

FREEZING BASICS

BASIC FOOD SAFETY

Wash Hands Frequently

- Personal cleanliness is a must. Wash your hands thoroughly and frequently. *E. coli* resides in the human nose and intestines. Wash your hands if you rub your nose, or if you wipe your face or skin.
- Bandage any cuts or burns on hands before handling food, or use disposable gloves.

Avoid Cross Contamination

- Rinse all fresh fruits and vegetables well under running water before preparing or eating them. Dry them with a clean cloth or paper towel.
- **ALWAYS** wash your hands, knives, cutting boards, and food preparation surfaces well with soapy water before and after any contact with raw meat, fish, or poultry.
- Use a disinfecting solution of 1½ teaspoon of chlorine bleach to 1 pint of water. Dispense with a spray bottle to disinfect countertops, cutting surfaces, sinks, etc. Make a new solution daily.

When In Doubt, Throw It Out

- Never taste food that looks or smells strange to see if it can still be used.
- Most bacteria that cause foodborne illness are odorless, colorless, and tasteless.

FREEZING FOODS

Retains natural color, flavor and nutritive value of foods and is quick and simple to do. Freezing slows down the enzymes in fruits and vegetables that cause them to ripen and then decay.

Freezing Pointers

- Freeze foods at 0°F or lower. For rapid freezing, set the temperature to -10°F 24 hours in advance.

- Freeze foods as soon as they are packed and sealed.
- Water in food freezes and expands creating ice crystals, which rupture cell walls of fruits and vegetables, making them softer when thawed. Large ice crystals do more damage to food cells and cause softer, mushier textures. Minimize the size of ice crystals by keeping the temperature consistent and freezing the food quickly.
- Do not overload your freezer with unfrozen food. Add only the amount that will freeze within 24 hours, which is usually 2 to 3 pounds of food per cubic foot of storage space. Overloading slows down the freezing rate, and foods that freeze too slowly may lose quality.
- Place packages in contact with refrigerated surfaces in the coldest part of the freezer.
- Leave a little space between new packages so air can circulate freely. Stack after frozen.

PREPARING VEGETABLES FOR FREEZING

Select vegetables that are ripe and free of blemishes and prepare for freezing by blanching in boiling water or steam. Consult a research-based recipe or resource for specific blanching times for each type of vegetable.

Blanching Vegetables

- Blanching (scalding vegetables in boiling water or steam for a short time) is a must for almost all vegetables to be frozen. It stops enzyme actions, which can cause loss of flavor, color and texture.
- Blanching cleanses the surface of dirt and organisms, brightens the color and helps retard loss of vitamins. It also wilts or softens vegetables and makes them easier to pack.

- Blanching time is crucial and varies with the vegetable and size. Underblanching stimulates the activity of enzymes and is worse than no blanching. Overblanching causes loss of flavor, color, vitamins and minerals.

Water Blanching

- Use one-gallon water per pound of prepared vegetables.
- Put the vegetables in a blanching basket and lower into vigorously boiling water.
- Place a lid on the blancher. The water should return to boiling within 1 minute, or you are using too much vegetable for the amount of boiling water.
- Start counting blanching time as soon as the water returns to a boil. Keep heat high for the time given in the directions for the vegetable you are freezing.

Steam Blanching

Heating in steam is recommended for a few vegetables. For broccoli, pumpkin, sweet potatoes and winter squash, both steaming and boiling are satisfactory methods. Steam blanching takes about 1½ times longer than water blanching.

- Use a pot with a tight lid and a basket that holds the food at least three inches above the bottom of the pot. Put an inch or two of water in the pot and bring the water to a boil.
- Put the vegetables in the basket in a single layer so that steam reaches all parts quickly. Cover the pot and keep heat high. Start counting steaming time as soon as the lid is on.

Microwave Blanching

Microwave blanching may not be effective, since research shows that some enzymes may not be inactivated. This could result in off-flavors and loss of texture and color. Those choosing to run the risk of low quality vegetables by microwave blanching should be sure to work in small quantities, using the directions for their specific microwave oven. Microwave blanching will not save time or energy.

