

Freezing and Blanching

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Why Freeze Food?

- Quick, easy, convenient
- Preserves food colour, flavour and texture
- Retains much of the original food value
- Makes it possible to have great variety of seasonal foods year round

How Freezing Preserves Foods

1. Freezing greatly reduces the growth of yeasts, bacteria and molds that can grow on food surfaces. Growth is almost stopped at -18°C or lower; however, most microorganisms continue to grow again as temperatures rise (ie. thawing).
2. Freezing slows the activity of the enzymes that cause ripening in fruit and vegetables.

How to Minimize Quality Loss in Frozen Foods

- Control enzyme activity (blanch or add natural preservatives)
- Control oxidation (store in airtight containers)
- Control ice crystal size (keep freezer at constant temperature (-18°C or lower))
- Control freezer burn (package in proper containers)



Blanching vegetables before freezing



What is Blanching?

Vegetables often require further control of enzyme activity than meat and some fruits. The process of blanching inactivates the naturally present enzymes that cause undesirable changes in food flavour, colour and texture. Almost all vegetables require blanching prior to freezing, with a few exceptions.

To blanch you will need a large kettle with a cover (4 L water to about 500 g vegetables or 8 L for leafy greens). Place vegetables in wire basket or tie loosely in cheesecloth bag leaving length of string for ease of handling. Lower vegetables into vigorously boiling water, cover and immediately start counting blanching time. Keep heat on high so water quickly returns to a boil. Once blanching time is up, chill vegetables immediately in cold running water. If water is not cold enough then add ice. Leave vegetables in cooling water for same time used in blanching but no longer than necessary. Drain cooled vegetables thoroughly and pack in freezer containers (label and date) and place in freezer.

Make sure to follow exact blanching times for each type of vegetables as under-blanching does not destroy all enzymes while over-blanching overcooks and reduces flavour and nutrient content.



Table 1: Measurements for different concentrations of sugar syrup

Type of Sugar	Sugar	Water	Yield
Thin	250 ml	500 ml	about 650 ml
Moderately Thin	250 ml	400 ml	about 550 ml
Medium	250 ml	250 ml	about 375 ml
Heavy	250 ml	200 ml	about 325 ml

7 Steps to Successful Freezing

1. Select fresh, high quality foods.
2. Prepare foods quickly but carefully (cleaning, cutting, blanching, packing).
3. Package in odorless, tasteless, moisture proof, vapour proof packaging to prevent dehydration or absorbing flavours.
4. Freeze at -18°C or lower ASAP (if delay place package in fridge as soon as sealed).
5. Store at -18°C or lower with as little temperature fluctuation as possible.
6. Thaw carefully and use soon after thawing.
7. Cook according to directions. Do not overcook frozen vegetables.

Packaging

- Plastic freezer bags – Press out as much air as possible, twist top several times and fold over in loop. Secure with metal closure.
- Freezer containers (plastic, aluminum foil, cardboard) – Square/rectangle containers store more compactly than round. Select either flexible or rigid plastic with tight fitting lids or cardboard with thick plastic coating or lined with plastic to prevent drying out. When packing liquids leave 1-2cm headspace.



- Freezer wrappings (aluminum foil, freezer paper, plastic film) – Fold over edges forming tight seal and leaving as little air space as possible. Seal with masking tape.

Freezing Fruit

- Select fruits at ideal maturity (ripe but firm)(not bruised, overripe or beginning to spoil).
- Berries, sour cherries and rhubarb freeze the best (pears, sweet cherries become too soft on thawing).
- Peaches, apples and apricots require ascorbic acid treatment to prevent discoloration.
- Wash fruit thoroughly and then pack unsweetened or use either a dry sugar pack, dry pack with ascorbic acid, syrup pack or syrup pack with ascorbic acid.
- Blueberries, cranberries, currants, gooseberries, rhubarb and saskatoons freeze well without sugar or syrup. Freeze in premeasured quantities.
- Fruits may be stored for 1 year at -18°C



Freezing Vegetables

- Select high quality, fresh, young, tender, ideal maturation (not tough, starchy or woody)
- Asparagus, beans, peas, spinach, whole kernel corn and mashed squash freeze well
- Corn on cob can develop off flavours unless blanched for correct time. Celery, lettuce, tomatoes and cucumbers become limp on thawing – unless tomatoes pureed for sauce or cooked slightly for use in soups and stews. Egg-plant darkens and becomes watery.
- Carrots and parsnips can be frozen but best to store in cool room.
- Cooked beets and raw onions are best frozen sliced or iced as texture will become rubbery and limp on thawing.
- Wash, blanch and pack.
- Vegetables may be stored for 1 year at -18°C

