



Food Freezing Guide



Julie Garden-Robinson
Food and Nutrition Specialist



North Dakota State University, Fargo, North Dakota 58105

SEPTEMBER 1985

Reviewed and Revised 2004



Contents

Introduction	3
Factors Affecting Quality	3-4
Loading the Freezer	5
Freezer Inventory	5
Thawing Foods	5
What If The Freezer Stops?	5-6
Foods That Do Not Freeze Well	6-7
Freezing Vegetables	7-12
Freezing Fruits	12-20
Freezing Prepared Foods	20
Freezing Animal Products	20-25
Extra Hints and Additional Foods	25-26
Suggested Storage Time	27-28
Freezing Prepared Foods	29-36



■ Introduction

Freezing is one of the easiest, quickest, most versatile and most convenient methods of preserving foods. Properly frozen foods maintain more of their original color, flavor and texture and generally more of their nutrients than foods preserved by other methods.

Because freezing can be the most expensive method of preserving foods, good freezer management is important. The following tips will help you get the most of your freezer dollar.

- Place your freezer in a cool, dry area where the temperature is constant.
- Keep your freezer at least $\frac{3}{4}$ full for efficient operation.
- Continue to use and replace foods. Do not simply store them.
- Open the freezer door as rarely as possible.
- Make proper use of energy saving features on your freezer.
- Keep door seals clean and check for proper sealing. Replace when necessary.
- Defrost manual freezers regularly.
- Keep the condenser coils clean.

Ask at your county extension office, for information on how to select a freezer.

■ Factors Affecting Quality

The condition of the food at the time of freezing will determine the final quality of the frozen food. Frozen food can be no better than the food was before it was frozen. Freezing does not sterilize foods as canning does. It simply retards the growth of microorganisms and slows down chemical changes that affect quality or cause food spoilage.

Enzymes

Enzyme action can be controlled by freezing, heating and chemical compounds. Freezing slows enzyme activity so that many frozen foods, such as meats and many fruits, will keep satisfactorily with little or no further treatment.

Enzymes in vegetables are inactivated by heat during the recommended blanching process described on page 7. Enzymes in fruits, causing browning and loss of vitamin C, are controlled by chemical compounds (antioxidants) described on page 12.

Air

Oxygen in the air may cause flavor and color changes if the food is improperly packaged.

Microorganisms

Microorganisms do not grow at freezer temperature, but most are not destroyed and will multiply as quickly as ever when the frozen food is thawed and allowed to stand at room temperature.

Ice Crystals

The formation of small ice crystals during freezing is desirable. Fast freezing is the most practical way to form small ice crystals. Large ice crystals associated with slow freezing tend to rupture the cells, causing an undesirable texture change. See page 5 on loading the freezer.

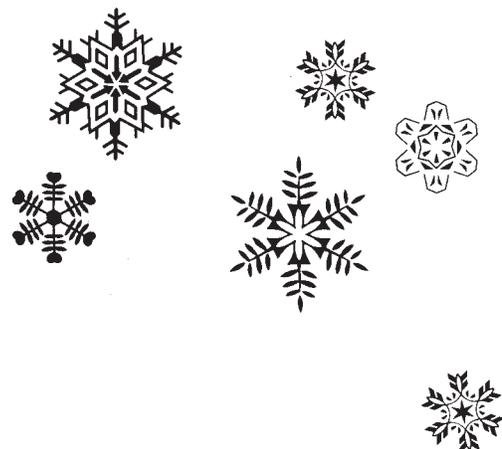
Freezer Temperature

A temperature of 0 degrees Fahrenheit or less must be maintained to keep frozen foods at top quality. The storage life of foods is shortened as the temperature rises. For example, the same loss of quality in frozen beans stored at 0 F for one year will occur in three months at 10 F, in three weeks at 20 F, and in five days at 30 F.

Fluctuating temperatures result in growth in the size of ice crystals, further damaging cells and creating a mushier product. Changes in temperature can also cause water to migrate from the product.

Evaporation of Moisture

Improperly protected food will lose moisture, color, flavor and texture. Ice crystal evaporation from an area at the surface results in freezer burn, which is a dry, grainy, brownish area that becomes tough. Freezer burn does not render a food unsafe, only less desirable.





Packaging Materials

The prime purpose of packaging is to keep food from drying out and to preserve nutritive value, flavor, texture and color. Labels on packages will say if the product is suitable for freezer storage. A good packaging material should have the following characteristics:

- Moisture/vapor-proof or at least moisture resistant.
- Made of food grade material, i.e. designed to be used for food products.
- Durable and leakproof.
- Doesn't become brittle and crack at low temperatures.
- Resistant to oil, grease or water.
- Protect foods from off flavors and odors.
- Easy to fill and seal.
- Easy to mark and store.

The packaging selected will depend on the type of food to be frozen, personal preference and availability. For satisfactory results, do not freeze fruits and vegetables in containers larger than one-half gallon.

Packaging not sufficiently moisture/vapor-resistant for long-time freezer storage includes ordinary waxed paper and paper cartons from cottage cheese, ice cream and milk.

Rigid Containers

Rigid containers are made of plastic, glass, aluminum and heavily waxed cardboard and are suitable for all packs. These are often reusable. Straight or tapered sides on rigid containers make it much easier to remove frozen foods.

Glass jars used for freezing should be made for the purpose. Regular glass jars may not withstand the extremes in temperature. Do not use regular, narrow-mouth canning jars for freezing foods packed in liquid. Expansion of the liquid could cause the jar to break at the neck.

Cans, such as shortening and coffee cans, are good for packaging delicate foods. Line the can with a food-storage bag and seal the lid with freezer tape because they are not airtight.

Baking dishes can be used for freezing, heating and serving. Dishes may be covered with a heavy aluminum foil taped with freezer tape. To free the baking dish, wrap the food in casserole-wrap fashion (see page 22).

Ice cube trays are good for freezing foods in small amounts. Freeze food until firm and then transfer to freezer bags.

Flexible Bags or Wrapping

Bags and sheets of moisture/vapor-resistant materials and heavy-duty foil are suitable for dry packed vegetables and fruits, meat, fish or poultry. Bags can also be used for liquid packs. Protective cardboard cartons may be used to protect bags and sheets from tearing and to make stacking easier.

Laminated papers made of various combinations of paper, metal foil, glassine, cellophane and rubber latex are suitable for dry packed vegetables and fruits, meats, fish and poultry. Laminated papers are also used as protective overwrap.

Packaging, Sealing and Labeling

- Cool all foods and syrup before packing. This speeds up freezing and helps retain natural color, flavor and texture of food.
- Pack foods in quantities that will be used at one time.
- Most foods require head space between the packed food and the closure for expansion as the food freezes (see page 9). Loose packing vegetables, such as asparagus and broccoli, bony pieces of meat, tray-packed foods and breads, do not need head space.
- Pack foods tightly to cut down on the amount of air in the package.
- Run a nonmetal utensil, such as a rubber scraper handle, around the inside of the container to eliminate air pockets.
- When wrapping food, press out as much air as possible and mold the wrapping as close to the food as possible (see page 21).
- When packing food in bags, press the air from the bags. Beginning at the bottom of the bag, press firmly moving toward the top of the bag to prevent air from re-entering or force the air out by placing the filled bag in a bowl of cold water taking care that no water enters the bag. Seal either method by twisting and folding back the top of the bag (gooseneck, see illustration page 9) and securing with string, good quality rubber band, strip of coated wire or other sealing device. Many bags may be heat sealed, and some have a tongue-in-groove seal built in.
- Keep sealing edges free from moisture or food so a good closure can be made.
- When tape is used it should be freezer tape, designed for use in the freezer. The adhesive remains effective at low temperature.
- Label each package with name of product, date, amount and any added ingredients. Use freezer tape, freezer marking pens or crayons, or gummed labels made especially for freezer use.

■ Loading the Freezer

- Freeze foods at 0 F or lower. To facilitate more rapid freezing, set the freezer at minus 10°F about 24 hours in advance of adding unfrozen foods.
- Freeze foods as soon as they are packaged and sealed.
- Do not overload the freezer with unfrozen food. Add only the amount that will freeze within 24 hours. This is usually 2 or 3 pounds of food per cubic foot of storage space. Overloading slows down the freezing rate, and foods that freeze too slowly may lose their quality.
- Place packages against freezing plates or coils. Leave space between packages so air can circulate freely. After freezing, store packages close together.
- Arrange packages so those that have been in the freezer the longest are used first.

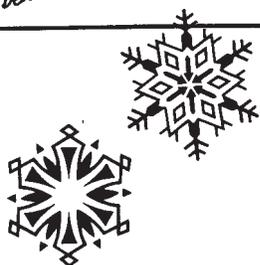
■ Freezer Inventory

Keep a list of all the foods in the freezer. Update the list each time food is put into the freezer or removed. Over-storage of foods and loss of quality can be avoided by use of an inventory.

See sample.

See pages 27-28 for recommended storage time.

FOOD	Date Packaged	Size	No. Frozen	No. Used
MEAT			20	11
hamburger	5/1/85	3lbs	10	11
chicken	3/5/85	whole	5	1
pork chops	4/20/85	4chps	5	11
roast beef	4/20/85	4 lbs	5	
FRUIT			25	11
peaches	7/5/85	pints	20	11
strawberries	6/10/85	pints		
VEGETABLES			12	1
peas	8/10/85	pints	12	11
green beans	8/5/85	pints		



■ Thawing Foods

Most of the changes that appear during thawing are a result of freezing and storage. When food is thawed the ice crystals melt, the liquid is either absorbed back into the food or leaks out from the food. Slow, well-controlled thawing usually results in better return of moisture to the food and results in a food more like the original food than rapid thawing.

Thawing in the refrigerator is the safest thawing method. When food stands at room temperature there is opportunity for growth and activity of microorganisms.

See Thawing Fruits, page 14.

■ What if the Freezer Stops?

The basis for safety in refreezing foods is the temperature at which thawed foods have been held and the length of time they were held after thawing. You can safely refreeze foods that still contain ice crystals or if they are still cold, i.e. below 40 F, and have been held no longer than one or two days at this temperature after thawing. In general, if it is safe to eat it is safe to refreeze.

Unfortunately the time and temperature are often unknown. In these cases the following points need to be considered.

- Do not open the door to check items; make a plan first.
- Try to determine, if possible, when the freezer may have stopped working.
 - Food in a closed, fully loaded freezer will keep for two days.
 - Food in a closed less than half loaded freezer won't keep longer than one day.
 - Meat, because of density, will remain frozen longer than baked goods.
 - Foods in a larger, well-stocked freezer, will stay frozen longer.
- If the freezer will not be operational within a day or two:

Use dry ice if available. Twenty-five pounds of dry ice in a 10 cubic foot freezer should hold the temperature below freezing for two to three days with less than half a load and three to four days in a fully loaded cabinet, if dry ice is obtained quickly following interruption of freezer operation.

Place dry ice on boards or heavy cardboard on top of packages. Open freezer only when necessary. Don't

handle dry ice with bare hands as it will cause burns. When using dry ice be sure the room is ventilated.

If dry ice is not available, other options are to:

- Cover the freezer with layers of newspaper and blankets. Pin the blankets away from the air vent. The air vent must be open because air is needed when electricity comes on. A blanket cover will help even when dry ice is used.
- Find other freezer storage at a locker plant or with friends and neighbors. Transfer foods in insulated boxes or well-wrapped in layers of newspapers.



■ Refreezing

Refreezing needs to be done quickly. Clean the freezer before refilling. If the freezer has an adjustable temperature control, turn it to the coldest position.

Check each package or container of food. Nonrigid containers can often be checked without opening by squeezing to feel for ice crystals. If they need to be opened they should be carefully rewrapped.

Place the warmer packages against the refrigerated surface when possible, but leave space between packages for air circulation.

The quality of refrozen foods is diminished.

Label and use refrozen foods as soon as possible.

■ What to Refreeze

Foods that have defrosted have no remaining ice crystals. If defrosted foods have warmed above refrigerator temperature (40°F) they should not be refrozen, except for very high acid foods, such as fruits.

Many thawed foods, i.e. those still containing many ice crystals or a firm-to-hard core of ice in the center, may be safely refrozen.

Any signs of spoilage, off odors or color in any food indicates the food should be disposed of without tasting.

Remember, however, that you can't rely on appearance and odor. Some foods may look and smell fine, but if they've been at room temperature too long, food poisoning bacteria may have multiplied enough to cause illness.

Meats, such as beef, pork, veal, lamb and poultry can be refrozen when they are still firm with ice crystals. Meat still safe to eat can be cooked and refrozen. Discard meats if any signs of spoilage such as an off color or off odor are present.

Fruits usually ferment when they start to spoil, which will not make them dangerous to eat but will spoil the flavor. Defrosted fruits that smell and taste good can be refrozen.

Vegetables should be refrozen only if they contain plenty of ice crystals.

Shellfish, prepared foods or leftovers should not be refrozen if defrosted. If the condition of the food is poor or even questionable, get rid of it. It may be dangerous.

Never refreeze melted ice cream, cream pies, eclairs or similar foods.

Unfrosted cakes, uncooked fruit pies, breads and rolls can be refrozen.

The investment in the foods in the freezer may be significant, but so are the benefits of serving safe foods.

■ Foods That Do Not Freeze Well

FLAVOR CHANGE

- Pepper, cloves, imitation vanilla, garlic (especially uncooked), sage and celery seasonings may become strong and/or bitter.
- Curry may develop a musty off-flavor.
- Onion changes flavor during freezing.
- Salt loses flavor and has the tendency to increase rancidity of any item containing fat.
- Artificial sweeteners and salt substitutes can be added at serving time to be on the safe side.

