



Food Preservation

Freezing Lesson 7

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Freezing Know-How

Freezing is a simple, easy and the least time-consuming way to preserve foods. Freezing has many advantages over other methods of preservation because frozen foods are more like fresh foods than those either canned or dried. Freezing keeps the natural color, fresh flavor and nutritive qualities of most foods better than other known methods of preservation.

Preservation by freezing is based on the principle that extreme cold retards growth of microorganisms and slows down enzyme activity and oxidation. Freezing does not sterilize foods.

The length of time frozen foods hold their fresh flavor and natural color depends on (a) kind and variety of food used, (b) its selection and preparation, (c) container in which it is frozen and (d) efficiency of freezing unit.

Equipment Needed

The equipment needed for freezing at home is little more than the pots, pans, strainers and other utensils required in the kitchen for preparing everyday meals.

As with all food storage methods, it is important to keep bacterial contamination to a minimum by using clean equipment and work surfaces.

Freezer Containers

Proper packaging is very important to prevent:

1. Chemical changes which result from exposure to air. These cause loss of color, development of off-flavors, absorption of odors and loss of vitamins.
2. Physical changes which result in loss of weight and fresh appearance. These changes are due to loss of moisture.

A good quality wrapping material or container that is moisture-vapor resistant is essential for a high quality product. Aluminum, glass, plastic or heavily waxed cardboard cartons are suitable for liquid packs. Bags and sheets of moisture-vapor resistant cellophane, heavy aluminum foil, polyethylene or laminated papers are suitable for dry-packed vegetables or fruits.

When packaging, make sure to eliminate air pockets. For dry pack, leave no head space. For packs that are “runny” at room temperature, leave ½ inch head space in quarts.

Frozen Food “Musts”

Home freezer must be placed in the most convenient, coolest, driest, best-ventilated place and defrosted at least once each year.

- Foods must be in best condition. If not, they are not worth freezing.

- Vegetables must be properly blanched to preserve quality.
- For best quality, all meats and poultry must have been chilled quickly after killing. Beef should be aged about 7 to 10 days.
- Everything must be properly packaged.
- Freezing must be rapid to preserve the natural color, flavor and texture and to prevent spoilage of foods.
- Frozen foods must be stored at 0° F or lower.
- Frozen foods must be used within a reasonable time since there is gradual loss of quality of all frozen foods.

Frozen foods must be cooked and served properly. For best quality, meats and vegetables must be cooked and served immediately upon thawing.

Time And Temperature

The relationship between temperature of storage and the length of time foods are frozen is highly important. Deterioration in frozen foods accelerates rapidly with a rise in storage temperature.

Foods That Do Not Freeze Well

Food Item	Reason
Cake icings made with egg whites	Become frothy or “weep” when thawed
Cream filling, soft frostings, mayonnaise	Separates
Custards and cream pie fillings	Become watery and lumpy
Fried foods	Lose crispness and become soggy
Macaroni, spaghetti and rice	Have a warmed-over flavor and are mushy
Pepper, onions and cloves	Become strong and bitter
Salt	Loses flavor
Irish potatoes	Baked or boiled become soggy and texture breaks down
Immature fruit	Textures toughen, flavors become sour

Step By Step Freezing

Use only quality fresh products. Freezing retains quality, but cannot improve it. Work under the most sanitary conditions. Have everything needed organized to save time and energy. Use only approved packaging materials. Be an expert. Follow proper freezing instructions.

Blanching (Scalding)

All vegetables, except bell peppers and onions, **MUST** be blanched before freezing. This scalding prevents changes in flavor or color. Blanching is done in either boiling water or steam. The boiling water method is usually more convenient for home use.

Time for blanching varies with each vegetable. Use a large kettle with a lid. Put at least one gallon of water in the kettle and blanch only one pound (about 1 quart) of prepared vegetables at a time. Put the vegetables in a perforated metal basket or cheesecloth bag. When water in kettle is at a **GOOD ROLLING BOIL**, immerse the vegetables in it. Put lid on kettle and begin to count time immediately. Keep heat high and kettle covered until blanching time is up. The same water can be used again, but **BE SURE** to bring it back to a good rolling boil before putting in other vegetables.

To blanch in steam, use a large pot with a rack on the bottom. Put about 2 or 3 inches of water in the pot and when this comes to a good, rolling boil, lower the wire basket or cheese cloth bag containing the vegetables — not more than one pound at a time — onto the rack. Place the lid on the pot. Begin counting time when the steam issues freely from under the lid. Steam blanching requires one or two minutes longer than water blanching.

Chill, Drain, Pack

Cool all vegetables immediately in cold running water or ice water. When thoroughly cold, drain and pack. Pack vegetables firm but not tight. Do not add salt or other seasoning. Put on caps, screw band tight. Freeze at once.

Keeping Color

Such fruits as apples, apricots, peaches and pears need special treatment to prevent discoloration.

This is done by adding ascorbic acid (Vitamin C). Commercial ascorbic and citric acid mixtures may be used. Be sure to follow manufacturer's directions.