Table 2: Preparing and Packing Fruits*

Fruit	Preparation	Packing
Apples	Pies & puddings: peel, core, slice Applesauce	Pack in dry sugar using 50 ml sugar to 1 L fruit Sweeten if desired and pack cold
Apricots	Pudding or as fruit: halve and pit Pies: cut in quarters and pit	Pack in moderately thin syrup Pack in dry sugar using 175 ml sugar to 1 L fruit
Blueberries	Stem	Pack without sugar
Cantaloupe	Halve, remove seeds and soft fiber. Cut in 2 cm cubes or balls	Pack in dry sugar using 125 ml sugar to 1 L fruit
Cherries (sour)	Pit	Pack in dry sugar using 250 ml sugar to 1 L fruit; or pack in heavy syrup to cover
Currants, Saskatoon, Cranberries,	Stem	Pack without sugar or syrup
Fruit Juices	Extract juice for jelly making	Pack without sugar
Fruit Salad/ Fruit cocktail	Prepare as individual fruit	Pack in thin syrup to cover
Gooseberries	Remove stems and blossom ends	Pack without sugar or syrup
Peaches	Dip in boiling water ½ - 1 min, then in cold water. Remove skins and pits. Slice	Pack in moderately thin syrup to cover; or pack in dry sugar using 175 ml sugar to 1 L fruit
Plums	Halve and pit	Pack in dry sugar using 175 ml sugar to 1 L fruit; or pack in thin syrup to cover
Raspberries	Leave whole	Pack in dry sugar using 175 ml sugar to 1 L fruit; or without sugar
Rhubarb	Cut stalks in 3 cm lengths Make into sauce	Pack without sugar Sweeten to taste and pack cold
Strawberries	Leave whole, cut in quarters or slice Leave whole	Pack in dry sugar using 125 ml sugar to 1 L whole berries, or 175 ml sugar to 1 L quartered or sliced berries Pack without sugar.

*Ref: Ontario Ministry of Agriculture and Food. (1990). *Freezing Foods. Food Advisory Services. Canada Department of Agriculture.*

Table 3: Preparing and packing vegetables

Vegetable	Preparation	Blanching	Packing
Asparagus	Remove tough ends. Cut in uniform lengths	Med – 3 min Lrg – 4 min	Chill, drain and pack
Beans (green/ wax)	Trim ends. Leave whole or cut in 3 cm pieces	Cut – 3 min Whole – 4 min	Chill, drain and pack
Beets	Leave root ends on; cut off tops leaving 3 cm stems. Cook in boiling water until tender. Cool. Peel and slice	None	Pack
Broccoli	Remove woody stems and trim. Cut through stalks so that pieces are not more than 3 cm across	Med – 3 min Lrg – 4 min	Chill, drain and pack
Brussel Sprouts	Trim stems and outer leaves	Sm – 3 min Med – 4 min Lrg – 5 min	Chill, drain and pack
Cabbage	Trim outer leaves and core. Cut in wedges or shred coarsely	Wedges – 2 min Shredded – 1 min	Chill, drain and pack
Carrots	Remove tops and scrape or peel. Leave small carrots whole. Cut larger carrots in 1 cm slices or dice or cut lengthwise in fingers	Cut – 3 min Whole – 5 min	Chill, drain and pack
Cauliflower	Break heads into small flowerets about 3 cm in diameter	3 min	Chill, drain and pack
Corn (whole kernel, on cob)	Remove husks and silk (kernels) Remove husks, trim cobs to even lengths	4 min Sm – 7 min Med – 9 min Lrg – 11 min	Chill, cut kernels from cob. Pack Chill, drain and pack
Herbs	Chop	None	Freeze on tray before packing
Mushrooms	Slice. Sauté 500 ml in 30 ml butter 4 min	None	Drain and pack
Onions	Remove outer skin, root and stem ends. Chop	None	Pack or freeze on tray before packing
Parsnips	Remove stem and root ends. Peel. Cut in 2 cm fingers or 1 cm slices	Fingers – 1 min Slices – 1 min	Chill, drain and pack
Peas	Shell	2 min	Chill, drain and pack
Peppers	Leave whole or remove seeds and half stems, cut in half or chop	None	Pack dry or freeze chopped pepper on tray before packing
Pumpkin	Cut or break apart, remove seeds and fibers. Cut in chunks. Steam, boil or bake until tender. Cool and scoop from rind. Mash or sieve	None	Pack
Spinach/ Chard	Wash thoroughly. Cut chard in 3 cm pieces or separate leafy parts from stalks and cut stalks in 10 cm lengths	2 min	Chill, drain and pack
Summer Squash	Cut in 1 cm slices	2 min	Chill and drain. Freeze on tray before packing
Winter Squash	Cut in pieces and steam, boil or bake until tender. Cool, scoop from rind and mash Peel and dice (butternut)	None 2 min	Pack Chill, drain and pack
Tomatoes	Peel by dipping in boiling water for 30 – 60 seconds, cooling in cold water and gently slipping off skin. Cut in quarters. Add 5 ml salt, dash pepper and 5 ml sugar to 1 kg tomatoes and cook gently until tender (5-6 mins)	None	Pack
Turnip	Peel, dice and boil until tender. Mash Peel, dice and blanch	None 2 min	Pack Chill, drain and pack