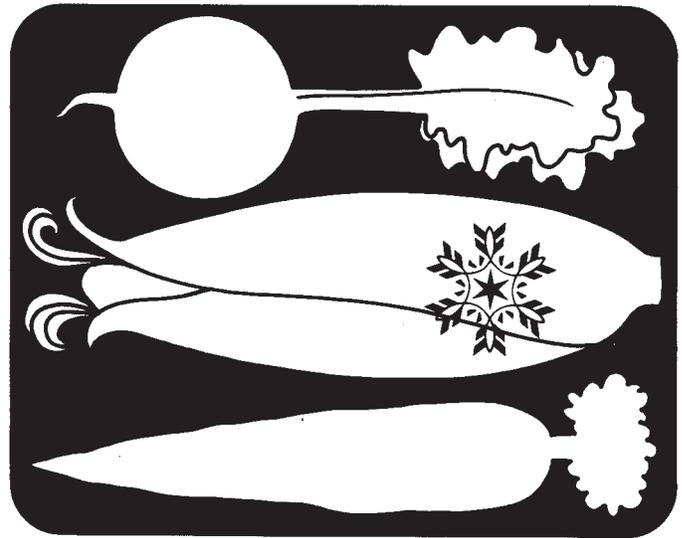
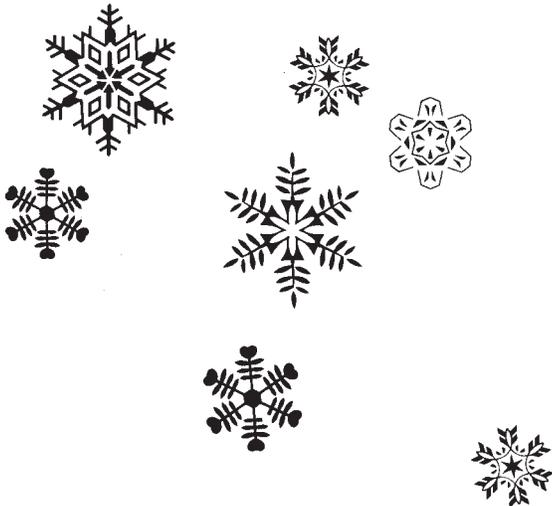
TEXTURE CHANGE

- Cooked egg whites become tough and rubbery.
- Soft meringues toughen and shrink.

- Mayonnaise and cooked egg or cream-based salad dressings separate when frozen alone.
- Milk sauces or wheat-flour thickened gravies may separate or curdle.
- Half-and-half, sour cream and cottage cheese separate and may become grainy and watery when frozen alone. Buttermilk and yogurt react similarly, but can be used for baking.
- Custard or cream fillings tend to separate and become lumpy and watery.
- Boiled or fluffy frostings made with egg whites become sticky and weep.
- Cooked pasta products lose texture and tend to taste rewarmed when frozen alone.
- Most gelatin dishes tend to weep when thawed.
- Cheese or crumb toppings become soggy.
- Fried foods, except french-fried potatoes and onion rings, lose crispness and become soggy.
- Lettuce, tomatoes, celery, cucumbers, parsley, radishes and similar high-water-content vegetables become limp and watery.
- Potatoes might darken and have a texture change when included in frozen soups and stews. New potatoes freeze better than older ones.
- Canned hams can become tough and watery.
- Stuffed poultry cannot be safely frozen.

■ Nutrient Retention

Recent studies have shown the nutrient content of frozen, fresh ready-to-eat and canned foods to be nearly comparable. Nutrient content is the highest when foods are preserved or eaten as soon after harvest as possible.



■ Freezing Vegetables

Fresh, tender vegetables right from the garden are best for freezing. If vegetables cannot be frozen immediately after harvesting, store them in the refrigerator to preserve freshness until they can be prepared and frozen.

See table 1, page 8 for approximate yield of frozen vegetables from fresh.

Not all vegetables freeze well (see page 6). Be sure to contact your county extension office for information on recommended varieties of vegetables for North Dakota to ensure a good crop to fill the freezer.

Blanching

Blanching is scalding the vegetables in water or in steam for a short time. It is a very important step in freezing vegetables because it slows or stops the action of enzymes. These enzymes are essential for growth and ripening. If the enzyme action is not stopped before freezing, the vegetables may continue maturing, develop off-flavors, discolor, or toughen so they may be unappetizing in a short time.

This heating process also wilts or softens vegetables and makes them easier to pack. Some microorganisms are killed and the color is brightened.

Blanching times vary with the size and kind of vegetable. The times recommended are just long enough to stop or destroy the enzymes. Be sure to follow the recommended blanching times.

Underblanching can stimulate the activity of some enzymes and is worse than not blanching at all. Overblanching results in loss of vitamins, minerals, flavor and color.

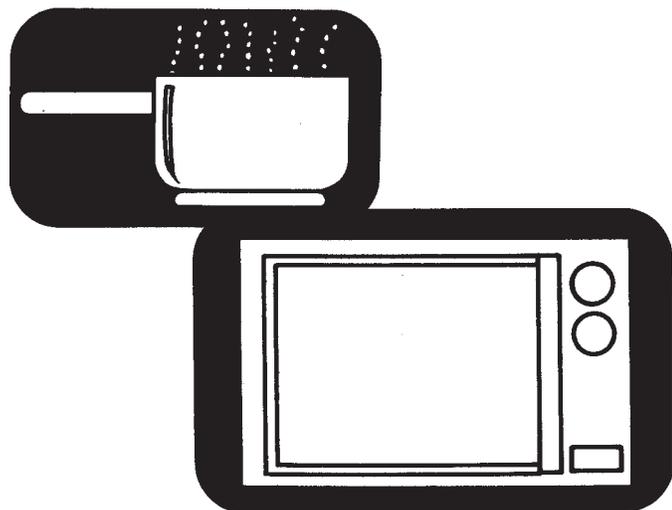
Table 1. Approximate yield of frozen vegetables from fresh.

Vegetable	Fresh, as Purchased or Picked	Approximate Pint Containers Needed	Approximate Pounds Needed for 1 Pint
Asparagus	1 crate (12 1-lb bunches)	15 to 22	1 to 1½
Beans, lima (in pods)	1 bu (32 lb)	12 to 16	2 to 2½
Beans, snap, green, wax	1 bu (30 lb)	30 to 45	⅔ to 1
Beet greens	15 lb	10 to 15	1 to 1½
Beets (without tops)	1 bu (52 lb)	35 to 42	1¼ to 1½
Broccoli	1 crate (25 lb)	24	1
Brussels sprouts	4 quart boxes	2 to 4	1
Carrots (without tops)	1 bu (50 lb)	32 to 40	1¼ to 1½
Cauliflower	2 medium heads	3	1⅓
Chard	1 bu (12 lb)	8 to 12	1 to 1½
Collards	1 bu (12 lb)	8 to 12	1 to 1½
Corn, sweet (in husks)	1 bu (35 lb)	14 to 17	2 to 2½
Kale	1 bu (18 lb)	12 to 18	1 to 1½
Mustard greens	1 bu (12 lb)	8 to 12	1 to 1½
Peas	1 bu (30 lb)	12 to 15	2 to 2½
Peppers, sweet	1 bu (25 lb)	34 to 42	⅔
Pumpkin			1½
Spinach	1 bu (18 lb)	12 to 18	1 to 1½
Squash, summer	1 bu (40 lb)	32 to 40	1 to 1¼
Squash, winter			1½
Sweet potatoes	1 bu (50 lb)	32 to 50	1 to 1½

To Blanch in Boiling Water

Use a blancher that has a blanching basket and cover or fit a wire basket into a large kettle with a cover. A cheesecloth bag is another option. Use at least 1 gallon of water for each pound of vegetables. Put the vegetables into the basket or bag and lower the basket into the boiling water. Cover and start counting time immediately. Keep heat high and continue boiling for the time specified for the vegetable you are freezing. If boiling stops, you are blanching too large a quantity at one time.

The same water can be reused several times for blanching; just be sure to bring it back to a vigorous boil before adding vegetables.

**To Blanch in Steam**

Put 1 to 2 inches of water in a kettle and bring to a rolling boil. Suspend a thin layer of vegetables in a wire basket or cheesecloth over the rapidly boiling water. Cover, keep the heat on high, and steam blanch vegetables the time recommended in the table.

Blanching in the Microwave

Microwave-blanching vegetables are not as acceptable as either water- or steam-blanching vegetables. Using the microwave for vegetable blanching does not save significant time. This is because the time required when using either water or steam is so short.

If you choose to use the microwave for blanching vegetables, check the oven manufacturer's recommendations.

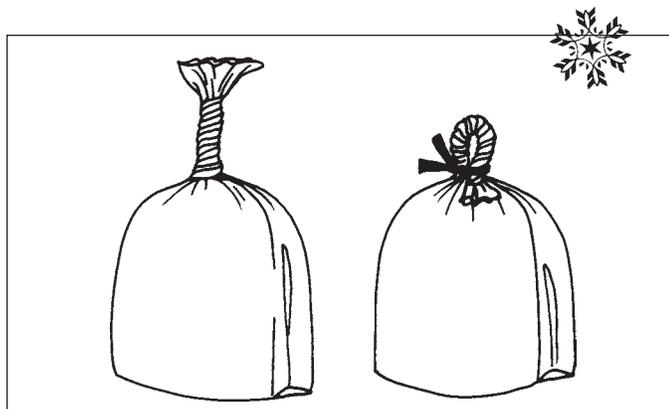
Cooling

After vegetables are heated they should be cooled quickly and thoroughly to stop the cooking. After heating, plunge the basket of vegetables immediately into a large quantity of cold water. Change water frequently or use cold running water or ice water. If ice is used you'll need about 1 pound of ice for each pound of vegetables. It takes about as long to cool the vegetables as it does to heat them. When vegetables are cool, remove from water and drain thoroughly.

■ Methods of Packing Vegetables

When using rigid containers leave head space (see below). Food expands when it freezes, and the top may pop off the container if it is too full.

When using freezer bags, press air out of unfilled part of the bag, seal and freeze. If the bag has a twist closure, be sure to twist the bag and fold the bag back in a gooseneck before securing the twist. If this is not done, air will rush back into the bag.



Vegetables can be packed either solid or loose.

Solid pack: Put drained vegetables into freezer containers. Pack tightly to cut down on the amount of air in the container or bag. Seal and freeze.

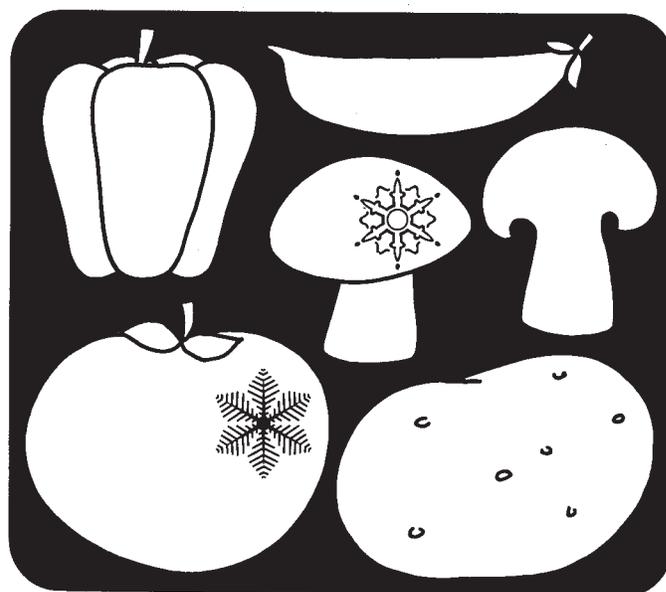
Loose or tray pack: This enables you to pour out as much as you want from a large package. Spread the drained vegetables in a single layer on a tray and freeze. As soon as they are frozen, pour into rigid freezer containers or bags, seal and return to freezer. Remove as you need them.

■ How to Use Frozen Vegetables

Most frozen vegetables should be cooked without thawing them first. Corn on the cob is an exception — it should be partially thawed so the cob is heated through by the time the corn is cooked. This takes about 10 minutes.

Do not overcook vegetables. Cook only until tender. Most vegetables have been partially cooked when blanched, so less cooking time is required than for fresh vegetables. Cook in a small amount of water; about ½ cup is sufficient.

Note: The microwave oven does an excellent job of cooking frozen vegetables. Follow the manufacturer's recommendations for times and power selections.



Type of Pack	Head Space			
	Container with wide top opening ¹		Container with narrow top opening ²	
	Pint	Quart	Pint	Quart
Liquid Pack (fruit packed in juice - syrup or water; crushed or pureed fruit)	½ inch	1 inch	¾ inch	1½ inch
Juice	1½ inch	1½ inch	1½ inch	1½ inch
Dry Pack (fruit or vegetable packed without sugar or syrup)	½ inch	½ inch	½ inch	½ inch

¹This is head space for tall containers either straight or slightly flared.

²Glass canning jars may be used except for a water pack.



