

Quality for Keeps: Freezing Vegetables

Frozen foods can add variety to your meals year-round. As with any method of food preservation, following specific guidelines will assure you of high-quality, safe food. For more information, refer to other guides in the Quality for Keeps freezer series.

Blanching

Blanching, a process of scalding vegetables in boiling water or steam for a short time, is a must for almost all vegetables to be frozen, except onions and green peppers. Blanching slows or stops the action of enzymes. Until harvest, enzymes cause vegetables to grow and mature. If vegetables are not blanched, or not blanched long enough, enzymes continue to be active during frozen storage, causing off-colors, off-flavors and toughening.

Additionally, blanching cleanses the surface of dirt and spoilage organisms, brightens the color, and helps slow the loss of vitamins. It also wilts or softens vegetables, making them easier to pack.

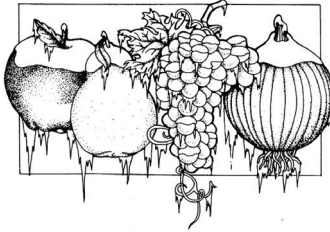
Blanching time is crucial and varies with the vegetable and the size of the pieces to be frozen. Underblanching speeds enzyme activity and is worse than no blanching. Overblanching causes loss of flavor, color, vitamins and minerals. Follow recommended blanching times for specific vegetables.

Water blanching

For home freezing, the best way to blanch vegetables is in boiling water. Use a blancher with a basket and cover, or fit a wire basket into a large kettle with a lid.

Use 1 gallon of water per pound of prepared vegetables. Using these proportions, the water should continue to boil when vegetables are lowered into water. Put vegetables in a blanching basket and lower into vigorously boiling water. Place a lid on the blancher. Start counting blanching time as soon as the water returns to a boil. Keep heat high so that water continues to boil throughout the blanching process. See recommended blanching times for specific vegetables.

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Steam blanching

Heating in steam is the recommended method for grated summer squash and sprouts. For broccoli, pumpkin, sweet potatoes and winter squash, both steaming and boiling are acceptable methods. Steam blanching takes about 1½ times longer than water blanching.

To steam vegetables, use a pan with a tight-fitting lid and a basket that holds the food at least 3 inches above the bottom of the pan. Put 1 to 2 inches of water in the pan, bring to a boil, and leave on high throughout the blanching process.

Place vegetables in the basket in a single layer so that steam reaches them equally. Cover the pan, and start counting time as soon as the lid is on.

Microwave blanching

Research has shown that microwave blanching is not always an effective method because, as some enzymes may remain active. This could result in low-quality frozen vegetables with off-colors, off-flavors and poor texture. If blanching is done in a microwave oven, follow the manufacturer's instructions. Microwave blanching does not save time or energy.

Cooling

As soon as blanching is complete, cool vegetables quickly and thoroughly to stop the cooking process. To cool, immediately plunge the basket of vegetables into cold water. Change water frequently, or use cold running water or iced water. If you use ice, you need about 1 pound of ice for each pound of vegetables. Cool vegetables for the same amount of time as they were blanched. Drain vegetables thoroughly after cooling. Extra moisture can cause a loss of quality when freezing vegetables.

Thawing and using

Follow the guidelines below to keep frozen vegetables safe and preserve their color, flavor, texture and nutritive value:

- Don't thaw frozen vegetables before cooking, with the following exceptions. Corn-on-the-cob should be thawed so the kernels will not be warmed while the cob interior is still cold. Additionally, greens, broccoli and asparagus will cook more uniformly if thawed

slightly and broken apart before cooking. Thaw in the refrigerator or under cold running water. Never thaw at room temperature.

- When cooking frozen vegetables, bring a small amount of water to boil and add the frozen vegetables. Bring water to a boil again, cover the pan, and lower the heat. Cook until vegetables are fork tender, usually about half the cooking time for the same fresh vegetable. See Table 2 for a timetable for cooking frozen vegetables.
- Prepare only enough frozen vegetables for one meal. Any leftovers could be used in salad. Do not refreeze frozen vegetables that have been cooked.

