and tray pack.
- Most vegetables maintain high quality for 12 to 18 months at 0 degrees F.

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To steam vegetables, bring 1 to 2 inches of water to a rolling boil in a kettle with a tight-fitting lid and a rack that holds a steaming basket or cheesecloth bag at least 3 inches above the bottom of the kettle. Put a single layer of vegetables in the basket or bag so steam can reach all parts quickly. Place the basket or bag on the rack in the kettle, cover and keep heat on high. Start counting steaming time as soon as the lid is on.

After vegetables are heated, cool quickly and thoroughly to stop the cooking. To cool vegetables heated in boiling water or steam, plunge the basket of vegetables immediately into a large quantity of cold water that is 60 degrees Fahrenheit (F) or below. Change water frequently or use cold running or iced water. Use about 1 pound of ice for each pound of vegetables. It takes about as long to cool the food as to heat it. When vegetables are cooled, remove from the water and drain thoroughly.

Pre-Cooking Prior to Freezing

Some foods are best preserved by pre-cooking prior to freezing. Pumpkin, sweet potatoes and winter squash may be heated in a microwave oven, pressure cooker or oven until soft, then chunked or pureed or for storage in meal-sized portions using the dry pack method. Mushrooms may be

lightly sautéed in butter or margarine, then cooled and dry packed. Stewed tomatoes may be prepared ahead, then frozen in meal-size portions. See specific directions in Table 1.

Packing Methods

There are two basic packing methods recommended for frozen vegetables: dry pack and tray pack.

To dry pack, place the blanched and drained vegetables into meal-sized freezer bags or containers. Pack tightly to cut down on the amount of air in the package. Leave 1/2-inch headspace at the top of rigid containers and close securely. For freezer bags, fill to within 3 inches of top, twist and fold back top of bag, and tie with a twist tape or rubber band about 1/2- to 3/4-inch from the food. This allows space for the food to expand. Provision for headspace is not necessary for foods such as broccoli, asparagus and Brussels sprouts that do not pack tightly in containers.

To tray pack, place chilled, well-drained vegetables in a single layer on shallow trays or pans. Place in freezer until firm, then remove and quickly fill

labeled bags or containers. Close and freeze immediately. Tray-packed foods do not freeze in a block but remain loose so that the amount needed can be poured from the container and the package reclosed.

Labeling and Storing

Label packages with the name of the product and the freezing date. Freeze at once at 0 degrees F or lower. Because speed in freezing is important for best quality, put only as much unfrozen vegetables into the freezer at one time as will freeze in 24 hours, usually 2 to 3 pounds per cubic foot of freezer capacity.

For quickest freezing, place packages at least 1 inch apart against freezer plates or coils. After vegetables are frozen, rearrange packages and store close together. Most vegetables maintain high quality for 12 to 18 months at 0 degrees F or lower. Longer storage will not make food unfit for use, but may impair quality. It is a good idea to post a list of the frozen vegetables near the freezer and to check off packages as they are used.

References

Freezing of Vegetables, FDNS-E043-5. J.A. Harrison and E.L. Andress. University of Georgia Cooperative Extension Service, Athens, GA, 2000.

Table 1
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Table 1. Vegetable freezing guide. (Note: Blanching times given are for 5,000 feet or higher. At altitudes below 5000 feet, subtract one minute from times given.)