PREPARATION TABLE FOR FREEZING VEGETABLES

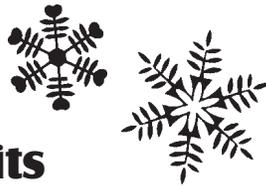
VEGETABLE	PREPARATION See page 9 for appropriate head space	BLANCHING TIME (In boiling water unless otherwise stated)
ASPARAGUS (young tender stalks; compact tips)	Wash thoroughly, sort by size. Cut in 2-inch lengths or leave in spears. Blanch, cool and drain. Alternate tips and stems when packaging.	Small Stalks - 2 minutes Medium Stalks - 3 minutes Large Stalks - 4 minutes
BEANS, lima (slightly rounded, bright green pods, young, tender beans)	Shell, wash and sort according to size. Blanch, cool and drain.	Small Beans - 2 minutes Medium Beans - 3 minutes Large Beans - 4 minutes
BEANS, snap, green or wax (young tender, stringless)	Wash and remove ends. Leave whole, slice or cut into 1- to 1½-inch lengths. Blanch, cool and drain.	3 minutes
BEETS (1 to 2 inches in diameter)	Trim tops leaving ½ inch of stem. Wash and sort according to size. Cook in boiling water until tender. Cool, peel and cut into slices or cubes.	Cook: Small beets 25-30 minutes Medium beets 45-50 minutes
BROCCOLI (compact dark green heads; tender stalks)	Wash and trim. If insects are present soak ½ hour in solution of 4 teaspoons salt to 1 gallon of cold water. Split lengthwise into pieces no more than 1½ inches across. Blanch, cool and drain.	In water - 3 minutes In steam - 5 minutes
BRUSSELS SPROUTS (green, firm compact heads)	Make sure no insects are present. Trim, remove coarse outer leaves. Wash and sort. Blanch, cool and drain.	Small - 3 minutes Medium - 4 minutes Large - 5 minutes
CABBAGE (for cooked dishes) (fresh, compact heads)	Remove coarse outer leaves. Cut into medium or coarse shreds, thin wedges, or separate leaves. Blanch, cool and drain.	1½ minutes
CARROTS (tender, mild-flavored carrots)	Remove tops. Wash and peel. Leave small carrots whole. Cut others into cubes, slices or lengthwise strips. Blanch, cool and drain.	Small, whole - 5 minutes OR Diced, sliced or strips - 2 minutes
CAULIFLOWER (tender, firm, snow-white heads)	Break into pieces about 1 inch across. Wash. If insects are present, soak ½ hour in solution of 4 teaspoons salt to 1 gallon of cold water. Drain. Blanch, cool and drain.	3 minutes
CORN, sweet (plump, tender kernels and thin sweet milk)	Husk ears, remove silk and wash	
whole kernel and creamed	Blanch, cool and drain. For whole kernel corn - cut corn off cob about 2/3 the depth of kernels. For cream style corn - cut at 1/2 depth of kernels and scrape cob with back of knife to remove juice. Package, seal and freeze.	4 minutes
on the cob	Sort ears according to size. Small ears - 1¼ inches or less in diameter. Medium ears - 1¼-1½ inches in diameter. Large ears - over 1½ inches in diameter. Blanch, cool and drain.	Small ears - 7 minutes Medium ears - 9 minutes Large ears - 11 minutes
GREENS, beet greens, collards, chard, kale, mustard greens, spinach, turnip greens (tender leaves)	Discard any infected leaves. Wash and remove tough stems. Blanch, cool and drain.	Collards - 3 minutes Other greens - 2 minutes Very tender leaves - 1½ minutes
HERBS, basil, dill, parsley and others	Wash, drain, trim or chop. Use in cooked dishes because herbs become limp when thawed. Add frozen herbs directly to food being cooked.	No heat treatment required.

PREPARATION TABLE FOR FREEZING VEGETABLES

VEGETABLE	PREPARATION See page 9 for appropriate head space	BLANCHING TIME (In boiling water unless otherwise stated)
KOHLRABI (young, tender mild-flavored)	Remove tops and roots. Wash, peel and leave whole or dice in ½-inch cubes. Blanch, cool and drain.	Whole - 3 minutes Cubes - 1 minute
MUSHROOMS (young, firm, free from spots and decay)	Sort by size; wash and trim ends. Those more than 1-inch across should be sliced or cut in quarters. For better color, soak for 5 minutes in a solution of 1 teaspoon lemon juice or 1½ teaspoon of citric acid and 1 pint of water prior to blanching.	In steam: Whole - 5 minutes Buttons or quarters - 3½ minutes Slices - 3 minutes OR Saute in butter or margarine until tender.
ONIONS (fully mature onions)	Peel, wash and chop. Loosely pack and freeze in large freezer bags. Take out as needed. Use in 2 to 3 months. Texture may be affected.	No heat treatment needed
PARSNIPS (tender small to medium)	Remove tops, wash, peel and cut into ½-inch cubes or slices. Blanch, cool and drain.	2 minutes
PEAS, green (sweet, tender table-ready)	Wash pods. Shell a batch at a time. Delay between shelling and freezing toughens skins. Blanch, cool and drain.	1½ minutes
PEAS, snow, sugar or Chinese (table-ready, tender pods)	Wash, remove blossom ends and strings. Leave whole. Blanch, cool and drain.	Small pods - 1½-2 minutes Medium pods - 2½-3 minutes
PEPPERS, green or hot (tender, crisp)	Wash, cut off stems, remove seeds. Cut into rings, dice or slice as desired.	No heat treatment needed
POTATOES	Wash, peel and cut into 1½-inch cubes. Blanch and cool. For hash browns: cook in jackets until nearly done. Peel, grate and form into desired shape. Freeze. For french fries: select mature potatoes that have been stored for 30 days. Peel and cut into strips. Rinse in cold water. Dry thoroughly. Fry in deep fat (360°Fahrenheit) until light golden brown. Drain on paper towel. Cool. Do not salt. Package and freeze. To serve, heat in 450°F oven until golden brown. Note: Potatoes may be precooked in water or steam instead of fat.	5 minutes
PUMPKIN and WINTER SQUASH (firm, mature)	Wash, cut into small pieces and remove seeds. Cook until soft in boiling water, in steam in a pressure cooker or in 350°F oven. Remove pulp from rind. Mash, cool, package and freeze.	Cook until tender
SUMMER SQUASH (ZUCCHINI) (young, tender)	Wash and cut into ½-inch slices. Blanch, cool and drain.	3 minutes
TOMATOES, juice sections	Wash, sort and trim tomatoes. Cut in quarters or eighths. Simmer 5-10 minutes. Press through a sieve. Cool. Package, seal and freeze. Wash, scald 2 minutes to loosen skin, peel and core. Cut into pieces. Simmer until table ready. Cool. Package, seal and freeze. OR Prepare tomato as above. Cut in quarters or smaller. Put into freezer containers. Press down with wooden spoon to release juice to cover. Leave 1 inch head space. Seal and freeze.	

PREPARATION TABLE FOR FREEZING VEGETABLES

VEGETABLE	PREPARATION	BLANCHING TIME (In boiling water unless otherwise stated)
TURNIPS (small to medium, firm, mild flavored)	Wash, peel and cut into ½-inch cubes. Blanch, cool and drain.	2 minutes
ZUCCHINI, grated	Steam in small quantities until translucent. Pack in amounts used in recipe allowing head space. Put containers in cold water to cool. Seal and freeze. Drain before using in baking.	In steam - 1-2 minutes



■ Freezing Fruits

Most fruits can be frozen satisfactorily, but the quality of the frozen product will vary with the kind of fruit, stage of maturity and type of pack.

Select a variety suitable for freezing. Select fruits with a firm texture and well-developed flavor and treat them with respect. Wash small lots (2 to 3 quarts) at a time to avoid bruising. Wash through several changes of cold water, lifting produce out of the water so dirt will not settle back on the fruit. Do not let produce soak.

Fruits are prepared for freezing in about the same way as for serving. It is best to prepare enough fruit for only 2 to 3 quarts at one time.

If fruit is to be crushed, suit the method to the fruit. A wire potato masher, pastry fork or slotted spoon may be used to crush soft fruits. Firm fruits may be crushed more easily with a food chopper. A colander, food press or strainer is useful for making purees. Blenders and food processors tend to liquify the fruit too much.

Do not use galvanized ware with fruit or fruit juices because the acid in fruit dissolves the zinc, which is poisonous. Metallic off-flavors may result from the use of iron utensils, chipped enameled ware or tinware that is not well tinned.

See page 13, for approximate yield of frozen fruits from fresh.

Preventing discoloration

Some fruits such as peaches, apples, pears and apricots darken quickly when exposed to air and during freezing.

While preparing, keep peeled, halved, quartered, sliced or diced fruits that turn dark in a solution of ascorbic acid.

This procedure is also useful for preventing stem-end discoloration in cherries and grapes. You can get ascorbic acid in several forms:

Pure powdered form — seasonally available among canners' supplies in supermarkets. One level teaspoon of pure powder weighs about three grams. Use one teaspoon per gallon of water as a treatment solution.

Vitamin C tablets — economical and available year round in many stores. Buy 500-milligram tablets; crush and dissolve six tablets per gallon of water as a treatment solution.

Commercially prepared mixes of ascorbic and citric acid — seasonally available among canners' supplies in supermarkets. Citric acid powder is sold in supermarkets, but it is less effective in controlling discoloration. If you choose to use these products, follow the manufacturer's directions.

Choosing a pack

There are several types of fruit packs suitable for freezing: syrup pack, sugar pack, unsweetened pack, tray pack or sugar replacement pack.

Most fruits have a better texture and flavor if packed in sugar or syrup. Some can be satisfactorily packed without sweetening, but vitamin C losses are greatest when fruits are packed without sugar. The type of pack will depend on the intended use. Fruits packed in syrup are generally best for serving uncooked; those packed in dry sugar or unsweetened are best for most cooking purposes because there is less liquid in the product. Unsweetened packs and sugar replacement packs are often used by people on special diets.

Approximate yield of frozen fruit from fresh.

Fruit	Fresh, as Purchased or Picked	Approximate Pint Containers Needed	Approximate Pounds Needed for 1 Pint
Apples	1 bu (48 lb)	32 to 40	1¼ to 1½
	1 box (44 lb)	29 to 35	
Apples, for sauce	1 bu (48 lb)	30 to 36	1¼ to 1¾
Apricots	1 bu (48 lb)	60 to 72	⅔ to 4/5
	1 crate (22 lb)	28 to 33	
Berries*	1 crate (24 qt)	32 to 36	¾ to 1½ (1-2 pt boxes)
Cantaloupe	1 dozen (28 lb)	22	1 to 1¼
Cherries, sweet or sour	1 bu (56 lb)	36 to 44	1¼ to 1½
Cranberries	1 box (25 lb)	50	½
	1 peck (8 lb)	16	
Currants	2 qt (3 lb)	4	¾
Grapes	1 lug (28 lb)	14 to 16	2
Peaches	1 bu (48 lb)	32 to 48	1 to 1½
	1 lug box (20 lb)	13 to 20	
Pears	1 bu (50 lb)	40 to 50	1 to 1¼
	1 western box (46 lb)	37 to 46	
Pineapple	5 lb	4	1¼
Plums and Prunes	1 bu (56 lb)	38 to 56	1 to 1½
	1 crate (20 lb)	13 to 20	
Raspberries	1 crate (24 pt)	24	1
Rhubarb	15 lb	15 to 22	⅔ to 1
Strawberries	1 crate (24 qt)	38	⅔

*Includes blackberries, blueberries, boysenberries, dewberries, elderberries, gooseberries, huckleberries, loganberries, youngberries.

Syrup pack

The proportion of sugar to water used depends on the sweetness of the fruit and the taste preference of the user. A 40 percent syrup is recommended for most fruits. Lighter syrups are desirable for mild flavored fruits to prevent masking the flavor. Heavier syrups may be used for very sour fruits.

Syrups for use in freezing fruits

Type of syrup	Sugar*	Water	Yield of syrup
	Cups	Cups	Cups
30 percent syrup	2	4	5
35 percent syrup	2½	4	5⅓
40 percent syrup	3	4	5½
50 percent syrup	4¾	4	6½
60 percent syrup	7	4	7¾
65 percent syrup	8¾	4	8⅔

*In general, up to ¼ of the sugar may be replaced by corn syrup. A larger proportion of corn syrup may be used if a very bland, light-colored type is selected.

To make syrup, dissolve the sugar in lukewarm water until the solution is clear. Cool syrup before using.

Use just enough cold syrup to cover the prepared fruit after it has been settled by jarring the container (about 1/2 to 3/4 cup of syrup per pint). To keep the fruit under the syrup, place a small piece of crumpled waxed paper or other water resistant wrapping material on the top and press the fruit down into the syrup before closing, sealing and freezing.

Unsweetened pack

Fruit can be packed dry. Place the clean fruit in the carton, cover and freeze, or cover with water containing ascorbic acid or packed in unsweetened juice. For fruit packed in water or juice, submerge fruit by using a small piece of crumpled water-resistant material as for syrup and sugar packs. Seal tightly and freeze.

Unsweetened packs generally yield a lower quality product than packs with sugar. However, some fruits such as raspberries, blueberries, scalded apples, gooseberries, currants, cranberries and rhubarb give a good quality without sugar.

Sugar pack

Put fruit in a bowl or shallow pan. Sprinkle sugar over the fruit and mix gently until the juice is drawn out and the sugar is dissolved. Use a large spoon or pancake turner for mixing.

Soft sliced fruits, such as peaches, strawberries, plums and cherries will yield sufficient syrup for covering if the fruit is layered with sugar and allowed to stand for 15 minutes. Some whole fruits may be coated with sugar and frozen.

Pack fruit and juice into container. Place a small piece of crumpled water-resistant paper on top to hold fruit down in the juice. Seal and freeze.

Tray pack

This is a good pack for the fruits mentioned above in unsweetened pack section. Spread a single layer of prepared fruit on shallow trays. Freeze and package in freezer bags promptly. The fruit pieces remain loose. Later the bag may be opened, the needed amount taken out, and the bag reclosed and returned to the freezer.

Sugar replacement pack

Sugar substitutes can be used when freezing fruits. They will give a sweet taste but do not furnish the beneficial effects of sugar like color protection and thick syrup. Fruits frozen with sugar replacements will freeze harder and thaw more slowly than those preserved with sugar.

Follow directions on the label of the sweetener to determine the amount of sweetener needed. Non-sugar sweeteners can be added at serving time instead of during the freezing process.

■ Packing

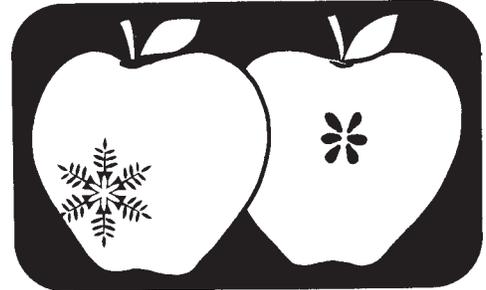
Use containers designed for freezer use. Allow head space between packed food and closure because most fruits expand during freezing. See page 9 for amount of head space needed.

■ Thawing Fruits

Allow fruit to thaw in the unopened package. Fruits packed in dry sugar thaw faster than those in syrup. Fruits packed without sugar take longer to thaw. Fruit to be served in salads, shortcakes, fruit sauce and fruit cups should be only partially thawed. Thaw fruits for pies until able to separate. Completely thawed fruit will become soft and may darken upon standing.