Other methods of cooking frozen vegetables include steaming, stir frying, pressure cooking or microwaving. Frozen vegetables can be added without thawing to soups or stews. Add them near the end of cooking to prevent texture loss. Many frozen vegetables can be baked in a covered, greased casserole dish in the oven. Partially thaw and separate pieces first. Although baking time for frozen vegetables varies, the approximate time for baking most partially thawed vegetables is 45 minutes at 350 degrees F. Thawing in the oven is not a time- or energy-efficient method, however, unless other foods are being baked in the oven at the same time.

Freezing instructions for specific vegetables

Asparagus

Select tender young spears. Wash thoroughly, and sort into sizes. Trim stalks and remove scales with a sharp knife. Cut into even lengths to fit containers.

Water blanch small spears 2 minutes, medium spears 3 minutes, and large spears 4 minutes. Promptly cool, drain, package, seal and freeze.

Beans: green, snap or wax

Select tender young pods when the seed is first formed. Wash in cold water. Cut into 1- or 2-inch pieces, or slice lengthwise.

Water blanch 3 minutes. Promptly cool, drain, package, seal and freeze.

Beans: lima, butter or pinto

Harvest while the seed is in the green stage. Wash, shell, and sort according to size.

Water blanch small beans 2 minutes, medium beans 3 minutes, and large beans 4 minutes. Promptly cool, drain, package, seal and freeze.

Beets

Select uniformly deep red, tender young beets. Wash, and sort according to size. Trim tops, leaving ½ inch of stem and taproot to prevent bleeding of color during cooking.

Cook beets in boiling water until tender, or 25 to 30 minutes for small beets; 45 to 50 minutes for medium beets. Cool promptly in cold water. Peel, and remove stem and taproot. Cut into slices, julienne strips or cubes. Package, seal and freeze.

Broccoli

Select firm, tender young stalks with compact heads. Remove leaves and woody portions. Separate heads into convenient-size sections, immerse in brine (4 teaspoons salt to 1 gallon water) for 30 minutes to remove insects, and drain. Split lengthwise so flowerets are no more than 1½ inches across.

Water blanch 3 minutes in boiling water, or steam blanch 5 minutes. Promptly cool, drain, package, seal and freeze.

Brussels sprouts

Select green, firm and compact heads. Trim, removing coarse outer leaves. Wash thoroughly, immerse in brine (4 teaspoons salt to 1 gallon of water) for 30 minutes to remove insects, and drain. Sort into small, medium and large sizes.

Water blanch small heads 3 minutes, medium heads 4 minutes, and large heads 5 minutes. Cool promptly, drain, package, seal and freeze.

Cabbage (including Chinese cabbage)

Frozen cabbage and Chinese cabbage are suitable for use only as a cooked vegetable. Select freshly picked, solid heads. Trim coarse outer leaves from head. Cut into medium to coarse shreds or thin wedges, or separate head into leaves.

Water blanch for 1½ minutes. Promptly cool, drain, package, seal and freeze.

Types of packs

Dry pack

Dry packing is recommended for all vegetables because it results in a quality product and preparation for freezing and serving is easier. After vegetables are blanched, cooled and drained, package quickly in rigid freezer containers or freezer bags. Remove as much air as possible from bags. Leave ½ inch of headspace for rigid containers. Seal tightly, label and freeze.

Tray pack

A variation of dry packing is tray packing. After vegetables are blanched, cooled and drained, spread in a single layer on shallow trays and freeze. Leave in the freezer just long enough to freeze firm. Longer exposure to dry freezer air will result in a loss of moisture and quality. When frozen, promptly package without headspace, seal tightly, label and return to the freezer. The advantage of tray packing is that vegetable pieces remain loose and can be poured from the container, and the package can be reclosed.

