



Resources for Home Food Freezing

Brian A. Nummer, Ph.D.

National Center for Home Food Preservation

June 2004

Freezing is the easiest, most convenient, and least time-consuming method of preserving foods. The holiday seasons have a way of filling the freezer with leftovers. Adding these to the frozen bounty of the past fall's harvest makes for tightly packed freezers. You can freeze almost any foods and a list of foods and freezing instructions can be found here: <http://www.uga.edu/nchfp/how/freeze.html>. For a table of foods that don't freeze well see: http://www.uga.edu/nchfp/how/freeze/dont_freeze_foods.html.

Freezing to fend off food spoilage

Food spoilage is caused by microorganisms, chemicals, and enzymes. Freezing foods to 0 degrees F. is recommended for best quality.

- Freezing stops the growth of microorganisms; however, it does not sterilize foods or destroy the organisms that cause spoilage. A few organisms may die, but once thawed to warmer temperatures, these organisms can quickly multiply.
- Chemical changes affect quality or cause spoilage in frozen foods. One major chemical reaction is oxidation. If air is left in contact with the frozen food oxidation will occur even in the freezer. An example is the oxidation of fats, also called rancidity.
- Enzymes are naturally present in foods and their activity can lead to the deterioration of food quality. Enzymes present in animal foods, vegetables and fruit promote chemical reactions, such as ripening. Freezing only slows the enzyme activity that takes place in foods. It does not halt these reactions which continue after harvesting. Enzyme activity does not harm frozen meats or fish, but browning can occur in fruits while they are being frozen or thawed.

Blanching

Blanching vegetables before freezing inactivates the enzymes. During blanching, the vegetable is exposed to boiling water or steam for a brief period. The vegetable is then rapidly cooled in ice water to prevent cooking. Following the recommended times for blanching each vegetable is important. Over-blanching results in a cooked product and loss of flavor, color, and nutrients. Under-blanching stimulates enzyme activity and is worse than no blanching at all. See: <http://www.uga.edu/nchfp/how/freeze/blanching.html> and <http://www.fcs.uga.edu/pubs/PDF/FDNS-E-43-5.pdf> for blanching specifics.

Chemical Treatment of Fruits

Fruits may also be steamed or cooked before freezing, but are more commonly treated with ascorbic acid to inactivate enzymes responsible for browning. See freezing recommendations for individual foods for specific recommended ascorbic acid usage: <http://www.uga.edu/nchfp/how/freeze.html> and <http://www.fcs.uga.edu/pubs/PDF/FDNS-E-43-4.pdf> for more information.

Packing and Packaging

Packing methods include dry packs, syrup packs, sugar packs, or possibly crushed or cooked packs. Each has advantages and disadvantages. Pectin or artificial sweeteners are offered as options for specific fruits. See freezing recommendations for individual foods for specific recommended packs:

<http://www.uga.edu/nchfp/how/freeze.html> or http://www.uga.edu/nchfp/publications/uga/uga_freeze_fruit.pdf or http://www.uga.edu/nchfp/publications/uga/uga_freeze_veg.pdf for more information.

Good packaging will help prevent air from entering the container and moisture loss. Severe moisture loss, or ice crystals evaporating from the surface of a product, produces freezer burn -- a grainy, brownish or white surface where the tissues have become dry and tough. Freezer-burned food is likely to develop off flavors, but it will not cause illness. Packaging in air-tight rigid containers or heavyweight, moisture-resistant wrap will prevent freezer burn. See: <http://www.uga.edu/nchfp/how/freeze/containers.html> for more specifics. Follow directions on appropriate [headspace](#), [packaging and labeling](#).

Textural changes during freezing

Freezing actually consists of freezing the water contained in the food. When the water freezes, it expands and the ice crystals formed can cause the cell walls of the food to rupture. Consequently the texture of the product will be much softer when the product thaws. Getting a food to a frozen state quickly helps keep the size of the ice crystals small. Less damage to cell walls of foods will occur and the final texture will be better. Keeping food frozen at 0 degrees F or lower will also minimize ice crystal growth that results when food temperatures fluctuate (i.e., warm up and re-freeze) too much while in the freezer.

Safe Defrosting

Never defrost foods on the kitchen counter, in a garage, basement, car, dishwasher or outdoors. These methods can leave your foods unsafe to eat. There are three safe ways to defrost food: in the refrigerator at 40 degrees Fahrenheit or lower, in the microwave immediately before cooking, or in running cold water for very short periods of time. Foods thawed in the microwave or by the running cold water method should be cooked thoroughly immediately after thawing occurs. See: <http://www.uga.edu/nchfp/how/freeze/thawing.html> for specific instructions.

Refreezing

- If food is thawed in the refrigerator, it is safe to refreeze it without cooking, although there will usually be a noticeable loss of quality due to the moisture lost through defrosting.
- After cooking raw foods that were previously frozen, it is safe to freeze the cooked foods if safe cooking procedures were followed.
- If previously cooked foods are thawed in the refrigerator, you may refreeze the unused portion. Again, there will be some quality loss from the additional freezing and thawing.
- If you purchase previously frozen meat, poultry or fish at a retail store, you can refreeze if it has been handled and transported properly, observing time limits for the Temperature Danger Zone. (Do not keep perishable foods between 40 and 140 degrees F for more than 2 hours; limit time to 1 hour in very warm temperatures. Any times in the TDZ are combined to determine this limit.)
- Foods thawed in the microwave or by the running cold water method should be cooked before refreezing.

Using and Cooking Frozen Foods

Frozen fruits are often eaten without cooking. Many are best if eaten while they still contain a few ice crystals. Vegetables may be cooked after thawing or while still frozen. Raw or cooked meat, poultry or casseroles can be cooked or reheated from the frozen state. However, it will take approximately one and a half times the usual cooking time for food that has been thawed. Always cook foods to the recommended internal temperature using a food thermometer.

More tips and specifics on freezing foods can be found here:

- [Freezing Pointers](#) University of Georgia
- [Care of the Freezer](#) University of Georgia
- [Freezer Management](#) University of Georgia
- [Focus on: Freezing](#) USDA-FSIS
- [Making Jam and Jelly From Frozen Fruit](#) North Dakota State University
- [Refrigerator/Freezer Approximate storage times](#) Kansas State University
- [Freezing Animal Products](#) University of Georgia
- [Freezing Prepared Foods](#) University of Georgia
- [What to do if the freezer stops?](#) University of Georgia

Spanish language resources:

- [Freezing Fruits and Vegetables \(Spanish\)](#) Texas A&M University

Brian A. Nummer is Project Coordinator with the National Center for Home Food Preservation, Department of Foods and Nutrition, College of Family and Consumer Sciences and Adjunct Assistant Professor, Department of Food Science and Technology, The University of Georgia, Athens.

This material is based upon work supported by the Cooperative State Research, Education, and Extension Service, U.S. Department of Agriculture, under Agreement No. 00-51110-9762.

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Contact:

National Center for Home Food Preservation
208 Hoke Smith Annex
The University of Georgia
Athens, GA 30602-4356
Tel: (706) 542-3773/Fax: (706) 542-1979
Web: <http://www.homefoodpreservation.com>