

# Freezing

## Freezing know-how

Freezing is simple and 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 methods of preservation.

Preservation by freezing is based on the principle that extreme cold slows growth of microorganisms, 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) the kind and variety of food used, (b) its selection and preparation, (c) the container in which it is frozen and (d) the efficiency of freezing unit.

## Equipment needed

The equipment needed for freezing at home includes the freezer, as well as pots, pans, strainers and other utensils required in the kitchen for preparing everyday meals.

Use a freezer with size, shape and efficiency that fits in a convenient, cool, dry, well-ventilated place. It should maintain a temperature of 0°F or lower and sit level. Defrost at least once each year.

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 that result from exposure to air. These cause loss of color, development of off-flavors, absorption of odors and loss of vitamins.
2. Physical changes that result from loss of moisture, such as loss of weight and fresh appearance.

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

When packaging, make sure to eliminate air pockets. Vacuum packaging is one method to draw air out then seal it. For dry, loose-packed items, such as asparagus or broccoli, bony meat pieces or cookies or breads, leave no headspace. For packs that are “runny” at room temperature, leave 1 inch headspace in wide-mouth quart size containers.

Cover rigid containers with a tight lid on the clean sealing edge. Secure loose covers with freezer tape.

## Frozen food “musts”

Foods must be in best condition. Freezing retains quality but cannot improve it. Wash food well. Work under sanitary conditions. Have everything you need organized to save time and energy. Use approved food packaging materials. Follow proper freezing instructions.

- 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 seven to 10 days.
- Prepare fruit by packing with or without sugar, or with syrup. Use ascorbic acid to retard browning of light-colored fruit.
- Everything must be properly packaged.
- Label with the name of the product, a description of how it was prepared, the number of servings and the packing date.
- Rapid freezing will preserve natural color, flavor and texture and prevent spoilage of foods.

- Freeze about 2 to 3 pounds of unfrozen food per cubic foot of storage space. Overloading slows the freezing rate, causing loss of quality.
- Place in coldest part of freezer, on frozen surface, with a little space between for free air circulation. When frozen, store close together.
- Store frozen foods at 0°F (-18°C) 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.

### 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

### 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.

### Freezing Vegetables

**Blanching (Scalding)** Most vegetables 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 pot with a lid. Put at least 1 gallon of water in the pot and blanch only 1 pound (about 1 quart) of prepared vegetables at a time. Put the vegetables in a perforated metal basket. When water in kettle is at a GOOD ROLLING BOIL, immerse the vegetables in it. Put lid on the pot. When water returns to boil (within 1 minute or too much vegetable has been put in), begin to count blanch time immediately. Keep heat high and pot covered until blanching time is up. The same water may be used again, but BE SURE to bring it back to a good rolling boil before putting in other vegetables.

To blanch with steam, use a large pot with tight lid and a basket. Put an inch or two of water in the pot. When this comes to a good rolling boil, lower the wire basket with a single layer of vegetables — not more than 1 pound at a time — onto the rack. Place the lid on the pot, then begin counting time. Steam blanching is 1 ½ minutes longer than water blanching.

**Chill, Drain and Pack** Cool all vegetables immediately in cold running water or ice water. When thoroughly cold, drain thoroughly. Extra moisture can cause a loss of quality when vegetables are frozen.

Pack vegetables firm but not tight. Remove air. Seal. Label. Freeze at once.

**Tray Pack** is an option. After vegetables are cooled and drained, spread in a single layer on shallow trays or pans. When frozen firmly, package quickly leaving no headspace, then seal. Tray pack vegetables remain loose, remove easily and container can be resealed.

### Methods to Freeze Fruits

Fruit can be frozen with or without sugar. Without sugar, the texture is softer than if frozen with sugar. Sweetening fruits before freezing helps develop flavor and hold their color. Which method chosen depends on intended use and preference.

Carefully wash fruit in cool, running water. Do not let fruit stand in water. Sort fruit, trim, and discard parts that are green, bruised, or insect damaged. Peel, trim, pit, and slice fruit as directed.

Prevent discoloration of fruit by adding ascorbic acid (vitamin C). Commercial ascorbic and citric acid mixtures may be used. Follow manufacturer’s directions. Ascorbic acid can be bought at drug or grocery stores. It can be in tablet or crystalline form.

The ascorbic acid is added to syrup or sugar just before combining it with the fruit. Add ½ teaspoon ascorbic acid (1500 milligrams) to each quart of chilled syrup. Stir only enough to dissolve. If the crystalline form is not available, finely crush 3 tablets of 500 milligrams. Dissolve these in ½ cup of warm water and add to each quart of the syrup.

For dry sugar packs, mix about ¼ teaspoon of ascorbic acid with the amount of sugar that you will use for each quart of the fruit. Or dissolve ¼ 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 or fruit juice just before using it.

**Unsweetened pack:** Put 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 freezer. This results in fruits that are individually frozen.

**Syrup pack:** Fruit to be served uncooked is frozen with syrup or juice pack. It is good for apples, apricots, peaches and pears, which discolor quickly. Select type of syrup for desired sweetness.

