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Freezing Basics

Freezing is one of the simplest and least time-consuming ways to preserve foods at home. Freezing does not sterilize food; the extreme cold simply retards growth of microorganisms and slows down changes that affect quality or cause spoilage in foods. Freezing cannot improve the flavor or texture of any food, but when properly done it can preserve most of the quality of the fresh product. Select only the best-quality fruits and vegetables at their peak of maturity for freezing.

CONTAINERS FOR FREEZING

Foods for your freezer must have proper packaging materials to protect their flavor, color, moisture content and nutritive value from the dry climate of the freezer. Packaging materials must:

- Be moisture- and vapor-resistant
- Be durable and leak-proof
- Not become brittle and crack at low temperature
- Be resistant to oil, grease or water
- Protect foods from absorption of off-flavors or odors
- Be easy to seal and easy to mark

There are two types of packaging materials for home use — rigid containers and flexible bags or wrappings.

Rigid Containers: Rigid containers made of plastic or glass are suitable for all packs and are especially good for liquid packs. Straight sides on rigid containers make frozen food much easier to get out. Rigid containers are often reusable and make the stacking of foods in the freezer easier. Cardboard cartons for cottage cheese, ice cream and milk are not sufficiently moisture- and vapor-resistant to be suitable for long-term freezer storage, unless they are lined with a freezer bag or wrap. Covers for rigid containers should fit tightly or the seal should be reinforced with freezer tape, which is especially designed to stick at freezing temperature.

Regular glass jars break easily at freezer temperatures. If using glass jars, choose wide-mouth dual-purpose jars made for freezing and canning. These jars have been tempered to withstand extremes in temperature. The wide mouth allows easy removal of partially thawed foods. If standard canning jars with narrow mouths are used for freezing, leave extra headspace (see Table 1) to allow for expansion of foods during freezing. Expansion of the liquid could cause the jars to break at the neck. Some foods will need to be thawed completely before removal from the jar.

Flexible Bags or Wrappings: Bags and sheets of moisture- and vapor-resistant materials, heavy-duty aluminum foil, and laminated papers are suitable for dry-packed vegetables and fruits, meats, fish, or poultry. Bags can also be used for liquid packs. Laminated papers are sometimes used as protective overwraps. Protective cardboard cartons may be used to protect bags and sheets against tearing and to make stacking easier. Lightweight (household) aluminum foil, wax paper and bread wrappers are not sufficiently moisture- and vapor-resistant to be suitable for long-term freezer storage.

PACKAGING AND LABELING TIPS

- Quickly cool all foods and syrup before packaging. This speeds up freezing and helps retain the natural color, flavor and texture of food.
- Pack foods in quantities that will be used for a single meal. Do not freeze fruits and vegetables in containers with a capacity over one-half gallon. Foods in larger containers freeze too slowly to result in a satisfactory product.
- Follow directions for individual foods to determine which ones can be packed dry and which need added liquid. Some loose foods such as blueberries may be “tray packed” (frozen first on a tray before packaging).
- Pack food tightly, leaving as little air as possible in the package.
- Most foods require headspace between the packed food and closure to allow for expansion of the food as it freezes. (See Table 1.) Foods that are exceptions and do not need headspace

include loose packing vegetables such as asparagus and broccoli, bony pieces of meat, tray-packed foods and bread.

- Seal rigid containers carefully. Use a tight lid and keep the sealing edge free from moisture or food to ensure a good closure. Secure loose-fitting covers with freezer tape.
- Meats may be packaged using either the drugstore wrap or the butcher wrap. (See instructions below.)
- Label each package, including the name of the product, any added ingredients, packaging date, the number of servings or amount, and the form of the food, such as whole, sliced, etc. Use freezer tape, marking pens or crayons, or gummed labels that are made specifically for freezer use.

Drugstore Wrap:

1. Center meat on paper.
2. Bring two sides of paper together at top.
3. Fold down about ½ to ¾ inch.
4. Roll folded edge down until snug against meat.
5. Turn package over. Press out air from sides.
6. Fold ends into triangles.
7. Bring to center and tape to secure.
8. Label and date.

Butcher Wrap:

1. Place meat at one corner of paper.
2. Roll up tightly towards opposite corner.
3. Tuck sides in.
4. Roll to end of paper.
5. Seal open edges with freezer tape.