Tips for successful freezing

- Select varieties suitable for freezing. Check a seed catalog or ask the grower.
- Work under sanitary conditions.
- Select tender young vegetables of good quality that are fresh from the garden. Freezing does not improve quality. Sort for size, ripeness and color.
- If the vegetables cannot be frozen immediately, refrigerate them.
- To maintain quality and nutrients, work with small quantities at a time, enough for only a few containers.
- Wash and drain all vegetables before removing skins or shells. Wash small lots at a time through several changes of cold water. Lift the produce out of the water so the dirt washed off will not get back on the food. Do not let the vegetables soak.
- Yields vary depending on the condition of the produce and the preparation and packing methods used. See Table 1 for the approximate yield of frozen vegetables from fresh.
- Prepare each vegetable as directed in this guide. Refer to MU Extension publication GH1501, *Freezing Basics*, for more detailed information on the freezing process and recommended storage times.

Table 1. Approximate yield of frozen vegetables from fresh.

Vegetable	Fresh (as purchased or picked)	Frozen (pints)
Asparagus	1 crate (12 2-pound bunches) 1–1½ pounds	15–22 1
Beans, lima (in pods)	1 bushel (32 pounds) 2–2½ pounds	12–16 1
Beans, snap, green and wax	1 bushel (30 pounds) ¾–1 pound	30–45 1
Beets (without tops)	1 bushel (52 pounds) 1¼–1½ pounds	35–42 1
Broccoli	1 crate (25 pounds) 1 pound	24 1
Brussels sprouts	4 quart boxes 1 pound	6 1
Carrots (without tops)	1 bushel (50 pounds) 1¼–1½ pounds	32–40 1
Cauliflower	2 medium heads 1½ pounds	3 1
Greens (chard, collard and mustard)	1 bushel (12 pounds) 1–1½ pounds	8–12 1
Corn, sweet (in husks)	1 bushel (35 pounds) 2–2½ pounds	14–17 1
Eggplant	2 average	2
Kale and spinach	1 bushel (18 pounds) 1–1½ pounds	12–18 1
Okra	1 bushel (26 pounds)	34–40
Peas (in pods)	1 bushel (30 pounds) 2–2½ pounds	12–15 1
Peppers, green	¾ pound (3 peppers)	1
Pumpkin	50 pounds 1½ pounds	30 1
Squash, summer	1 bushel (40 pounds) 1–1¼ pounds	32–40 1
Squash, winter	3 pounds	2
Sweet potatoes	¾ pound	1
Tomatoes	1 bushel (45 pounds) ^a	26–34
Tomatoes, for juice	1 bushel (45 pounds) ^a	20–28

^aAs defined by the Missouri Department of Agriculture.

Carrots

Select tender young coreless carrots. Remove tops; wash and peel. Leave small carrots whole. Cut others into thin slices, ¼-inch cubes, or lengthwise strips.

Water blanch small whole carrots 5 minutes, diced or sliced 2 minutes, and lengthwise strips 2 minutes. Promptly cool, drain, package, seal and freeze.

Cauliflower

Choose compact, snow-white heads. Trim off leaves. Cut head into pieces about 1 inch across, immerse in brine (4 teaspoons salt to 1 gallon of water) for 30 minutes to remove insects, and drain.

Water blanch for 3 minutes in water containing 4 teaspoons salt per gallon of water. To prevent darkening, add 2 to 3 tablespoons of lemon juice per gallon of blanching water. Promptly cool, drain, package, seal and freeze.

Celery

Celery loses its crispness when frozen. The frozen product is suitable only for cooked dishes. Select crisp, tender stalks, free from coarse strings. Wash thoroughly. Trim and cut stalks into 1-inch lengths.

Water blanch for 3 minutes. Promptly cool, drain, package, seal and freeze.

Corn

Select only tender, freshly-gathered corn in the milk stage. Husk and trim the ears, remove silks, and wash.

Corn-on-the-cob

Water blanch small ears (less than 1¼ inches in diameter) for 7 minutes, medium ears (1¼ to 1½ inches in diameter) for 9 minutes, and large ears (more than 1½ inches in diameter) for 11 minutes.

Cool promptly and completely to prevent a “cobby” taste. Drain, package, seal and freeze.