■ Preparation of Fruits for Freezing

For syrup recipe refer to page 13, for head space required see page 9.



Apples

Apple slices – Select firm, crisp full-flavored apples. Wash, peel and core. Slice medium apples into twelfths, large sizes into sixteenths. Pack in one of the following ways.

Syrup pack – Use 40 percent syrup (page 13). For a better quality frozen product add ½ teaspoon crystalline ascorbic acid to each quart of syrup.

Slice apples directly into cold syrup in containers, starting with ½ cup syrup to a pint container. Press fruit down in containers and add enough syrup to cover.

Leave head space (page 9). Seal and freeze.

Sugar pack – To prevent darkening of apples during preparation, slice them into a solution of 2 tablespoons salt to a gallon of water. Hold in this solution not more than 15 to 20 minutes. Drain.

To retard darkening, place slices in a single layer in steamer; steam 1½ to 2 minutes, depending on thickness of slice. Cool in cold water and drain.

Over each quart (1¼ pounds) of apples slices evenly sprinkle ½ cup sugar and stir.

Pack apples into containers and press fruit down. Leave head space (page 9). Seal and freeze.

Unsweetened pack – Follow directions for sugar pack, omitting sugar.

For pies – Follow directions for sugar pack, omitting sugar. Arrange steamed slices in a pie plate as for a pie. Put the filled plate into a plastic bag and freeze. Remove the solid chunk of slices from the plate as soon as frozen. Wrap it tightly and return to the freezer. At pie-making time, lay the pie-shaped chunk of slices in your pastry. Put on the sugar and seasonings, top with a crust and bake.





Applesauce – Select full-flavored apples. Wash apples, peel if desired, core and slice. To each quart of apple slices add $\frac{1}{3}$ cup water and cook until tender. Puree and add $\frac{1}{4}$ cup sugar, if desired, for each quart of hot puree, stirring until dissolved. Cool and package leaving head space (page 9). Seal and freeze.

Apple juice – Place freshly made juice in rigid containers. Leave head space (page 9). Seal and freeze.

With each quart (2 pounds) of prepared apricots mix with 1 cup sugar. For a better product, add to the fruit $\frac{1}{4}$ teaspoon crystalline ascorbic acid dissolved in $\frac{1}{4}$ cup of water just before adding the sugar.

Pack into containers, leaving head space (page 9). Seal and freeze.



Apricots

Halved – Select firm, ripe, uniformly yellow apricots. Sort, wash, half and pit. Peel and slice if desired. Unpeeled apricots are satisfactory for pies.

If apricots are not peeled, heat them in boiling water $\frac{1}{2}$ minute to keep skins from toughening during freezing. Then cool in cold water and drain.

Pack into containers in one of the following ways.

Syrup pack – Use 40 percent syrup (page 13). For a better quality frozen product, add $\frac{3}{4}$ teaspoon crystalline ascorbic acid to each quart of syrup.

Pack apricots directly into containers. Cover with syrup. Leave head space (page 9). Seal and freeze.

Sugar pack – Before combining apricots with sugar, treat the fruit as follows to prevent darkening:

Dissolve $\frac{1}{4}$ teaspoon crystalline ascorbic acid in $\frac{1}{4}$ cup water and sprinkle over 1 quart ($\frac{7}{8}$ pound) of fruit.

Mix $\frac{1}{2}$ cup sugar with each quart of fruit. Stir until sugar is dissolved. Pack apricots into containers and press down until fruit is covered with juice, leaving head space (page 9). Seal and freeze.

Crushed or puree – Select fully ripe fruit. For crushed apricots, dip in boiling water for $\frac{1}{2}$ minute and cool in cold water. Peel the apricots. Pit and crush them coarsely.

For puree, pit and quarter the apricots. Press through a sieve; or heat to boiling point in just enough water to prevent scorching and then press through a sieve.



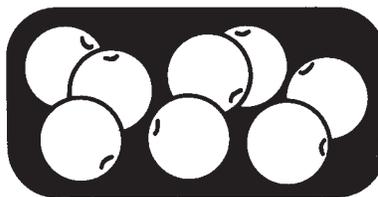
Avocados

Select avocados that yield to gentle pressure with rind free from dark blemishes. Peel fruit, cut in half and remove pit.

Puree – Mash. Add $\frac{1}{4}$ teaspoon crystalline ascorbic acid to each quart of puree or add 1 tablespoon lemon juice for each two avocados. Use the ascorbic acid if intended use is in a sweet dish. Use lemon juice if for Guacamole. Pack into containers, leaving head space (page 9). Seal and freeze.

Bananas

Select firm ripe bananas. Peel. Mash thoroughly while adding 1 teaspoon lemon juice per cup of mashed banana. Pack, leaving head space (page 9). Seal and freeze.



Berries, most firm

(blueberries, elderberries, huckleberries)

Whole – Select full-flavored, ripe berries all about the same size, preferably with tender skins. Sort, wash and drain.

If desired, steam for 1 minute and cool immediately. Preheating in steam tenderizes skin and makes a better flavored product.

Use one of the following packs.

Syrup pack – Pack berries into containers and cover with cold 40 percent syrup (page 13). Leave head space (page 9). Seal and freeze.

Unsweetened pack – Tray pack or pack berries into containers, leaving head space (page 9). Seal and freeze.

Crushed or puree – Select fully ripened berries. Sort, wash and drain. Crush, or press berries through a fine sieve for puree.

To 1 quart (2 pounds) crushed berries or puree, add 1 to 1½ cups sugar, depending on tartness of fruit. Stir until sugar is dissolved. Pack into containers, leaving head space (page 9). Seal and freeze.

Berries, most soft

(blackberries, boysenberries, dewberries, loganberries, youngberries)

Select firm, plump, fully ripe berries with glossy skins. Green berries may cause off-flavor.

Sort and remove any leaves and stems. Wash and drain.

Use one of the following packs.

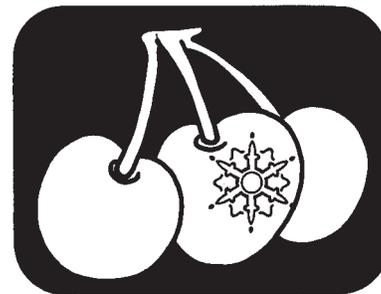
Syrup pack – Pack berries into containers and cover with cold 40 or 50 percent syrup (page 13), depending on the sweetness of the fruit. Leave head space (page 9). Seal and freeze.

Sugar pack – To 1 quart (1½ pounds) berries, add ¾ cup sugar. Turn berries over and over until most of the sugar is dissolved. Fill containers, leaving head space (page 9). Seal and freeze.

Unsweetened pack – Pack berries into containers, leaving head space (page 9). Seal and freeze.

Crushed or puree – Prepare for packing in the same way as whole berries. Then crush, or press through a sieve or puree.

To each quart (2 pounds) of crushed berries or puree add 1 cup sugar. Stir until sugar is dissolved. Pack into containers, leaving head space (page 9). Seal and freeze.



Cherries, sour

Select bright red, tree-ripened cherries. Stem, sort and wash thoroughly. Drain and pit.

Use one of the following packs:

Syrup pack – Pack cherries into containers and cover with cold 60- or 65-percent syrup (page 13), depending on tartness of the cherries. Leave head space (page 9). Seal and freeze.

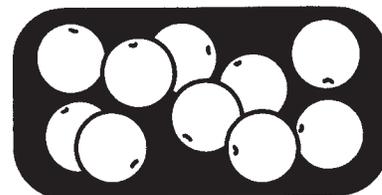
Sugar pack – To 1 quart (1½ pounds) cherries add ¾ cup sugar. Mix until sugar is dissolved. Pack into containers, leaving head space (page 9). Seal and freeze.

Cherries, sweet

Select well-colored, tree-ripened fruit with a sweet flavor. Sort, stem, wash and drain. Remove pits if desired — they tend to give an almond-like flavor to the fruit.

Pack cherries into containers. Cover with cold 40 percent syrup (page 13) to which ½ teaspoon crystalline ascorbic acid has been added per quart. Leave head space (page 9). Seal and freeze.

With sour cherries, use half sweet cherries and half sour cherries. Pack as above using 50 percent syrup (page 13). Ascorbic acid may be added, but is not as essential as it is for sweet cherries alone.



Cranberries

Whole – Choose firm, deep red berries with glossy skins. Stem and sort. Wash and drain.

Unsweetened pack – Tray pack or pack into containers without sugar. Leave head space (page 9). Seal and freeze.

Syrup pack – Pack into containers. Cover with cold 50 percent syrup (page 13). Leave head space (page 9). Seal and freeze.

Puree – Prepare cranberries as for freezing whole. Add 2 cups water to each quart (1 pound) of berries. Cook until skins have popped. Press through a sieve.

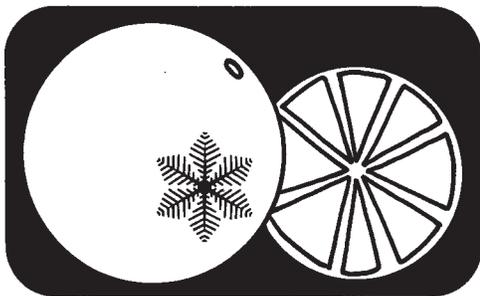
Add sugar to taste, about 2 cups for each quart (2 pounds) of puree. Pack into containers, leaving head space (page 9). Seal and freeze.

Gooseberries

Choose fully ripe berries if freezing for pie — berries a little underripe for jelly making. Sort, remove stems and blossom ends, and wash.

Unsweetened pack – Tray pack or pack into containers without sugar. Leave head space (page 9). Seal and freeze.

Syrup pack – Pack into containers. Cover with 50 percent syrup (page 13). Leave head space (page 9): Seal and freeze.



Grapefruits, Oranges

Sections or slices – Select firm tree-ripened fruit heavy for its size and free from soft spots. Wash and peel. Divide fruit into sections, removing all membranes and seeds. Slice oranges if desired. For grapefruit with many seeds, cut fruit in half, remove seeds and cut or scoop out sections.

Pack fruit into containers. Cover with cold 40 percent syrup (page 13) made with excess fruit juice and water if more liquid is needed. For better quality, add ½ teaspoon crystalline ascorbic acid to each quart of syrup. Leave head space (page 9). Seal and freeze.

Juice – Select fruit as directed for sections. Squeeze juice from fruit, using squeezer that does not press oil from rind.

Sweeten, if desired, with 2 tablespoons sugar for each quart of juice, or pack without sugar. For better quality, add

¾ teaspoon crystalline ascorbic acid for each gallon of juice. Pour juice into containers immediately. To avoid development of off-flavors, pack juice in glass jars. Leave head space (page 9). Seal and freeze.

Ground cherries

Husk. Scald for 2 minutes. Pack in 40 percent syrup (page 13). Leave head space (page 9). Seal and freeze.



Melons (cantaloupe, crenshaw, honeydew, Persian, watermelon)

Syrup pack – Select firm-fleshed, well-colored, ripe melons. Cut in half, remove seeds and peel. Cut melons into slices, cubes or balls. Pack into containers and cover with cold 30 percent syrup (page 13). Leave head space (page 9). Seal and freeze.

Unsweetened pack – Select and prepare as for syrup pack. Place in freezer bag. Seal and freeze. Serve before completely thawed.



Nectarines

Halves, quarters or slices – Choose fully ripe, well-colored, firm nectarines. Overripe fruit may take on a disagreeable flavor in frozen storage.

Sort, wash and pit the fruit. Peel if desired. Cut in halves, quarters or slices.

Cut fruit directly into cold 40 percent syrup (page 13), starting with ½ cup for each pint container. For a better product add ½ teaspoon crystalline ascorbic acid to each quart of syrup. Press fruit down and add syrup to cover, leaving head space (page 9). Seal and freeze.

Puree – Prepare same as peach puree below.



Peaches

Halves and slices – Peaches in halves and slices have better quality when packed in syrup or with sugar, but a water pack will serve if sweetening is not desired.

Select firm, ripe peaches with no green color in the skins.

Sort, wash, pit and peel. For a better product, peel peaches without a boiling-water dip. Slice if desired.

Syrup pack – Use 40 percent syrup (page 13). For a better quality product, add ½ teaspoon crystalline ascorbic acid for each quart of syrup.

Put peaches directly into cold syrup in container, starting with ½ cup syrup to a pint container. Press fruit down and add syrup to cover, leaving head space (page 9). Seal and freeze.

Sugar pack – To each quart (1½ pounds) of prepared fruit add ⅔ cup sugar and mix well. To retard darkening, sprinkle ascorbic acid dissolved in water over the peaches before adding sugar. Use ¼ teaspoon crystalline ascorbic acid in ¼ cup cold water to each quart of fruit.

Pack into containers, leaving head space (page 9). Seal and freeze.

Water pack – Pack peaches into containers and cover with cold water containing 1 teaspoon crystalline ascorbic acid to each quart of water. Leave head space (page 9). Seal and freeze.

Puree – To loosen skins, dip peaches in boiling water ½ to 1 minute. The riper the fruit, the less scalding needed. Cool in cold water, remove skins and pit.

To puree, press through a sieve, or heat pitted peaches 4 minutes in enough water to prevent scorching and press through a sieve.

With each quart (2 pounds) of pureed peaches mix 1 cup sugar. For better quality, add 1½ teaspoons crystalline ascorbic acid to each quart of fruit.

Pack into containers, leave head space (page 9). Seal and freeze.



Pears

Halves or quarters – Select pears that are well ripened and firm, but not hard. Wash fruit in cold water. Peel, cut in halves or quarters and remove cores.

Heat pears in boiling 40 percent syrup (page 13) for 1 to 2 minutes, depending on size of pieces. Drain and cool.

Pack pears into containers and cover with cold syrup. For a better product, add ¾ teaspoon crystalline ascorbic acid to a quart of cold syrup. Leave head space (page 9). Seal and freeze.