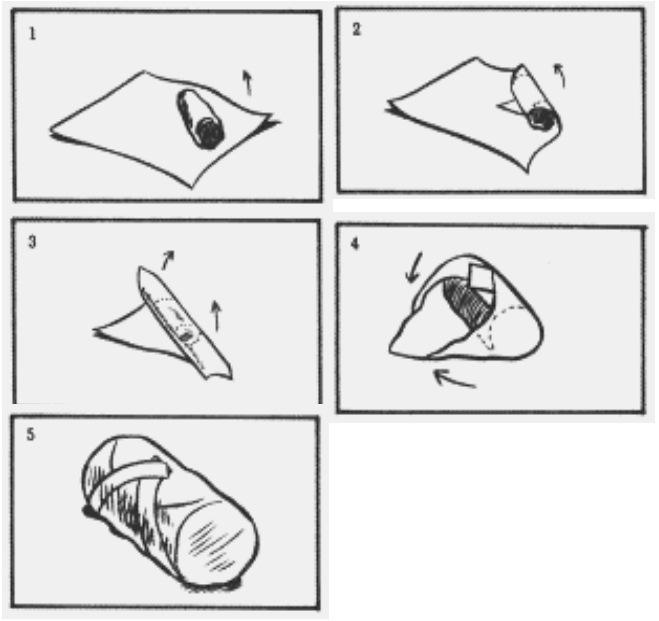

TABLE 1. HEAD SPACE TO ALLOW BETWEEN PACKED FOOD AND CLOSURE

Type of Pack	Container with wide top opening		Container with narrow top opening	
	Pint	Quart	Pint	Quart
Liquid pack*	½ inch	1 inch	¾ inch ***	1½ inch
Dry pack**	½ inch	½ inch	½ inch	½ inch

*Fruit packed in juice, syrup or water; crushed or puréed fruit; or fruit juice.
**Fruit or vegetable packed without added sugar or liquid.
***Headspace for juice should be 1½ inches.

FREEZER POINTERS

- Freeze food at 0 °F or lower. To facilitate more rapid freezing, set the temperature control at minus 10 °F or lower about 24 hours in advance.
- Freeze foods as soon as they are packaged and sealed.
- Do not overload your freezer with unfrozen food. Add only the amount that will freeze within 24 hours; usually 2 to 3 pounds of food per cubic foot of storage space. Overload slows down the freezing rate, and foods that freeze too slowly may lose quality.

- Place packages in contact with refrigerated surfaces in the coldest part of the freezer.
- Leave a little space between packages so air can circulate freely. Then, when the food is frozen, store the packages close together.

FREEZER MANAGEMENT

A full freezer is most energy efficient. Post a frozen foods inventory near the freezer and keep it up-to-date by listing the foods and dates of freezing as you put them in the freezer. Check them off as you take them out. By keeping an inventory, you will know the exact amounts and kinds of foods that are in the freezer at all times. It also helps to keep foods from being forgotten. Maintain the storage temperature at 0 °F or lower. At higher temperatures, foods lose quality much faster. Keep a freezer thermometer in your freezer and check the temperature frequently.

FOODS THAT DO NOT FREEZE WELL

- Cabbage*, celery, cress, cucumbers*, endives, lettuce, parsley, radishes
- Cheese or crumb toppings
- Cream or custard fillings, milk sauces, sour cream
- Cooked egg whites, icings made from egg whites
- Fried foods
- Fruit jelly, gelatin
- Irish potatoes, baked or boiled
- Cooked macaroni, spaghetti or rice

*Note: Cucumbers and cabbage can be frozen as marinated products such as “freezer slaw” or “freezer pickles.” These do not have the same texture as regular slaw or pickles.

EFFECT OF FREEZING ON SPICES AND SEASONINGS

When using seasonings and spices, season lightly before freezing, and add additional seasonings when reheating or serving. Pepper, cloves, garlic, celery seasonings, green pepper, imitation vanilla and some herbs tend to get stronger and bitter. Onion, paprika and curry change flavor during freezing. Salt loses flavor and has the tendency to increase rancidity of any item containing fat.