Whole-kernel corn

Water blanch 4 minutes on the cob. Promptly cool and drain. Cut kernels from cob about two-thirds the depth of the kernels. Package, seal and freeze.

Cream-style corn

Water blanch 4 minutes on the cob. Cool promptly and drain. Cut off kernel tips and scrape cobs with the back of a knife about half the depth of the kernel to remove the juice and the heart of the kernel. Package, seal and freeze.

Another way to prepare cream-style corn for freezing is to cut and scrape the corn from the cob without blanching. Place the cut corn in a double boiler, and heat with constant stirring for about 10 minutes, or until it thickens; cool by placing the pan in ice water. Package, seal and freeze.

Dill

Do not wash dill. Break dill heads off stems. Place heads in rigid containers, seal and freeze.

Eggplant

Harvest before seeds become mature and when color is uniformly dark. Wash and peel. If eggplant is to be fried, cut in ½-inch slices. For casseroles or mixed vegetables, dice or cut in strips. Work quickly, preparing only enough eggplant for one blanching.

Water blanch diced pieces or strips 2 minutes in 1 gallon of boiling water containing 4½ teaspoons citric acid or ½ cup lemon juice. Slices of ½ inch should be blanched for 4 minutes. Cool, drain, package, seal and freeze.

Note: Slices to be fried should be packed between sheets of freezer wrap for easy removal.

Greens

Types: Beet, chard, collard, kale, mustard, spinach and turnip greens.

Select tender young green leaves. Wash thoroughly, and cut off woody stems. Cut leaves of chard into pieces.

Water blanch collards 3 minutes and all other greens 2 minutes. Blanch tender young leaves 1½ minutes. Cool, drain, package, seal and freeze.

Note: Do not steam blanch greens.

Fresh herbs

Wash, drain, and pat dry with paper towels. Wrap a few sprigs in freezer film wrap, and place in a freezer bag. Seal and freeze.

Chop and use in cooked dishes. Herbs prepared in this way are usually not suitable for garnish, as they become limp when thawed.

Kohlrabi

Select tender young, mild-flavored kohlrabi, small to medium in size. Cut off tops and roots. Wash and peel. Leave whole, or dice into ½-inch cubes.

Water blanch whole kohlrabi 3 minutes and cubes 1 minute. Cool promptly, drain, package, seal and freeze.

Okra

Select tender young pods. Separate into small pods (4 inches or under) and large pods. Wash. Remove stems at the end of the seed pods, being careful not to cut into the seed pod.

Water blanch small pods 3 minutes and large pods 4 minutes. Promptly cool and drain. Leave whole, or slice crosswise. Package, seal and freeze.

For frying

After blanching, coat okra with cornmeal or flour. Tray freeze in a single layer on shallow trays. Place in a freezer just long enough to freeze firm. Package, seal and return to freezer immediately.

Onions

Bulb onions store well in a cool, dry place, so freezing is usually not necessary.

It is not necessary to blanch mature onions before freezing. Just dice or slice, package, seal and freeze.

Onion rings

Wash, peel, and slice onions, and then separate into rings. Water blanch for 10 to 15 seconds. Promptly cool and drain. Coat with flour and then dip in milk. Coat with a mixture of equal parts cornmeal and pancake mix. Arrange in a single layer on a tray, and freeze. Pack frozen rings into containers, using freezer wrap to separate the layers. Seal and return to freezer immediately. Fry frozen rings in oil at 375 degrees F until golden brown.

Peas: edible podded

Select bright green, tender pods. Wash. Remove stems, blossom ends and any strings. Leave whole.

Snow peas

Snow peas, also called sugar or Chinese peas, should be harvested when peas are just barely visible in the pods. To freeze, water blanch in boiling water for 2 minutes.

Sugar snap peas

Pick when the pods are round and fully mature, 2 to 3 inches long. To freeze, water blanch in boiling water for 2 to 3 minutes. Cool, drain, package, seal and freeze.

Peas: black-eyed or field

Select pods when seeds are tender and well-filled. Wash and shell. Discard overmature and immature seeds and those damaged by insects. Wash again.