Pineapple

Select firm, ripe pineapples with full flavor and aroma. Pare and remove core and eyes. Slice, dice, crush, or cut the pineapple into wedges or sticks.

Unsweetened pack – Pack fruit tightly into containers without sugar. Leave head space (page 9). Seal and freeze.

Syrup pack – Pack fruit tightly into containers. Cover with 30 percent syrup (page 13) made with pineapple juice, if available, or with water. Leave head space (page 9). Seal and freeze.



Plums and prunes

Whole, halves or quarters – Choose firm tree-ripened fruit of deep color. Sort and wash. Leave whole or cut in halves or quarters. Pack in one of the following ways.

Unsweetened pack – Pack whole fruit into containers, leaving head space (page 9). Seal and freeze.

To serve uncooked, dip frozen fruit in cold water for 5 to 10 seconds, remove skins, and cover with 40 percent syrup to thaw.

Syrup pack – Pack cut fruit into containers. Cover fruit with cold 40 or 50 percent syrup (page 13), depending on tartness of fruit. For improved quality, add ½ teaspoon crystalline ascorbic acid to a quart of syrup. Leave head space (page 9). Seal and freeze.



Raspberries

Whole – Select fully ripe, juicy berries. Sort, wash carefully in cold water and drain thoroughly.

Sugar pack – To 1 quart (1½ pounds) berries add ¾ cup sugar and mix carefully to avoid crushing. Put into containers, leaving head space (page 9). Seal and freeze.

Syrup pack – Put berries into containers and cover with cold 40 percent syrup, (page 13) leaving head space (page 9). Seal and freeze.

Unsweetened pack – Put berries into containers, leaving head space (page 9). Seal and freeze.

Crushed or puree – Prepare as for whole raspberries then crush or press through a sieve for puree.

To 1 quart (2 pounds) crushed berries or puree add ¾ to 1 cup sugar, depending on sweetness of fruit. Mix until sugar is dissolved. Put into containers, leaving head space (page 9). Seal and freeze.



Rhubarb

Stalks or pieces – Choose firm, tender, well-colored stalks with good flavor and few fibers. Wash, trim and cut into

1 or 2 inch pieces or in lengths to fit the package. Heating rhubarb in boiling water for 1 minute and cooling promptly in cold water helps retain color and flavor.

Unsweetened pack – Tray pack or pack either raw or preheated rhubarb tightly into containers without sugar. Leave head space (page 9). Seal and freeze.

Pie pack – Use directions give for apples.

Syrup pack – Pack either raw or preheated and cooled rhubarb tightly into containers, cover with cold 40 percent syrup (page 13). Leave head space (page 9). Seal and freeze.

Sugar pack – Mix either raw or preheated and cooled rhubarb with ½ cup sugar per quart of prepared fruit. Pack, leaving head space (page 9). Seal and freeze.



Strawberries

Whole – Choose firm, ripe, red berries preferably with a slightly tart flavor. Large berries are better sliced or crushed. Sort berries, wash them in cold water, drain well and remove hulls.

Syrup packed – Put berries into containers and cover with cold 50 percent syrup (page 13), leave head space. Seal and freeze.

Sugar packed – Add ¾ cup sugar to 1 quart (1½ pounds) strawberries and mix thoroughly. Put into containers, leaving head space (page 9). Seal and freeze.

Unsweetened pack – Tray pack or pack into containers, leaving head space (page 9). For better color, cover with

water containing 1 teaspoon crystalline ascorbic acid to each quart of water. Seal and freeze.

Sliced or crushed – Prepare for packing as for whole strawberries, then slice, or crush partially or completely.

To 1 quart (1½ pounds) berries add ¾ cup sugar; mix thoroughly. Pack into containers, leaving head space (page 9). Seal and freeze.

Puree – Prepare strawberries as for freezing whole. Then press berries through a sieve. To 1 quart (2 pounds) puree add ⅔ cup sugar and mix well. Put into containers, leaving head space (page 9). Seal and freeze.



■ Freezing Prepared Foods

For success use only high-quality foods and ingredients that freeze well. Package properly, store at 0°F or lower, and use within recommended storage time. If you are uncertain about how a prepared food freezes, try freezing a small portion to see if the quality is acceptable.

Reasons for Freezing Prepared Foods

- Waste can be avoided by freezing leftovers.
- Time can be saved by doubling or tripling recipes and freezing the extra.
- Foods can be prepared when the time is available.
- Foods can be prepared when in season or on special.
- If cooking for one or two, individual portions can be frozen for later use.

Points to Remember

- Expect some changes in seasoning level of frozen dishes. Season sparingly and season to taste when reheated.
- Add crumb or cheese toppings just before reheating. These tend to get soggy or dry when frozen.
- A general suggestion is to slightly undercook foods to allow for additional cooking when reheating. Some experimenting may be necessary.

- Quickly cool foods to be frozen by placing container of hot food in a pan or sink of ice water.
- Package foods in practical meal-size quantities in appropriate freezer material (see pages 21-22).
- Baking dishes may be lined with foil or plastic wrap, the food frozen in them, and then removed and properly wrapped for freezer storage (see page 22, casserole wrap).

■ Freezing Animal Products

Meat, Poultry and Fish

Freezing is the best way to retain the good taste and texture of meat, poultry and fish.

PLANS FOR FREEZING

1. Examine the household's needs and usage. For top quality, meats should be used within recommended storage times (see page 28).
2. Consider the amount of freezing space one wishes to devote to these foods. A cubic foot of freezer space will hold 30 to 35 pounds of meat.
3. Shop for specials and take advantage of seasonal peaks.
4. Processed cured meats such as ham and bacon should be frozen for only 1 to 3 months because the high salt and fat content accelerate rancidity.

GENERAL TIPS FOR SUCCESSFUL FREEZING

1. Freeze meat as soon as desirable after slaughter and as soon as possible after purchase to ensure freshness and top quality.
2. Trim excess fat and remove bones if practical, or cover sharp extruding bones with folded freezer paper or foil so they will not pierce the outside wrapper.
3. Freeze meat in meal-size pieces and packages. Place a double layer of freezer wrap between individual pieces.
4. Do not season meat before freezing for longest freezer life.

5. Meatballs, beef cubes, chops or meat patties can be tray frozen (see page 14) then packaged in freezer bags.
6. Materials used for packaging meat, fish and poultry need to have the same characteristics as those used for freezing other foods (see page 3).
7. Packages must be air tight to maintain quality.
8. The store wrap on meats from self-service counters is not meant for freezer storage longer than two weeks. Rewrap or over wrap for longer storage.
9. Wrap used by butchers may be either coated or uncoated. The coated is suitable for use in the freezer, but the uncoated is unsatisfactory.
10. Vacuum-packaged meats can be frozen in the undamaged package for one to three months.



PACKAGING

Red Meats

Freezer bags or containers may be used for freezing ground meats, stew meats or other meats frozen into small portions.

Meats can be wrapped using either the drugstore or the butcher wrap (see pages 23-24). The drugstore wrap is preferred, except for irregular meat cuts. The butcher wrap is more appropriate for these.

Lard

Freezing helps prevent rancidity. Use glass jars or plastic containers. Make an airtight seal.

For extra protection against rancidity, obtain a commercial antioxidant from a locker plant or a drugstore. Use it according to the manufacturers directions or add fresh hydrogenated vegetable fat to the rendered lard using this proportion: 2 to 3 pounds of vegetable fat to 50 pounds lard. Mix thoroughly while still hot. Pour into small containers, filling to the top.



METHODS OF WRAPPING

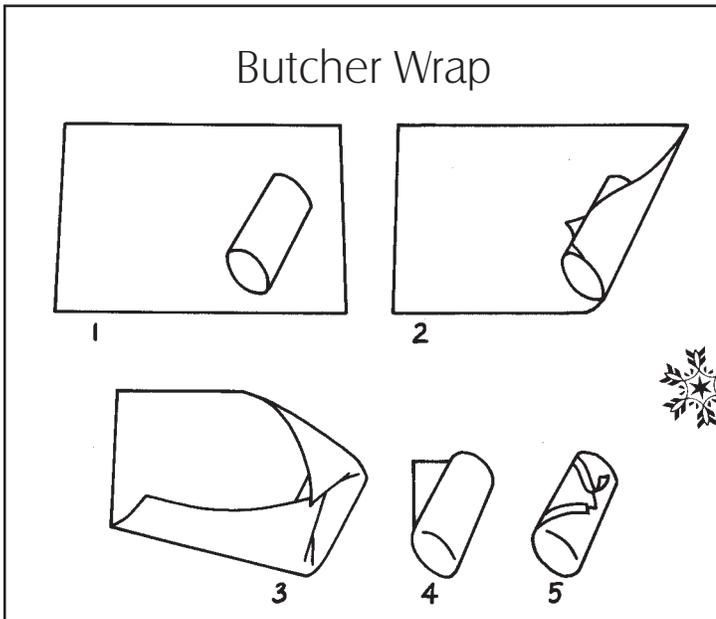
Drugstore Wrap

Cut off enough wrapping material to wrap around the food about 1½ times or enough to make three 1-inch fold down when wrapping.

1. Place meat in center of wrapping.
2. Bring two opposite edges of the wrap together centered above food.
3. Fold the edges down in a series of folds ½ to 1 inch deep until the fold lies against the food.
4. Press the fold down across the food, squeezing out the air.
5. Turn package over. Press ends to remove air.
6. Fold ends snugly with a double fold.
7. Bring ends up and fasten securely with cord or freezer tape. Label.



Butcher Wrap

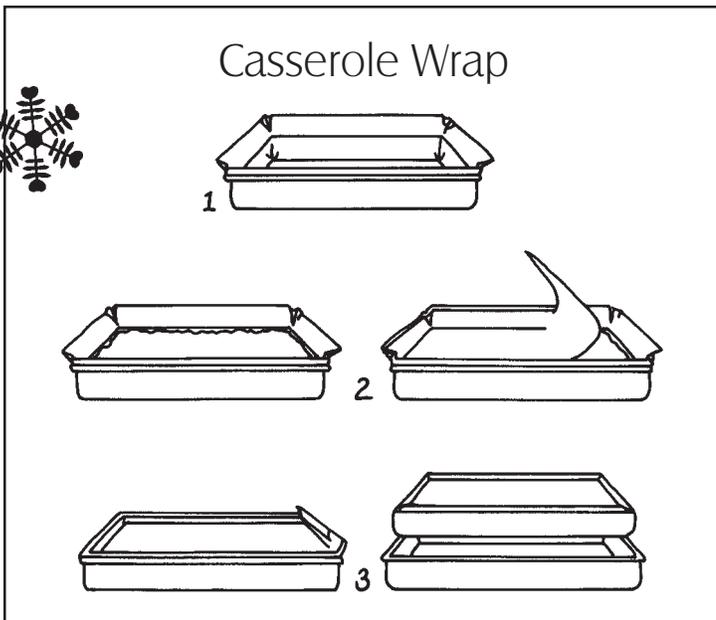


Butcher Wrap

Best for bulky and irregular shaped foods. Cut off enough wrap to go around the food twice.

1. Place food at one corner of the wrapping.
2. Fold the food and wrap over two times in the direction of the opposite corner.
3. Fold the ends up pushing the air out as you fold.
4. With ends tucked up, continue to fold food and wrapping over.
5. Pull end tight and seal with cord or freezer tape. Label.

Casserole Wrap



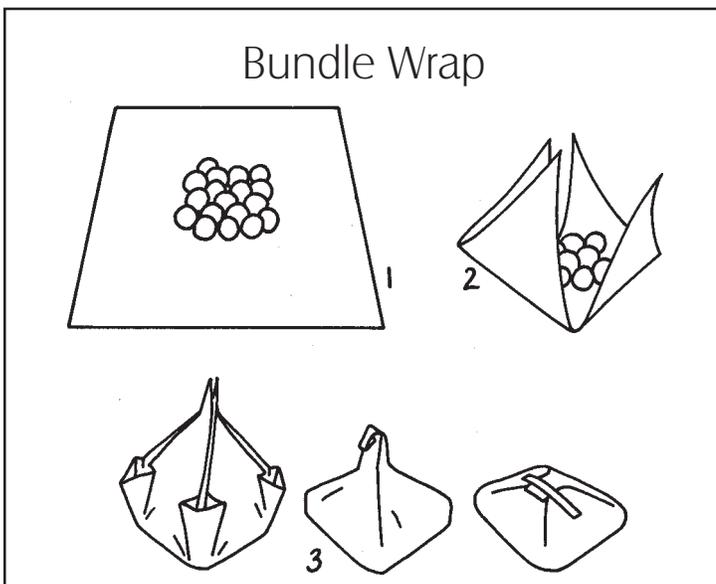
Casserole Wrap

Allows for reuse of baking dish after food is frozen.

1. Line baking dish with heavy duty foil*, leaving a 1½ inch foil collar around the edge.
2. Place food in foil-lined dish. Cover with sheet of foil the size of dish and foil collar. Press air out from center; fold edges together, sealing tightly.
3. Label and freeze. When frozen, lift from dish and return food to freezer.

*A plastic-type freezer wrap can be used to line baking dishes. The wrap needs to be large enough to fold over the top for sealing.

Bundle Wrap



Bundle Wrap

Good for odd shapes and semimoist foods. Foods may be baked or grilled in this wrap.

1. Center food on a square of heavy duty foil large enough for adequate wrapping.
2. Bring four corners of foil up together in a pyramid shape.
3. Fold open edges together in locked folds, pressing air out, until foil is tight against food. Label.



■ POULTRY

Home-slaughtered poultry should be chilled in the refrigerator below 40° F, 6 hours for broiler-fryers and 24 hours for older birds. If refrigerator space is not available it can be chilled for two to three hours in a large tub of ice water.

Packaging

Wrap giblets separately from bird. Arrange poultry to give a compact, flat package. Tie the wings and legs closely to the body on birds frozen whole.