| Vegetable | Preparation |
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| Asparagus | Select young, tender stalks with compact tips. Remove or break off tough ends and scales. Wash thoroughly. Sort for size. Cut to fit containers or in 2-inch lengths. Blanch medium stalks 4 minutes in boiling water, 5 minutes in steam. Blanch large stalks 5 minutes in boiling water, 6 minutes in steam. Cool and drain dry. Pack without headspace, alternating tips and stem ends of spears. |
| Beans, green | Select young, tender stringless beans. Wash thoroughly, remove ends, sort for size. Cut into 1- to 2-inch pieces, leave whole, or slice into lengthwise strips. Water blanch 4 minutes. Chill and drain. Dry pack with headspace, or tray pack. |
| Beans, lima | Select well-filled pods containing green beans. Wash, shell and sort. Water blanch 3-5 minutes, depending on size. Cool and drain dry. Tray pack or dry pack with headspace. |
| Beans, green soybeans | Select firm, well-filled, bright green pods. Wash. Water blanch 6 minutes. Cool and drain. Squeeze soybeans out of pods. Dry pack with headspace, or tray pack. |
| Beets | Select beets 3 inches in diameter or less. Wash; sort for size. Remove tops, leaving 1/2-inch stems. Cook in boiling water until tender: 25-30 minutes for small beets, 45-50 minutes for medium-sized beets. Cool and drain; peel, slice or cube. Dry pack with headspace. |
| Broccoli | Select tender, dark green stalks. Wash; peel and trim stalks. To remove insects from heads, soak 30 minutes in a solution of 4 teaspoons salt per gallon of water. Rinse and drain. Split lengthwise into pieces not more than 1 1/2 inches across. Blanch in steam 6 minutes or boiling water 4 minutes. Cool and drain. Dry or tray pack without headspace. |
| Brussels sprouts | Select green, firm, compact heads. Wash, trim. Soak in salt solution (see broccoli) 30 minutes to drive out insects. Rinse and drain. Water blanch 4-6 minutes depending on size of head. Cool and drain. Dry pack without headspace. |
| Cabbage | Wash. Trim coarse outer leaves of solid heads. Cut heads into medium or coarse shreds, thin wedges or separate into leaves. Water blanch 2 1/2 minutes. Cool and drain. Dry pack with headspace. |
| Carrots | Select tender, mild-flavored carrots. Remove tops; wash and peel. Leave whole if small; dice or slice larger carrots 1/4-inch thick. Water blanch whole carrots 6 minutes, diced or sliced carrots 3 minutes. Cool and drain. Dry pack with headspace. |
| Cauliflower | Choose firm, tender, snow-white heads. Break or cut into pieces 1 inch across. Wash well. Soak 1/2 hour in salt solution (see broccoli) if needed to drive out insects. Rinse and drain. Blanch 4 minutes in boiling water containing 4 teaspoons salt per gallon of water. Cool and drain. Dry pack without headspace. |
| Corn, cut | Husk, remove silk, trim ends and wash. Water blanch 5 minutes. Cool and drain. Cut kernels from cob. Dry pack with headspace, or tray pack. |
| Corn-on-the-cob | Husk, remove silk, wash, and sort for size. Water blanch small ears 8 minutes, medium ears 10 minutes and large ears 12 minutes. Cool and drain. Pack in plastic freezer bags without headspace. |
| Eggplant | Peel, cut into slices 1/3-inch thick. To preserve color, drop pieces into a solution of 4 teaspoons salt per gallon of water. Water blanch 5 minutes in the same proportions of salt and water. Cool and drain. Tray pack or dry pack in layers separated by sheets of locker paper. |
| Greens | Wash young, tender leaves well. Remove tough stems and imperfect parts. Cut in pieces, if desired. Water blanch tender spinach leaves 2 1/2 minutes; beet greens, kale, chard, mustard greens, turnip and mature spinach leaves 3 minutes; and collard greens 4 minutes. Cool and drain. Dry pack with headspace. |
| Herbs | Wash, drain, trim or chop. Tray freeze. Use in cooked dishes, as product becomes limp when thawed. |
| Mushrooms | Select mushrooms free of spots or decay. Sort for size. Wash and drain. Trim off ends of stems. Slice or quarter mushrooms larger than 1 inch across. Dip mushrooms to be steam blanched for 5 minutes in a solution of 1 teaspoon lemon juice or 1 1/2 teaspoons citric acid per pint of water. Steam whole mushrooms 6 minutes; quarters or slices 4-4 1/2 minutes. Cool and drain. Mushrooms also may be lightly sauteed in butter or margarine and cooled. Dry pack with headspace. |
| Onions | Wash, peel and chop fully mature onions. Water blanch 2 1/2 minutes; cool and drain. Also may freeze without blanching. Tray pack or dry pack with headspace. Use in cooked products. Will keep 3-6 months. |
| Peas, green | Select bright green, plump, firm pods with sweet, tender peas. Shell. Water blanch 2 1/2 minutes. Cool and drain. Dry pack with headspace. |
| Peas, sugar, or snow pod | Wash, remove stems, blossom end and any strings. Leave whole. Water blanch 3 1/2 minutes. Cool and drain. Dry pack with headspace, or tray pack. |
| Peppers, green, sweet | Select firm, crisp, thick-walled peppers. Wash; cut out stems. Cut in half, remove seeds. Cut into strips or rings, if desired. Water blanch halves 4 minutes, slices 3 minutes for tighter packing and use in cooked dishes. Cool and drain. Freeze without blanching for use in salads and as garnishes. Dry pack blanched peppers with headspace. Tray or dry pack unblanched peppers without headspace. |
| Peppers, hot, condiment | Wash and stem peppers. Dry or tray pack in small containers without headspace. |