Water blanch 2 minutes. Promptly cool, drain, package, seal and freeze.

Peas: green

Harvest when pods are filled with tender young peas that have not become starchy. Wash and shell.

Water blanch 1½ minutes. Cool, drain, package, seal and freeze.

Peppers: bell or sweet

Sweet or bell peppers can be frozen without blanching. Blanched peppers are limp and easier to pack; however, they can only be used in cooked dishes. Select crisp, tender, green or bright red pods. Wash, cut out stems, cut peppers in half, and remove seeds and white membrane. Dice or cut in halves, slices, rings or ½-inch strips, depending on intended use.

Blanched

Water blanch halves 3 minutes and strips or rings 2 minutes. Cool promptly, drain, package, seal and freeze.

Unblanched

Package raw, seal and freeze.

Peppers: hot

To prevent burning hands when handling hot peppers, wear rubber gloves. Do not touch eyes. Wash peppers, and peel using one of these methods:

Table 2. Timetable for cooking frozen vegetables.^a

Vegetable	Time to cook after water returns to boil (minutes) ^b
Asparagus	5–10
Beans, lima (in pods)	
Large type	6–10
Baby type	15–20
Beans, snap, green and wax	
1-inch pieces	12–18
Julienned strips	5–10
Beans, soybeans, green	10–20
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 (thawed)	3–4
Kale	8–12
Kohlrabi	8–10
Mustard greens	8–15
Peas, green	5–10
Spinach	4–6
Squash, summer	10–12
Turnip greens	15–20
Turnips	8–12

^a Use ½ cup lightly salted water for each pint (2 cups) of vegetables with these exceptions: lima beans, 1 cup; corn-on-the-cob, water to cover.

^b The cooking times listed are provided as general guidance. Cooking times vary depending on personal preference. Ensure that vegetables are completely cooked through before eating.

- Place peppers in an oven at 400 to 450 degrees F for 6 to 8 minutes. Remove from heat, and allow to stand in a wet towel to steam for 15 minutes. Remove skin, stem and seeds.
- Blister the skin of the peppers thoroughly on a hot range or with a flame, turning frequently to prevent scorching. Steam peppers as directed above. Slash skin, insert knife at tapered end, and pull the skin off toward stem. Remove stem and seeds.

Flatten whole peppers to remove air. Pack into containers. For ease in separating when thawing, place freezer wrap between peppers. Seal and freeze.

Potatoes

Because fresh potatoes are available year-round, most people do not find it practical to freeze potatoes at home. However, if potatoes are to be home-frozen, freeze cooked mashed potato patties, baked stuffed potatoes or french fries.

Baked stuffed potatoes or mashed potato patties

Prepare according to your favorite recipe, cool quickly in the refrigerator, and then wrap in moisture-vapor-proof packaging. Seal and freeze. The recommended maximum storage time is 1 month at 0 degrees F. To serve, unwrap and reheat in an oven at 350 degrees F.

French fried potatoes

Pare and cut potatoes lengthwise into strips about ¼-inch thick. Rinse quickly in cold water, and dry on paper towels.

Oven method: Arrange potato strips in a shallow baking pan, brush with melted butter or margarine, and bake at 450 degrees F until they begin to brown, turning occasionally. Cool quickly in the refrigerator.

Oil method: Blanch potato strips in vegetable oil heated to 370 degrees F until tender but not brown. Drain. Cool quickly in refrigerator. Place prepared strips in moisture-vapor-proof containers or bags. Seal and freeze. The maximum recommended storage time is 2 months at 0 degrees F.

To serve: Return frozen potatoes to baking sheet, and bake at 450 degrees F until golden brown, turning occasionally. Or deep-fat fry frozen potatoes at 390 degrees F until golden and crisp.

Pumpkin

Select full-colored mature pumpkins with fine texture. Wash, cut into cooking-size sections, and remove seeds.