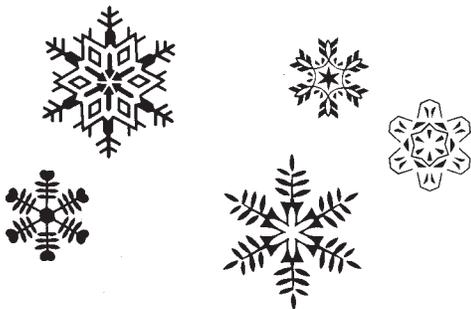
Poultry may be wrapped in freezer wrap or placed in freezer bags. Remove as much air as possible. Plastic freezer bags conform to the irregular shape of poultry. A good way to remove air is to place the bird in the bag and then plunge the bag in a pan of cold water. This forces air to the top. Quickly twist the top in a goose neck (see illustration page 9) and secure. Dry bag thoroughly.

Warning: Do not stuff birds before freezing. The time it takes to cool stuffing in the bird before freezing and to thaw and reheat it may be long enough to permit growth of food spoilage and food poisoning bacteria.

Pink Meat - Dark Bones

Sometimes the meat around bones of young fryers or broilers looks pink or raw even though thoroughly cooked. This color is thought to come from hemoglobin in the bones of young birds. It usually shows up more with long, slow cooking or in chicken that has been frozen. The meat is safe to eat.

Bones in cooked chicken sometimes become a dark maroon color. This color usually shows up more in frozen chicken and is due to hemoglobin also. It does not affect the safety of the chicken.



■ FISH

Improperly frozen fish develops a bad taste and becomes dry and tough. There are a number of alternative methods for properly freezing fish.

Keep fresh fish as cold as possible. Clean them immediately and freeze at once.

Clean fish as for immediate use. Wash thoroughly. If slime is a problem, rinse fish in a solution of one teaspoon vinegar to three quarts of cold water.

Fish to be stored longer than three months should be left whole or in large pieces.

Pretreating

Fish are categorized as either fat or lean. Fat fish include mullet, mackerel, trout, tuna, salmon and whitefish. Lean fish include flounder, cod, whiting, snapper and most freshwater fish.

Pretreating before freezing improves the quality of fish stored for more than four to six months.

Fat fish should be placed in an ascorbic acid dip for 20 seconds (2 tablespoons ascorbic acid to 1 quart cold water) to decrease rancidity and flavor change. Wrap and freeze immediately.

Lean fish can be immersed in a chilled salt brine of ¼ cup salt to 1 quart water for 20 minutes. This treatment firms the fish and reduces drip loss when thawed.

Packaging

One of the best methods is to wrap fish with a cling plastic wrap and then overwrap with a freezer wrap. Squeeze out as much air as possible.

Fish may be placed in freezer bags. Submerge the bag in a pan of cold water to force the air out. Do not let water flow into the bag. Seal the bag by twisting and a goose neck (see illustration page 9).

■ ALTERNATIVE FREEZING METHODS

Glazes

Ice - Freeze unwrapped fish. Then dip frozen fish in near-freezing ice water and return to freezer. Repeat this sequence until the glaze is $\frac{1}{8}$ to $\frac{1}{4}$ inch thick. Be careful not to break the glaze when handling the fish. Wrap glazed fish for storage.

Gelatin

To prepare the glaze:

- Measure $\frac{1}{4}$ cup of lemon juice into a pint container. Fill the rest of the container with water.
- Dissolve one packet of unflavored gelatin in $\frac{1}{2}$ cup of the lemon juice-water mixture.
- Heat the remaining liquid to boiling.
- Stir the dissolved gelatin mixture into the boiling liquid.
- Cool the mixture to room temperature.

Dip the fish into the glaze and drain it for several seconds. The glaze will be enough for about a dozen medium-size fillets. Wrap glazed fish and freeze.

Water

Place fish in a container and cover with water. Too much water and large containers will draw out nutrients, cause fish to freeze slowly, and cause a soft texture in the fish because of pressure from the ice.

It is best to freeze fish first and then add cold water and freeze again. This hastens freezing and reduces pressure on the fish flesh.

Smoked fish may be refrigerated for two to three weeks. Do not store smoked fish in airtight containers in the refrigerator. For longer storage, the fish may be frozen immediately after smoking. Use within three months. Use within a few days after thawing.

Shrimp can be frozen, cooked or raw, with shells on or off. For maximum storage life and quality freeze shrimp raw with head and dark vein removed, but shells still on. Shrimp may be placed in a shallow pan, covered with water, frozen and wrapped.

Be sure to wash and drain shrimp if frozen uncooked. Quickly chill cooked shrimp.

Oysters should be fresh and live. Shuck oysters and wash meat in fresh salted water ($\frac{1}{2}$ cup salt to 1 gallon cold water). Drain, package and freeze.

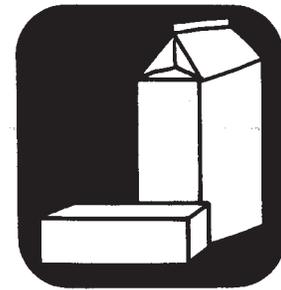


■ THAWING AND PREPARING - Meat, Fish & Poultry

Frozen meats, poultry and fish are best when thawed in the refrigerator in their original wrapping. For faster thawing, place the meat or fish in a waterproof wrapping in cold water. Change the water as needed so it stays cold. These foods can be thawed in a microwave oven. For best quality, cook thawed meat and fish immediately.

Meat, poultry and fish can be cooked from the frozen stage, but additional cooking time must be allowed. The amount of additional time depends on the size and shape of the product. Large frozen roasts can take $1\frac{1}{2}$ times as long. Small pieces of frozen fish may take twice as long to cook as fresh or thawed.

When frozen meat, poultry or fish are to be breaded and fried, they should be at least partially thawed first for easier handling. All poultry to be stuffed should be thawed completely for safety.



■ DAIRY PRODUCTS

Butter - Freeze only high-quality butter made from pasteurized cream. Over-wrap store wrap with freezer wrapping. Unsalted butter loses flavor so its storage time is shorter. Flavored butter freezes well.

Cheese - Hard or semi-hard cheeses can be frozen. Frozen cheese will be crumbly and a little dry and will not slice as well, but the flavor will be just as good as fresh cheese. Freeze cheese in small pieces — no more than $\frac{1}{2}$ pound per chunk. Seal it in foil, freezer wrap, plastic film or bag.

Cottage cheese - Cream style and dry cottage cheese and ricotta cheese can be frozen for a month. Cream style may separate when thawed.

Creamed cheese - can be frozen for later use in cooking, dips or as icing.

Cheese food products, such as sauces, dips, processed cheese — flavored or plain — usually freeze fine. If in real doubt, freeze a small quantity and check after 24 hours by thawing it. If pleased with the results, freeze the rest. Otherwise, do not freeze.

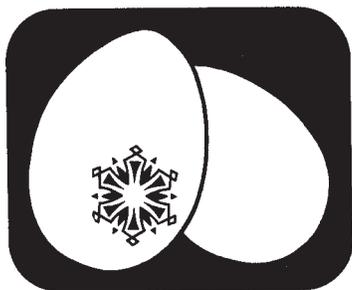
Cream - Freeze only heavy cream containing 40 percent or more butter fat. Lighter cream and half and half do not freeze well. Cream that has been frozen will not whip to the usual volume. Whipped cream can be sweetened to taste and frozen in individual sized portions. Tray-freeze in mounds.

Ice cream - Commercially prepared ice cream should be stored no longer than 1 month in its original container because the container is not moisture/vapor resistant. If stored longer than 1 month, it loses volume and the surface becomes waxy and sticky. A plastic wrap laid tightly on the surface of partially used containers of ice cream helps prevent surface changes. If ice cream must be stored longer, overwrap the container with freezer wrap.

Homemade ice cream is difficult to store for any length of time because it becomes grainy. Commercial products have added milk solids and gelatin to prevent this.

Milk - Pasteurized homogenized milk may be frozen, including low and non-fat. Some quality change may be noted upon thawing. Stirring or shaking may help restore smoothness.

Sour cream, yogurt and buttermilk - All of the cultured, soured dairy products lose their smooth texture when frozen. They become grainy and sometimes separate out their water. They can still be used for cooking. Flavored yogurts may be more stable because of the fruit and sugar. It may taste more acidic when thawed.



■ EGGS

Eggs can be stored for at least one month, covered in the refrigerator. Freezing is often unnecessary.

Whole Eggs - Thoroughly mix yolks and whites. Do not whip in air. To prevent graininess, add 1 tablespoon sugar or ½ teaspoon salt per cup whole eggs, depending on intended use. Strain through a sieve or colander to improve uniformity. Package, allowing ½ inch head space. Seal and freeze.

Another method of freezing whole egg mixture is to use ice trays. Measure 3 tablespoons of egg mixture into each

compartment of an ice tray. Freeze until solid. Remove frozen cubes, and package in moisture/vapor resistant containers. Seal and freeze. Three tablespoons of the egg mixture equals one whole egg.

Egg Yolks - Separate eggs. Stir gently. To prevent graininess, add 2 tablespoons sugar or 1 teaspoon salt per cup of egg yolks, depending on intended use. Strain through a sieve. Package, allowing ½ inch head space. Seal and freeze. One tablespoon of the yolk mixture equals one egg yolk.

Egg Whites - Gently mix whites. Strain through a sieve. Package, leaving ½ inch head space. Seal and freeze. Two tablespoons of the egg white mixture equals one egg white.

■ Thawing Dairy Products and Eggs

Butter, eggs, milk, cream and cheese - Place the frozen product in the refrigerator to thaw. After thawing use as fresh. Use soon after thawing. Do not refreeze.

Cream and milk may need to be mixed or blended slightly.

■ EXTRA HINTS AND ADDITIONAL FOODS

Baby food (home prepared) - Freeze in meal-size portions in ice cube trays or muffin tins. Place in freezer bags after they are frozen. Thaw in the refrigerator.

Bread crumbs and croutons stay fresh in the freezer.

Brown sugar can be overwrapped and frozen. It will be soft when thawed.

Coffee (ground or beans) - stay fresher in the freezer.

Crackers and chips stay crisp when packaged tightly and frozen.

Dried fruits stay fresh and moist when frozen and they are easier to chop when frozen.

Herbs (fresh) - Wash, drain and pat dry with paper towels. Wrap a few sprigs or leaves in freezer wrap and

place in a freezer container. Seal and freeze. These can be used in cooked dishes, but are usually not suitable for garnishes because they become limp as they thaw.

Jams and jellies - Ordinary cooked jams and jellies freeze well. Those made with gelatin may break down during freezing.

Margarine - The same as butter (see page 24).

Whipped butter and margarine - Do not freeze well because the emulsion may break, and the product may separate.

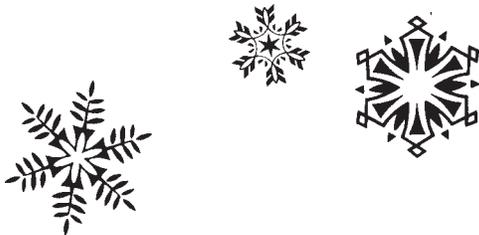
Marshmallows are easy to cut when frozen and won't stick to the knife.

Nuts - Shell nuts keeping kernels as nearly whole as possible. Spread in a thin layer to dry for 24 hours. Package in airtight bags for freezing. Nuts keep well frozen up to 6 months. Salted or seasoned nuts keep only about half as long.

Oils - Freezing prevents rancidity. You can strain and freeze oil that has been used for deep-fat frying for reuse. Oil clouds when frozen, but clears when it thaws.

Sauerkraut - Freezing stops fermentation. Frozen sauerkraut may be stored up to 12 months.

Sprouts - A variety of seed sprouts such as alfalfa, mung beans, chick peas, soybeans, etc. may be frozen. First wash the sprouts and removed seed coats. Heat one layer at a time in steam for 3 minutes. Cool promptly in cold water and drain. Package, label and freeze.



■ SUGGESTED STORAGE TIMES FOR FROZEN FOODS

Keep freezer at 0°F. Use foods within recommended time for best quality. Food stored longer than recommended should still be safe, but lower in quality.