### Storage Times for Frozen Foods at 0°F

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

Make syrup before preparing the fruit. Mix sugar and water; boil until sugar is dissolved. Chill before using. Allow 1 cup of syrup for each quart of fruit. Pack prepared and drained fruit firmly into containers, filling to within 1 inch of the top. Add the cold syrup to cover 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. Add dry sugar to the prepared and drained fruit. Most fruits need about 1 cup of sugar to 6 cups of fruit. Mix gently to completely coat the fruit. Put sugar-coated fruit and the syrup that forms in container, packing firmly, leaving 1 inch of headspace. Put on lid and freeze immediately.

### Freezing Animal Products

Freezing retains the good taste and texture of meat, poultry and fish. Freeze soon after slaughter or after purchase to ensure freshness and quality.

Trim excess fat. Cover sharp edges of bones with folded freezer paper or foil to not pierce wrapper.

Freeze meat in meal-size pieces and packages. Place a double layer of freezer wrap between individual pieces.

Tray pack to freeze meatballs, meat cubes, chops or patties then package in freezer bags (see page 2).

The store wrap on meats from self-service counters is not for freezer storage longer than two weeks. Rewrap or over-wrap for longer storage.

Vacuum-packaged meats can be frozen in the undamaged package for one to three months.

For best shelf life, meat should be double-wrapped. Using two different types of wrapping materials gives a better moisture and vapor proof barrier.

## Thawing and Preparing

Carefully thawing and serving prepares attractive servings of frozen products. Thaw the amount of food to be used at one time. 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° to 140°F, microorganisms can multiply rapidly.

To serve fruit, thaw in the refrigerator, under cool running water, or in the microwave (if serving immediately). Serve while a few ice crystals remain.

Meat, poultry and fish can be cooked from frozen or thawed state. If you thaw it, do so in refrigerator in original wrappings. For faster thawing, place in waterproof wrapping under cold, slowly running water or place in a large container of cold water. Change water at least every 30 minutes or as needed so it stays cold. If thawed in microwave, **cook immediately after thawed. To cook without thawing, it will just take longer to cook.**

## 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. Partial thawing may reduce 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

*USDA Complete Guide to Home Canning*. Online version: [www.uga.edu/nchfp/publications/publications\\_usda.html](http://www.uga.edu/nchfp/publications/publications_usda.html). Print version: [https://mdc.itap.purdue.edu/item.asp?item\\_number=AIG-539#.VWTLiZRdWrY](https://mdc.itap.purdue.edu/item.asp?item_number=AIG-539#.VWTLiZRdWrY).

*So Easy to Preserve*. University of Georgia Cooperative Extension Service: [www.uga.edu/setp](http://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. University of Alaska Fairbanks Cooperative Extension Service.

*Home Freezing of Vegetables*, FNH-00264. University of Alaska Fairbanks Cooperative Extension Service.

[www.uaf.edu/ces](http://www.uaf.edu/ces) or 1-877-520-5211

**Julie Cascio**, Extension Faculty, Health, Home and Family Development. Originally written by Roxie Rodgers Dinstel, former Extension Faculty, Health, Home and Family Development.

In accordance with Federal law and U.S. Department of Agriculture (USDA) civil rights regulations and policies, this institution is prohibited from discriminating on the basis of race, color, national origin, sex, age, disability, and reprisal or retaliation for prior civil rights activity. (Not all prohibited bases apply to all programs.) Program information may be made available in languages other than English. Persons with disabilities who require alternative means of communication for program information (e.g., Braille, large print, audiotope, and American Sign Language) should contact the responsible State or local Agency that administers the program or USDA's TARGET Center at (202) 720-2600 (voice and TTY) or contact USDA through the Federal Relay Service at (800) 877-8339. To file a program discrimination complaint, a complainant should complete a Form AD-3027, USDA Program Discrimination Complaint Form, which can be obtained online at <https://www.ocio.usda.gov/document/ad-3027>, from any USDA office, by calling (866) 632-9992, or by writing a letter addressed to USDA. The letter must contain the complainant's name, address, telephone number, and a written description of the alleged discriminatory action in sufficient detail to inform the Assistant Secretary for Civil Rights (ASCR) about the nature and date of an alleged civil rights violation. The completed AD-3027 form or letter must be submitted to USDA by: (1) Mail: U.S. Department of Agriculture Office of the Assistant Secretary for Civil Rights 1400 Independence Avenue, SW Washington, D.C. 20250-9410; or (2) Fax: (833) 256-1665 or (202) 690-7442; or (3) Email: [program.intake@usda.gov](mailto:program.intake@usda.gov). This institution is an equal opportunity provider.



Published by the University of Alaska Fairbanks Cooperative Extension Service in cooperation with the United States Department of Agriculture. The University of Alaska is an Affirmative Action/Equal Opportunity employer, educational institution and provider and prohibits illegal discrimination against any individual: [www.alaska.edu/nondiscrimination](http://www.alaska.edu/nondiscrimination).

©2023 University of Alaska Fairbanks.

09-05/RD/02-23

Reviewed January 2023