TABLE 2. REMEDIES FOR FREEZING PROBLEMS

Problems	Cause	Prevention
Freezer burn — (surface of food light colored and dried out; food is tough, dry and less flavorful)	1. Torn or unsealed packages	1. Be sure all packages are tightly sealed so no air can get in. Handle carefully to avoid tears.
	2. Packaging not moisture- and vapor-resistant	2. Use only packaging approved for use in freezing.
	3. Too much air in package	3. Always press out all air in wrapped foods. Use just the right size container for the amount of food and proper headspace.
1. Gummy liquid in fruits	1. Fruits frozen too slowly or freezer temperatures too warm or fluctuating	Freeze foods at 0 °F or below immediately after packaging and maintain that temperature throughout storage. Do not freeze more than 2 to 3 pounds of food per cubic foot of storage space at one time.
2. Mushy food	2. Large ice crystals form in the food, breaking the cell structure	
1. “Grassy” flavors in vegetables	Freezing unblanched vegetables	Blanch all vegetables as directed.
2. Green vegetables turn olive brown color		
Rancid flavors — (strong oily-like flavor in fats)	Spoilage of the fat in a product	Blanch all vegetables as directed. Package food correctly and exclude all unnecessary air. Do not store for longer than recommended.
Maroon-colored bones or pink meat in frozen poultry after it is cooked	Hemoglobin (coloring matter) in bones	Natural occurrence. There’s nothing wrong with the meat.

OFTEN ASKED FREEZING QUESTIONS

Can Frozen Food Be Stored in Refrigerator-Freezer Combinations? Refrigerator-freezer combinations can be used for storing frozen food if the freezer is a true freezer (will maintain 0 °F or less) and not just a freezing compartment. A better-quality product will be maintained at 0 °F or less. If a freezer compartment is used, store food for only one to two weeks.

How Long Will Food Remain Frozen if the Power Goes Off? Foods stay frozen longer if the freezer remains unopened, is full, is in a cool place and is well-insulated. Usually food in a loaded freezer will stay frozen for two to four days, depending on the size of the freezer. A half-filled freezer will keep food frozen only about 24 hours. Cover the freezer with blankets, keeping them away from the compressor, to help hold the cold.

Can Food Be Refrozen if It Has Thawed? Foods that have only partially thawed and still have ice crystals in the package can be safely refrozen, though quality will be poorer. Meat, fish, poultry, prepared foods, vegetables and fruits can be refrozen if they have been kept at a temperature of 40 °F or below and if their color and odor are good. However, quality will be lower. If ice cream is partially thawed, throw it out. Its texture will not be acceptable and if its temperature reaches above 40 °F, it could be unsafe.

TABLE 3. STORAGE TIMES FOR HOME-FROZEN FOODS

The recommended storage times for home-frozen products held at 0 °F are given below. For best quality, use the shorter times. After these times, the food should be safe, just lower in quality.

Products	Storage Period
Bacon	1 month
Butter or margarine	9 months
Cheese	
Dry-curd cottage cheese, ricotta	2 weeks
Natural, process	3 months
Cream (all kinds)	2 months
Whipped	1 month
Egg whites or yolks	12 months
Frankfurters	2 months
Fish or shellfish	
"Fatty" fish	3 months
"Lean" fish	6 months
Shellfish	3 months
Fruits (except citrus)	8-12 months
Citrus fruits and juices	4-6 months
Ham	2 months
Ice cream or sherbet	1 month
Meat, ground or stew	3 months
Milk, fresh fluid	1-3 months

Products	Storage Period
Poultry	
Cooked, with gravy	6 months
Cooked, no gravy	1 month
Duck or Goose	6 months
Uncooked (whole) chicken or turkey	1 year
Uncooked (parts) chicken	9 months
Uncooked (parts) turkey	6 months
Roasts	
Beef or lamb	12 months
Pork or veal	8 months
Steaks or chops	
Beef	12 months
Lamb or veal	9 months
Pork	4 months
Variety meats	4 months
Vegetables	8-12 months
Yogurt (regular)	
Plain	1 month
Flavored	5 months

For more information on freezing, request any of the following fact sheets: HGIC 3063, *Freezing Fruits and Vegetables;* HGIC 3064, *Freezing Meats and Seafood;* and HGIC 3065 *Freezing Prepared Foods.*

Source:
Reynolds, Susan and Paulette Williams. *So Easy to Preserve*, Bulletin 989. University of Georgia Cooperative Extension Service. Revised by Judy Harrison, 1993.

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