FOOD	TIME	SPECIAL HANDLING
HOME FROZEN FOODS		
Breads		
baked	2-3 months	
unbaked doughs	1 month	Use only special freezer-dough recipes
Butter, margarine	12 months	
lard	10-12 months	
Cakes, baked	2-4 months	
Candy	3-6 months	
Combination		
Stews	4-6 months	
Casseroles	1 month	
Cookies, baked	6-12 months	
dough	3 months	
Cheese		Creamed cottage cheese and cream cheese don't freeze well. Cut and wrap cheese in small pieces.
dry-curd cottage cheese, ricotta	4 weeks	
natural, process	6-8 months	
Cream (all kinds)	2 months	Thawed cream may not whip.
whipped	1 month	
Eggs, in shell		Do not freeze.
Egg white, yolks	1 year	For sweet dishes: Mix each cup of yolks with 1 tablespoon corn syrup or sugar. For other cooking, substitute 1 teaspoon salt for sugar.
Fish, shellfish		Wrap tightly in heavy-duty foil or freezer wrap.
"fatty" fish - bluefish, catfish, trout, etc.	6 months	
"lean" fish - cod, flounder, etc.	8-9 months	
shellfish	6-9 months	
Fruits		
citrus fruit and citrus juice	4-6 months	
packed in sugar or syrup	8-12 months	
packed without sugar or liquid	3-6 months	
Ice cream, sherbet	1 month	
Main dishes		Freeze in freezer-proof and oven-proof baking dishes or freezer containers
cooked meat	2-3 months	
fish	3 months	
poultry	4-6 months	
Meat		If meat is purchased fresh and wrapped in plastic wrap, check for holes. If none, freeze in this wrap up to 2 weeks. For longer storage, overwrap tightly with freezer wrap or heavy-duty foil. Keep frankfurters in vacuum packages.
bacon	1 month	
frankfurters	1-2 months	
ground, stew meat	3-4 months	
ham	1-2 months	
leftover cooked	2-3 months	
roasts		
beef, lamb	6-12 months	
pork, veal	4-8 months	
steaks, chops		
beef	6-12 months	
lamb, veal	6-9 months	
pork	3-4 months	
variety meats	4 months	
venison		
ground, steaks, stew meat	3-4 months	
roasts	6 months	



FOOD	TIME	SPECIAL HANDLING
Milk, fresh fluid	1-3 months	
Nuts	3 months	
Pies custard fruit	8 months	Do not freeze. Freeze baked or unbaked.
Potatoes french fried scalloped	4-8 months 1 month	
Poultry cooked, with gravy cooked, no gravy uncooked (whole) chicken, turkey duck, goose uncooked (parts) chicken turkey rolls	6 months 1 month 1 year 6 months 9 months 6 months	Wrap in heavy-duty foil or freezer wrap as airtight as possible. Thaw uncooked poultry in refrigerator or under cool running water. Cook within two days of thawing.
Sandwiches	1-2 months	
Soups	4-6 months	
Vegetables	1 year	
Yogurt plain flavored	1 month 5 months	

COMMERCIALLY FROZEN FOODS

Breads baked unbaked	3 months check label	
Cakes angel food layer cake, frosted pound, yellow cake	2 months 4 months 6 months	Pick up frozen food immediately before going to check-out counter.
Coffee lighteners	1 year	
Doughnuts, pastries	3 months	
Fish, shellfish "fatty" fish - mackerel, trout, etc. "lean" fish - cod, flounder, etc.	3 months 6 months	Buy only foods that are frozen solid and with no dribbles on the package, odor or other signs of being thawed. Put all frozen foods together in one bag so they'll stay as cold as possible for the trip home. Store in original wrapping. Place in home freezer as soon as possible. Cook or thaw as label directs.
Shellfish Alaska King crab breaded, cooked lobster, scallops shrimp (unbreaded)	10 months 3 months 3 months 1 year	
Fruit	1 year	
Ice cream, sherbet	1 month	
Juices, concentrates	1 year	
Main dishes, pies fish, meat poultry	3 months 6 months	
Pancake, waffle batter	3 months	
Pies	8 months	
TV dinners	6 months	
Vegetables	8 months	



■ FREEZING PREPARED FOODS

FOOD	Preparing & Packaging For Freezing	Serving	Suggested Storage Time (at 0°F)
APPETIZERS			
Stuffed olives and nuts, bacon-wrapped tidbits and cheese rolls	Prepare as usual. Freeze in single layer and then package no more than 2-3 layers deep, separating layers with freezer paper.	Refer to the manufacturers instructions for thawing and heating foods in your microwave. Arrange on serving tray and thaw at room temperature for about 1 hour.	2-4 weeks
Dips and spreads of cheese, ham, egg yolk mixtures, fish and avocado	Prepare using minimum salad dressing (avoid mayonnaise or sour cream). Cream cheese, milk or juice may be used as a binding agent.	Thaw in the refrigerator and use shortly after thawing.	2-4 weeks
BAKED PRODUCTS AND DOUGHS			
Baked Quick Breads		If condensation is a problem during thawing, loosen the wrapping.	
Biscuits	Make as usual. Cool. Package.	To serve hot, heat unthawed at 350°F for 15-20 minutes.	2-3 months
Gingerbread, nut and fruit bread, coffee cake	Make as usual. Bake to light brown. Cool quickly. Package.	Thaw in wrapping at room temperature. If in aluminum foil, heat at 400°F. Slice fruit and nut breads while partially frozen to prevent crumbling.	2-4 months
Muffins	Make as usual. Package.	Thaw in wrapping at room temperature, 1 hour or heat unthawed at 300°F for 20 minutes.	6-12 months
Waffles	Bake to a light brown. Wrap individually or in pairs.	Heat without thawing in a toaster, under the broiler, or on baking sheet at 400°F, 2-3 minutes.	1 month
Doughnuts	Make as usual. Cool. Package. Raised doughnuts freeze better than cake-type. Glazed ones lose glaze when frozen and thawed, but may be dipped in granular sugar after thawing.	Thaw at 400°F for 5-10 minutes or in wrapping at room temperature.	2-4 months
Yeast Breads and Coffee Cakes			
Bread, rolls	Make as usual. Cool quickly. Package.	Thaw at room temperature. If wrapped in aluminum foil, heat at 300°F for 15 minutes (5-10 minutes for rolls).	2-3 months

FOOD	Preparing & Packaging For Freezing	Serving	Suggested Storage Time (at 0°F)
Brown'n serve rolls	Make as usual, but let rise slightly less after molding. Bake at 325°F for 30 minutes. Do not brown. Cool. Package. Likely to dry out more in rebaking than when completely baked first and reheated.	Thaw in wrapping 10 to 15 minutes. Bake at 425°F, 5-10 minutes or until light brown. If undercrust is too moist, bake on cooling rack instead of baking sheet.	6-8 months
Unbaked coffee cakes, bread, and rolls	Use only recipes especially developed for freezing the dough.	Follow the recipe directions.	Up to 2 months

Microwave heating of breads: To heat to serving temperature, place bread in airtight packaging, remove wrap after one minute of warming. If a crusty outside is desired, place bread in paper toweling before heating. Nut, fruit and quick breads can be wrapped in waxed paper.

Cakes	Make as usual. Cool.	Frosted or filled:	
Angel food, chiffon, sponge cakes	Frosted: Freeze before wrapping. Do not use egg white frosting. Unfrosted: Wrap and freeze. If freezing slices, place a double layer of freezer wrap or foil between slices if baked in tube pan, fill hole with crumbled freezer paper. Put whole cake in box to prevent crushing. See frostings.	Unwrap and thaw in refrigerator. Unfrosted: Thaw in wrap on rack 1-2 hours at room temperature. If wrapped in aluminum foil, can thaw at 300°F for 15-20 minutes.	Egg-white cakes: 6 months Whole egg cakes: 4-6 months Egg yolk cakes: 2 months
Shortened cakes	Make as usual. Cool. For best results, freeze cake and frosting separately. Confectioners' sugar icing and fudge frosting freeze best. Do not use egg whites in frosting. Seven minute frosting will become frothy.	Same as above.	2-4 months
Cupcakes	Make as usual. Cool completely before wrapping. Package.	Thaw at room temperature for 1 hour. If unfrosted, thaw in aluminum foil at 300°F for 10 minutes.	2-3 months
Cheese cake	Make as usual. Cool. Tray-freeze until firm, then wrap in freezer material.	Thaw in wrapping in refrigerator.	4 months
Fruit cake	Make as usual. Cool and wrap.	Thaw in wrapping at room temperature about 1 hour per pound of cake.	12 months
Cookies (except meringue type)			
Cookies, baked	Make as usual. Package with freezer paper between layers.	Thaw in wrappings for 15-20 minutes.	6 months



FOOD	Preparing & Packaging For Freezing	Serving	Suggested Storage Time (at 0°F)
Cookies, unbaked	Refrigerator cookies: Form dough into roll. Slice if desired. Drop on sheet or just package bulk dough.	Bake refrigerator cookies without thawing according to recipe. Bake formed cookies without thawing at 400°F for about 20 minutes. Thaw bulk dough at room temperature until soft enough to drop by teaspoons. Bake as usual.	3 months
Cream puffs, eclair shells, steamed puddings	Make as usual. Cool. Slit and remove moist parts. Do not fill with cream filling. May use ice cream fillings. Package.	Thaw in wrappings at room temperature for 10 minutes.	1-2 months
Pastry			
Unbaked pastry	Regular pastry formed into balls to be rolled out after thawing, rolled flat or placed in pie pans. Fit into pie pans. Prick regular pastry if shell will be baked unfilled. Stack pie pans with 2 layers of freezer paper between each pan. Put all in freezer bags or store flat rounds on lined cardboard separated with two pieces of freezer paper between each.	Bake pastry in pan still frozen at 475°F until light brown, or fill and bake as usual. Place flats on pan and allow to thaw about 10 minutes before shaping and baking.	6-8 weeks
Baked pastry	Bake as usual. Cool. Package in freezer bags. If concerned about pastry breaking, place bags in a rigid container.	Thaw in wrapping at room temperature, 10-20 minutes.	2-3 months
Pies			
Chiffon pies	Make with gelatin base. May wish to freeze before wrapping to keep top from sticking to freezer wrap.	Thaw chiffon pies in refrigerator.	1-2 months
Fruit, mince, nut pies, unbaked	Make as usual except add 1 extra tablespoon flour or tapioca or ½ tablespoon cornstarch to juicy fillings to prevent boiling over when pies are baking. Do not cut vents in top crust. Steam and cool light fruits before making pies. Freeze in pan. Package. Unbaked fresh pies have a better fresh-fruit flavor than frozen baked pies, but bottom crust tends to get soggy. Fruit fillings may be thickened and cooled before adding to crust.	Cut vent holes in upper crust. Put pan on cookie sheet. Bake without thawing at 450°F for 15-20 minutes. Then reduce to 375°F for 20-30 minutes or until top crust is brown.	fruit pies: 3-4 months mince pies: 6-8 months nut pies: 3-4 months



FOOD	Preparing & Packaging For Freezing	Serving	Suggested Storage Time (at 0°F)
Fruit, mince, nut pies, baked	Make as usual. Cool rapidly. Freeze before packaging. Pies are easier to wrap after freezing.	Let stand at room temperature about 15 minutes. Then heat in 350°F oven until warm, about 30 minutes.	6-8 months
Pumpkin pie	Prepare pie shell and filling as usual. Have filling cold before adding to unbaked, chilled pie shell. Package same as fruit pies.	Bake without thawing at 400°F for 10 minutes. Then reduce to 325°F to finish baking. Test for doneness by inserting a knife.	1-2 months
Fruit pie fillings	Make as usual. Package. Leave head space.	Thaw just enough to spread in pie crust.	6-8 months

Sandwiches

Regular closed sandwiches	Use day old bread. Spread to edges with butter or margarine. Omit crisp vegetables, hard-cooked egg white, tomato, jellies and jams. Mayonnaise tends to separate. Use salad dressing if desired. Package individually.	Thaw at room temperature in wrappings, 3-4 hours. Frozen sandwiches in lunchbox will thaw in 3-4 hours and keep other foods cool.	cheese, ham, bologna: 3-4 weeks others: 3-6 months
Hors d'oeuvres, canapes	Spread thin layer of butter on bread to prevent soaking or drying. Make as usual. Before packaging, spread in single layer on metal pans and freeze. Package toast or crisp base appetizers separately. Use shallow air-tight containers that don't hold more than two to three layers. Separate layers with moisture-resistant paper.	Toasted and crisp base appetizers: thaw at room temperature for 2-3 hours. Don't unwrap. Others: Arrange on serving trays and thaw at room temperature about 1 hour.	3-4 weeks

Problem Foods

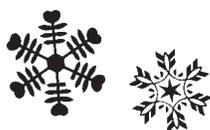
Unbaked biscuits will be smaller and less tender.
 Unbaked muffins will likely have poor texture.
 Custard and cream pies soak into the crust.
 Meringue on meringue pies toughens and sticks to the wrapping.

MAIN DISHES AND MEALS

Combination meat dishes: stews, spaghetti sauce with meat, ravioli, etc.	Make as usual. Keep fat to minimum. Omit potatoes from stew. Slightly undercook other stew vegetables. Cool all combination dishes rapidly. Use rigid wide-mouth containers. Cover meat with sauce or broth. Leave head space or freeze in foil-lined casserole dishes. After freezing, remove from dish. Package.	Thaw partially in package in the refrigerator or microwave to prevent overcooking. Heat partially thawed or frozen food in top of double boiler or at 400°F for 30 minutes or replace in casserole dishes and bake.	1-2 months
--	--	---	------------



FOOD	Preparing & Packaging For Freezing	Serving	Suggested Storage Time (at 0°F)
Creamed meats, fish, poultry	Use recipe with small amount of fat. Make as usual. Cool quickly. Package.	Heat frozen product over boiling water. Stir occasionally to make smooth. Takes about 30 minutes per pint.	2-3 months
Dressing	Make as usual. Cool quickly. Pack in rigid containers.	Put in greased casserole before completely thawed. Add a little water to the dressing. Heat at 350°F or heat over boiling water.	1 month
Fish loaves	Make as usual. Do not put bacon strips on top. Pack in loaf pan. Package.	Thaw in wrapping in refrigerator for 1-2 hours. Unwrap. Bake at 450°F for 15 minutes. Then reduce to 350° F to finish baking.	1-2 months
Fried meats and poultry	Fry as usual until almost done. Cool quickly. Freeze on trays. Package. Fried meats and poultry may lose some fresh flavor and crispness.	Thaw in refrigerator. Place in shallow pan and heat without a cover at 350°F for 30-45 minutes.	1-3 months
Meals, whole (TV dinners)	Use foods recommended for freezing in this publication. Prepare as usual. May use leftovers. Package each food in individual servings or a meal in sectional foil trays. Separate foods in individual servings preferred. Cover with aluminum foil. Package.	Take off outer wrap. Do not thaw or remove foil. Heat at 400°F for 20-30 minutes. For crisp foods, uncover the last 10-15 minutes.	3-4 months
Meat loaf	Prepare as usual. Do not put bacon strips on top. May bake. Package.	Unbaked: Unwrap. Bake at 350°F for 1½ hours. Baked: To serve cold, thaw in wrappings in refrigerator. To reheat, unwrap and bake unthawed at 350° F, about 1 hour or until all meat is hot.	3-4 months
Meat pies	Make as usual. Cook until nearly done. Omit potatoes. Cool quickly. Do not use bottom crust. Pour meat mixture into casserole or individual containers. Top with pastry. Do not bake. Freeze pie before wrapping. Package.	Cut vents in crust. Bake without thawing, 400°F for 45 minutes for individual pies, 1 hour for larger pies, or until meat mixture is piping hot and crust golden brown.	4-6 months
Non-meat casseroles (such as macaroni and cheese)	Make as usual. Cool quickly. May want to freeze in foil-lined casserole dishes. After freezing, remove food from dish. Package. (See page 22, casserole wrap.)	If in oven-proof container, uncover and bake at 400°F for 1 hour for individual sizes, or 1¾ hours for quarts or heat over boiling water.	2-4 months
Pizza	Make as usual, but do not bake. Freeze before packaging.	Unwrap. Bake unthawed at 450°F for 15-20 minutes.	1 month



FOOD	Preparing & Packaging For Freezing	Serving	Suggested Storage Time (at 0°F)
Roast (beef, pork or poultry)	Roast as usual. Remove as much fat as possible. Keep pieces large. Turkey and other large fowl should be cut from the bone to save space. Ham and other cured meats often lose color when frozen and become rancid quicker than other meats. For short storage, roast may be packaged without sauce or gravy. To help keep meat from drying out, cover sliced meat with gravy, sauce, or broth. Package in rigid containers. Leave head space.	Thaw dry meat in refrigerator. If in aluminum foil, heat at 325°F for 15-20 minutes. Thaw meat with sauce in refrigerator 5-6 hours, or heat slowly on top of range or in oven.	2-3 months

SOUPS AND SAUCES

Soups and purees	Omit potatoes. If possible, concentrate by using less liquid. Cool quickly. Leave head space or freeze in ice cube trays and store cubes in plastic bags.	Heat without thawing. Heat cream soups over boiling water. Stir cream soup to keep smooth.	4-6 months
Sauces, dessert and meat	Because spices may change flavor over long storage, add just before serving. Package. Leave head space. (Recipes using flour not recommended – see gravy.)	Thaw in package at room temperature if it doesn't require refrigeration or heat in top of double boiler. Stir if sauce separates. Meat, dairy or products containing eggs needs refrigeration.	3-4 months

Problem Foods

Milk sauces sometimes curdle and separate. Stirring while reheating helps retain smoothness. Using a waxy rice flour or waxy corn flour as a thickener helps.