Table 1. Vegetable freezing guide. (Note: Blanching times given are for 5,000 feet or higher. At altitudes below 5000 feet, subtract one minute from times given.)

| Vegetable | Preparation |
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| Peppers, chili | Wash. Make a small slit in the side for steam to escape. Heat in 400-450 F oven 6-8 minutes or until skins blister. Cool in ice water for a crisp product. For a more thoroughly cooked product, wrap in a hot damp towel and allow to steam 15 minutes. Freeze without peeling or slit side, peel off skin and remove stem, seeds, membranes. Flatten to remove air, fold in half. Dry pack with waxed paper between single layers leaving headspace, or tray pack. |
| Pimentos | Wash. Roast in oven at 400 F for 3-4 minutes. Rinse in cold water to remove charred skins. Drain. Dry pack with headspace, or tray pack. |
| Potatoes | Wash and peel; remove eyes, bruises, green spots. Cut in 1/4- to 1/2-inch cubes. Water blanch 4-6 minutes. Cool and dry pack with 1/2-inch headspace, or tray pack. For hash browns, cook in jackets until almost done. Peel and grate. Form in desired shapes. Pack and freeze. For French fries, peel and cut in thin strips. Rinse and dry. Fry in fat heated to 360 F for 4 minutes or until golden. Drain and cool. Dry pack with headspace, or tray pack. |
| Pumpkins and winter squash (banana, butternut, Hubbard, buttercup) | Wash; cut into pieces and remove seeds. Cook pieces until soft in boiling water, steam, microwave oven, pressure cooker or 350-400 F oven (cut side down). Cool. Scoop out pulp; mash, blend or put through sieve. Chill thoroughly. Pack with headspace. |
| Rutabagas | Cut off tops of young, medium-sized rutabagas, wash and peel. Cut into cubes and water blanch 3 minutes. Cool, drain and dry pack with 1/2-inch headspace, or tray pack. For mashed rutabagas, cut into chunks and cook until tender in boiling water. Drain, mash, cool thoroughly and pack in containers with headspace. |
| Squash, (zucchini, yellow, white scallop) | Select young squash with small seeds and tender rind. Wash, cut in 1/2-inch slices. Water blanch 4 minutes. Cool summer and drain. Dry pack with headspace. |
| Sweet potatoes | Select medium to large mature sweet potatoes that have been air-dried (cured). Sort for size; wash. Cook until almost tender in water, steam, pressure cooker or oven. Cool at room temperature. Peel; cut in halves, slice, or mash. To prevent darkening, dip halves or slices in solution of either 1 tablespoon citric acid or 1/2 cup lemon juice per quart of water for 5 minutes. For mashed sweet potatoes, mix 2 table-spoons orange or lemon juice with each quart. Dry pack with headspace. |
| Tomatoes, juice | Wash, sort and trim firm tomatoes. Cut in quarters or eights. Simmer 5 to 10 minutes. Press through sieve. Season with 1 teaspoon salt per quart of juice, if desired. Pour into containers, leaving 1 1/2-inch headspace. |
| Tomatoes, stewed | Wash ripe, blemish-free tomatoes. Scald 2-3 minutes to loosen skins; peel and core. Cut into pieces and freeze or simmer 10-20 minutes until tender. Cool and dry pack with 1/2-inch headspace. |
| Turnips; parsnips | Select tender, firm, mild-flavored small to medium turnips or parsnips. Wash, peel, cut into 1/2-inch cubes. Water blanch 3 minutes. Cool and drain. Dry pack with headspace. |