Ascorbic acid can be bought at drug or grocery stores. It can be obtained in tablet or crystalline form.

The ascorbic acid is added to syrup or sugar just before combining it with the fruit. Add 1/2 teaspoon ascorbic acid to each quart of chilled syrup. Stir ONLY enough to dissolve. If the crystalline form is not available, use 10 tablets of 200 milligrams each. Dissolve these in 1/2 cup of warm water and add to each quart of the syrup.

For dry sugar packs, mix about 1/4 teaspoon of ascorbic acid with the amount of sugar that you will use for each quart of the fruit. Or dissolve 1/4 teaspoon of ascorbic acid in 2 tablespoons water. Sprinkle this over a quart of the fruit. Turn fruit over and over to cover all parts, then add sugar and turn until fruit is completely coated. Add ascorbic acid to the sugar or syrup just before using it.

Storage Times For Frozen Foods at 0°F

Food	Maximum Storage Time (Months)
Fruits & Vegetables	8-12
Meats	
Beef	6-12
Lamb and Veal	6-9
Cured Pork	1-2
Sausage and Ground Meat	1-3
Cooked Meat (not covered with sauce)	1
Poultry	
Chickens	6-12
Giblets	3
Cooked Poultry (not covered with sauce)	1
Precooked Combination Dishes	2-6
Fish	1-3

Most Fruits Need Sugar or Syrup

Sweetening fruits before freezing helps develop flavor and hold color.

Syrup pack: The syrup pack is most satisfactory if fruit is to be used as a sauce. It is also best for apples, apricots, peaches and pears that discolor quickly. Mix sugar and water and boil until sugar is dissolved. Make syrup well in advance of the preparation of the fruit. It must be cold before pouring over the fruit. Any of the following syrups may be used with fruits of any kind. Selection of the syrup will depend upon how sweet you want the fruit, and to some extent upon how you plan to use the fruit.

Allow one cup of syrup for each quart of fruit.

Pack prepared and drained fruit firmly into containers, filling to within one inch of the top. Add the cold syrup according to chart, being sure syrup covers the fruit. Place a small piece of crumpled wax paper on top of the fruit to keep it under the syrup. Put on lid and freeze immediately.

Types of Syrup		
Kind of Syrup	Sugar (cups)	Water (cups)
Thin	1	4
Medium	2	4
Medium Heavy	3	4
Heavy	4	4

Dry sugar pack: A dry sugar pack works well with juicy fruits. It draws juice from fruit and when packed there is usually enough syrup to cover the fruit. It also works well with fruits cut into small pieces, such as sliced strawberries. To the prepared and drained fruit add dry sugar. Most fruits need about one cup of sugar to 4 to 6 cups of fruit. Turn fruit over and over until each piece is completely coated. Put sugar coated fruit and syrup which forms, in container, packing firmly, leaving one inch of headspace. Put on lid and freeze immediately.

Unsweetened pack: Put the prepared, washed, and drained fruit into clean containers, packing them firmly. Do not add liquid or sweetening of any kind. Put on lid and freeze immediately.

Fruits such as berries can be placed on a cookie sheet and frozen. When firm, transfer to a freezer bag and return to freeze. This results in fruits that are individually frozen.

Label with the name of the product and a description of how it was prepared, the number of servings and the shelf life date.

Promptly place packages in food freezer in single layers. Don't over-fill freezer. Food should reach freezing temperatures as soon as possible to ensure quality of products.

Maintain 0° F (-18°C) temperature in freezer. Keep an inventory. Use all products within recommended storage period.

Never thaw by holding product in hot water. Glass containers cannot tolerate sharp changes in temperatures.

Thawing and Preparing

By careful thawing and serving at exactly the right stage, it is possible to prepare attractive servings of products that would be rejected if served without thawing or if completely thawed. Do not thaw more food at one time than is actually needed because once frozen food is thawed it spoils more readily than fresh foods.

Remember, the objective of thawing food safely is to keep every part of the food below room temperature. When food reaches temperatures of 40°F to 140°F, microorganisms can multiply rapidly.

Refreezing

Occasionally, foods are partially or completely thawed before it is discovered that the freezer is not operating.

If foods have thawed only partially and there are still ice crystals in the package, they may be safely refrozen. Even this partial thawing reduces quality. If some of the high quality has already been lost during previous partial thawing, the additional loss may result in very low quality. Refrozen foods should be used as soon as possible.

If foods have slowly thawed and have warmed gradually over a period of several days to a temperature of 40°F, they are not likely to be suitable for refreezing.

References

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So Easy to Preserve. \$18. University of Georgia Cooperative Extension Service: www.uga.edu/setp.

Ball Blue Book. Ball Corporation, Consumer Products Division, Consumer Affairs, 345 S. High, Muncie, IN 47305-2326.

Home Freezing of Fish, FNH-00222. Free. University of Alaska Fairbanks Cooperative Extension Service: 1-877-520-5211 or www.uaf.edu/ces.

Home Freezing of Vegetables, FNH-00264. Free. University of Alaska Fairbanks Cooperative Extension Service: 1-877-520-5211 or www.uaf.edu/ces.

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