Gravy tends to separate and curdle when thawed. It is better to freeze broth and make gravy just before serving. Waxy rice flour or waxy corn flour can be used as a thickener, or add 1/4 teaspoon unflavored gelatin to each quart of gravy before freezing.

VEGETABLE DISHES

Beans, baked	Make as usual. Use a minimum of bacon, ham or salt pork cut in small pieces. Bake until barely tender to avoid too much softening when reheated. Cool quickly. Package in rigid containers. Cover all meat. Leave head space.	Heat over boiling water or in saucepan with a small amount of water added. Stir frequently to prevent sticking or bake at 400°F for 45 minutes for pints, 1 hour for quarts.	6 months
Potatoes, baked and stuffed, Irish potatoes or baked sweet potatoes	Make as usual. Cool. Wrap individually in foil. Package.	Unwrap and bake without thawing at 400°F until thoroughly heated and lightly browned (about 15-20 minutes).	2-4 weeks

FOOD	Preparing & Packaging For Freezing	Serving	Suggested Storage Time (at 0°F)
Potatoes, mashed	Make as usual. Shape into patties or leave in bulk. Pack patties with two pieces of paper between layers. Press bulk potatoes tightly into container in layers with two pieces of freezer paper between layers. Press out air spaces. Place crumpled moisture-resistant paper on top.	Thaw just enough to separate layers. Slip into top of double boiler or heat over boiling water. Stir while heating or fry patties slowly without thawing.	2 weeks
Potatoes, scalloped	Make as usual until almost tender and a delicate brown color. Leave in baking dish. Cool quickly. Cover surface with moisture-resistant paper cut to fit. Package.	Partially thaw at room temperature or bake unthawed. Bake at 400°F until heated through. Add milk if necessary.	2 weeks

Problem Foods

Cooked creamed vegetables tend to lose flavor rapidly and should only be stored a few days. To do this, cook vegetables and cool quickly. Add sauce. Package. Leave head space.

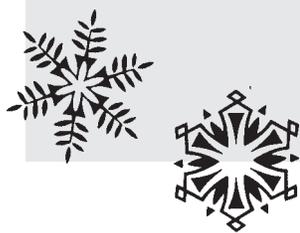
Lettuce, other greens, or raw tomatoes lose crispness and become soggy.

FRUIT DISHES

Apples, baked	Bake as usual until barely done. Cool quickly. Wrap each apple individually. Pack in cartons. Seal and freeze.	To serve cold, thaw in wrapping at room temperature. To serve hot, unwrap and heat at 350°F for 15-20 minutes.	2 months
Applesauce	Make as usual. Cool quickly. Pack in rigid containers. Leave head space.	Thaw at room temperature.	8-10 months
Salads with base of cream or cottage cheese, whipped cream, or mayonnaise	Make in large or individual molds. Fit a piece of freezer paper over the top and wrap in freezer paper or line muffin tins with freezer film. Fill with mixture. Freeze. Wrap individually and store in freezer bags or pour mixture in jar with straight sides, leaving head space.	Thaw in refrigerator and serve before completely thawed.	2 months

DESSERTS AND SWEETS

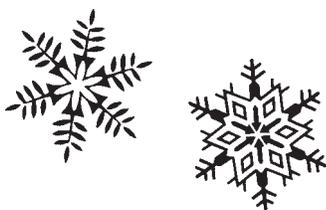
Candies	Make as usual or freeze commercially made candy. Package.	Thaw in wrapping at room temperature. Fat "bloom," which develops in chocolate candy during freezing, should disappear. Cracks in brittle candies, chocolate-covered nuts, and a few creams should disappear when candies are thawed.	1 year
---------	---	---	--------



FOOD	Preparing & Packaging For Freezing	Serving	Suggested Storage Time (at 0°F)
Frostings	Frozen frostings lose some gloss, and ones with much granulated sugar may become grainy. Cooked frostings may crack. Confectioners' sugar frostings freeze best. Package.	Thaw in container.	1-2 months
Ice cream, plain or in pies, cakes, rolls	Make as usual. Freeze before wrapping. If storing large, partially filled container, fill to top with freezer paper or cover surface well with plastic wrap.	Thaw until soft enough to serve.	1-2 months
Ices, mousses, sherbets, fruit sponges, Bavarians	Use recipes with cooked base, gelatin, marshmallows, or other stabilizers. Do not use whipped egg whites. Mousses need only be mixed and poured into container. Fruit sponges and Bavarians should be frozen before they are set so they will be firmer after thawing and have less leakage. Pack in rigid containers or leave in molds.	Thaw in refrigerator or at room temperature until soft enough to serve.	mousses, fruit sponges, Bavarians: 2 months others: 6 months
Whipped cream, whipped cream toppers	Add 3 tablespoons sugar to each pint of cream. Whip before freezing. Put dabs of whipped cream on baking sheet or lined cardboard and freeze. Remove dabs and place in cartons or freezer bags.	Thaw in refrigerator or serve frozen.	3-6 months

Problem Foods

Chocolate-covered cherries do not freeze well. Expansion during freezing causes them to break open.



Index

Animal Products	20-26	Cabbage, for cooked dishes	10
See name of product		Cakes	
general tips	21	angelfood	28,30
packaging red meat	21-22	baked	27
planning	20	cheese	30
Antidarkening treatments		chiffon	30
See antioxidants		cupcakes	30
Antioxidants	12	fruit	30
Appetizers	29,32	layer	28
Apples		pound	28
baked	35	shortened	30
fresh	14	sponge	30
juice	15	Canapes	
pie	14,31,32	See appetizers	
sauce	15,35	Candy	27,35,36
Apricots, fresh	15	Cantaloupe, fresh	
Artificial sweeteners	6	See melons	
Ascorbic acid		Carrots, fresh	10
See antioxidant		Casseroles	27
Asparagus, fresh	10	Cauliflower, fresh	10
Babyfood	25	Celery	7
Bacon		Chard	
See meat storage		See greens	
Bananas, mashed	15	Cheese	
Batter	32	cake	30
See also pancakes and waffles		cottage	7,24,27
Beans		creamed	24,27
baked	34	hard or semi-hard	24,27
green or wax, fresh	10	processed, cheese food	24,27
lima, fresh	10	topping	7
Beets, fresh	10	Cherries	
Beet greens		fresh sour	16
See greens		fresh sweet	16
Berries, most firm	15-16	Chips	25
Berries, most soft	16	Citric acid	
Biscuits		See antioxidant	
See breads		Coffee	25
Blackberries		Coffee lighteners	28
See berries, most soft		Collards	
Blanching	7-8	See greens	
See also vegetables		Commercially frozen foods	28
Blueberries		Containers for freezing	4
See berries, most soft		Cookies	
Boysenberries		baked	27,30
See berries, most soft		unbaked	27,31
Bread		Corn	
baked	27,28,29	cream-style	10
brown'n serve	29	on-the-cob	10
crumbs	25	sweet, fresh	10
fruit	29	whole kernel	10
quick	29,32	Crackers	17
unbaked	27,28,29	Cranberries	16,17
Broccoli, fresh	10	Cream	
Brown sugar	25	sweet, fresh	25,27
Brussels sprouts, fresh	10	whipped	27,36
Butter	24,27	Cream filling	7,32
Buttermilk	7,25	Cream puffs	31

Crenshaw		Ground meat	
See melons		See meat storage	
Cucumbers	7	Half-and-half	7
Custards	7,27,32	Ham	
Dairy products	7	See meat storage	
See name of product		Head space	4,9
thawing	25	Herbs	10,26
Dewberries		Honeydew	
See berries, most soft		See melons	
Dips		Hors d'oeuvres	
See appetizers		See appetizers	
Doughnuts	28,29	Huckleberries	
Dressing	7,33	See berries, most firm	
Eclair shells	31	Ice cream	25,27,28,36
Eggs	7,25,27	Ice crystals	3
thawing	25	Inventory	
Elderberries		See freezing-inventory	
See berries, most firm		Jams and jellies	26
Emergency freezer care		Juice	
See freezer failure		See name of fruit	
Enzymes	3	storage	27,28
Fish and shellfish		Kale	
creamed	33	See greens	
loaf	33	Kohlrabi	11
preparation	24	Labeling foods	4
storage	27,28	Lard	21,27
thawing	24	Lemon juice	
wrapping	23,24	See antioxidants	
Foods, not recommended		Lettuce	7,35
for freezing.....	6,7	Loading the freezer	5
Food value		Loganberries	
See nutrients, loss		See berries, most soft	
Frankfurters		Main dishes	32,33
See meat storage		Margarine	26,27
Freezer		Marshmallows	26
burn	3	Meat	
failure	5	chops	27
management	3	creamed.....	33
temperature	3,5	fried	33
Freezing		leftovers, cooked	27
food quality	3,4	loaf	33
inventory	5	roasts	27,34
loading	5	steaks	27
seasoning	6	variety	27
Frosting	7,36	venison	27
Fruits	12-20	Meat storage	27
See also name of fruits		Meringue	7,32
crushing	12	Melons	17
dried	25	Microwave	9,30
packaging	12-14	See also vegetable blanching	
selection	12	Milk	25,27
storage.....	27,28	Muffins	
thawing	14	See breads, quick	
yield	12	Mushrooms	11
Gelatin	7	Mustard greens	
Gooseberries	17	See greens	
Grapefruit		Nectarines	17,18
fresh	17	Nutrients, loss and retention	7
juice	17	Nuts	26,27
Gravy	34	Oil	26
Greens, fresh	10		
Ground cherries	17		

Onions		Radish	7
fresh	11	Raspberries, fresh	19
rings	7	Refreezing	6
Oranges		Rhubarb	19
fresh	17	Salads	35
juice	17	Salad dressings	7
Pack, types		Salt substitutes	6
loose	9	Sandwiches	28,32
solid	9	Sauces	34
sugar	12,14	Sauerkraut	26
sugar replacement	14	Shellfish	
syrup	12,13	See fish and shellfish	
tray	9,14	Sherbet	27,28,36
unsweetened	12,13	Soups	28,34
Packaging and wrapping	3,4,21,22	Sourcream	7,25
Pancakes	28	Spinach	
Parsnips, fresh	11	See greens	
Pasta	7	Spreads	
Pastry		See appetizers	
baked	31	Sprouts	26
unbaked	31	Squash	
Peaches	18	summer	11
Pears	18	winter	11
Peas		Stews	7,27,32
green, fresh	11	Storage times	27-28
snow, sugar or Chinese	11	Strawberries	19,20
Persian melon		Sugar-free	12,13,14
See melons		Syrup for fruit	13
Peppers, green or hot	11	Temperature	
Pies		See freezer temperature	
See also name of fruit		Thawing	5,9,14,24,25,30,36
baked	32	Tomatoes	7,35
chiffon	31	juice	11
cream	32	sections	11
custard	27	Turnips	12
fruit filling	32	TV dinners	28,32
main dish	28,32	Vegetables	7-12
pumpkin	32	See also names of vegetables	
storage	27	blanching	8
unbaked	31	microwave	8
Pineapple	18,19	steam	8
Plums	19	water	7
Pizza	33	cooking	9
Potatoes		cooling	8
baked and stuffed	34	creamed	35
French fried or shoestrings	7,11,27	packaging	9
hash browns	11	storage	27,28
mashed	35	thawing	9
scalloped	27,35	yield	8
sweet	34	Waffles	28,29
Poultry		Watermelon	
cooked	34	See melons	
creamed	33	Wrapping	
discoloration	23	See packaging and wrapping	
packaging	23	Yogurt	7,25,27
storage	27	Youngberries	
stuffed	7	See berries, most soft	
Prepared foods	20,29-36	Zucchini	
See also name of food		See also squash, summer	11
Pudding		grated	11
steamed	11		
Pumpkin	11		

For more information on this and other topics, see www.ag.ndsu.nodak.edu/food.htm

NDSU Extension Service, North Dakota State University of Agriculture and Applied Science, and U.S. Department of Agriculture cooperating. Duane Hauck, Interim Director, Fargo, North Dakota. Distributed in furtherance of the Acts of Congress of May 8 and June 30, 1914. We offer our programs and facilities to all persons regardless of race, color, national origin, religion, sex, disability, age, Vietnam era veterans status, or sexual orientation; and are an equal opportunity employer. This publication will be made available in alternative format upon request to people with disabilities (701) 231-7881.