Cook until soft in boiling water, steam, a pressure cooker, an oven or a microwave oven. To cool, place pan containing pumpkin in cold water and stir occasionally. Remove pulp from rind, and mash. Package, seal and freeze.

Note: Small pumpkins can be pierced and baked whole on a tray in an oven or microwave oven until soft. After cooling, peel, remove strings and seeds, and mash. Package, seal and freeze.

Squash: summer

Types: Cocolle, crookneck, straightneck, white scallop and zucchini.

Choose young squash with tender skin. Wash and cut in ½-inch slices.

Water blanch 3 minutes. Cool promptly, drain, package, seal and freeze.

Grated zucchini (for baking)

Choose tender young zucchini. Wash, and grate without peeling. Steam blanch in small quantities for 1 to 2 minutes, or until translucent. Drain well, and pack in containers in amounts needed for recipes. Cool by placing the containers in cold water. Seal and freeze. If watery when thawed, drain the liquid before using the zucchini.

Squash: winter

Types: Acorn, banana, buttercup, butternut, Golden Delicious and Hubbard.

Select firm, mature squash with a hard rind. The instructions for preparing winter squash are the same as those for pumpkin.

Sweet potatoes

Choose medium to large sweet potatoes that have been cured for at least 1 week. Sort according to size, and wash.

Cook until almost tender in water, steam, a pressure cooker, an oven or a microwave oven. Let stand at room temperature until cool. Peel sweet potatoes, cut in half, and slice or mash.

If desired, to prevent darkening, dip whole sweet potatoes or slices for 5 seconds in a solution of 1 tablespoon citric acid or ½ cup lemon juice and 1 quart water. To keep mashed sweet potatoes from darkening, mix 2 tablespoons orange or lemon juice with each quart of mashed sweet potatoes. Pack into containers, seal and freeze.

Baked

Wash, trim and heat unpeeled potatoes in oven at 350 degrees F until slightly soft. Cool, remove peel, and wrap individually in aluminum foil. Place in freezer bags and freeze. Complete the baking in an oven at 350 degrees F immediately before serving, leaving the sweet potatoes wrapped in foil.

Tomatoes

Select firm, ripe tomatoes with a deep red color. Frozen tomatoes have a mushy texture when thawed and are suitable only for cooking, such as in soups, stews and spaghetti sauces. In addition, tomatoes that are frozen raw become watery and develop an off-flavor after a short time in the freezer. Tomatoes that are too ripe for safe canning, but still sound and free from decay, can safely be frozen.

Raw

Wash and then dip in boiling water for 30 seconds to loosen skins. Core and peel. Freeze whole or in pieces. Pack into containers, leaving 1 inch of headspace. Seal and freeze.

Juice

Wash, sort, and trim firm, vine-ripened tomatoes. Cut in quarters or eighths. Simmer 5 to 10 minutes. Press through a sieve. If desired, season with 1 teaspoon salt to each quart of juice. Pour into containers, leaving 1½ inches of headspace. Seal and freeze.

Stewed

Remove stem ends; then peel and quarter ripe tomatoes. Cover and cook until tender, or about 10 to 20 minutes. Place pan containing tomatoes in cold water to cool. Pack into containers, leaving 1 inch of headspace. Seal and freeze.

Other tomato products

Tomato products such as sauce, puree, catsup and chili sauce can be frozen. Cool tomato products rapidly, pack into rigid containers, leaving headspace, and freeze.

Green tomatoes

Select firm green tomatoes. Wash, core and slice ¼-inch thick. No blanching is necessary.

For frying

Pack slices into containers with freezer wrap between the slices. Seal and freeze.

Turnips or parsnips

Select small to medium-size firm turnips or parsnips that are tender and have a mild flavor. Wash, peel, and cut into ½-inch cubes.

Water blanch for 2 minutes. Cool, package, seal and freeze.

Mashed

Cut into chunks, and cook until tender. Drain, mash, cool and pack into containers. Seal and freeze.

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- GH1502 *Quality for Keeps: Freezing Fruits*
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- GH1505 *Quality for Keeps: Freezing Home-Prepared Foods*
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