Cooling Vegetables

As soon as blanching is complete, vegetables should be cooled quickly and thoroughly to stop the cooking process.

- Plunge the basket of vegetables immediately into a large quantity of cold water, 60°F or below.
- Change water frequently or use cold running water or ice water. If ice is used, about one pound of ice for each pound of vegetable is needed.
- Cooling vegetables should take the same amount of time as blanching.
- Drain vegetables thoroughly after cooling. Extra moisture can cause a loss of quality when vegetables are frozen.

PREPARING FRUITS FOR FREEZING

Select premium fruits that are fully ripe and free of bruises and other blemishes. Carefully wash, dry, remove pits, and peel, if desired. Use one of the methods described below to prepare fruit for freezing.

Without Sugar

Fruit may be frozen without sugar in a water pack or sugar-free fruit juice, such as citrus or berry juice. Small fruit such as berries, cherries, and grapes may be frozen in a single layer on a cookie sheet before packing in containers.

Syrup pack

Fruit may be frozen in a simple syrup of water and cane or beet sugar. If desired, part of the sugar may be replaced by corn syrup or honey. Allow about 2/3 cup of simple syrup for each pint of fruit; 1-1/3 cup for each quart of fruit. Dissolve sugar in hot water and cool before using.

Strength of syrup	Water (cups)	Sugar (cups)	Yield (cups)
Light	4	1	4 ¾
Medium	4	1 ¾	5
Heavy	4	2 ¾	5 ½

Sugar Pack

Juicy fruits and those that will be used for pies or other cooked products may be packed in sugar. Use about 1 cup of sugar for each 2 to 3 pounds of fruit. Gently mix until the sugar has dissolved in the fruit's juices.

Retarding Browning

Ascorbic acid may be used to reduce browning of light-colored fruit. For syrup or liquid packs, add ½ teaspoon ascorbic acid to each quart of cold syrup. For sugar or sugarless dry packs, dissolve ½ teaspoon ascorbic acid in 3 table-spoons cold water and sprinkle over 4 cups of fruit just before adding sugar.

PACKAGING AND SHELF LIFE

Packaging and Labeling Foods

- Cool all foods and syrup before packaging to speed up freezing and help retain the natural color, flavor and texture of food. (Cool in shallow containers in the refrigerator or ice bath.)
- Pack foods in single meal quantities.
- Follow directions for each individual food to determine which can be packed dry and which need added liquid. Some loose foods such as blueberries may be individually “tray packed.”
- Pack foods tightly leaving as little air as possible in the package.
- Most foods require headspace between the packed food and closure to allow for expansion of the food as it freezes. Foods that are exceptions and do not need headspace include loose packing vegetables such as asparagus and broccoli, bony pieces of meat, tray packed foods and breads.

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

Containers

Use proper packaging materials to protect food's flavor, color, moisture content and nutritive value from the dry climate of the freezer. The type of containers depends on the type of food to be frozen, personal preference and what you have at home. Do not freeze fruits and vegetables in containers with a capacity over one-half gallon. Foods in large containers freeze too slowly to result in a satisfactory product.

Best packaging materials:

- Moisture vapor resistant
- Not become brittle and crack at low temperatures
- Resistant to oil, grease or water
- Protect foods from absorption of off flavors or odors
- Durable and leak proof
- Easy to seal and mark

Headspace to Allow Between Packed Food and Closure

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

*Fruit packed in juice, sugar, syrup or water; crushed or pureéd fruit. **Fruit or vegetable packed without added sugar or liquid.

Rigid: Used with liquids or soft foods

- Plastic
- Glass: wide mouth dual purpose jars
- Straight sides (no shoulder)
- Tight fitting covers/freezer tape

Flexible: Used with irregular shapes and liquids

- Flexible freezer bags
- Plastic freezer wrap
- Freezer paper
- Heavy-weight aluminum foil

Freezer Shelf Life

- Freezing cannot improve the flavor or texture of any food, but when properly done it can preserve most of the quality of the fresh product. Knowing how long a particular food can be stored in the freezer is not as simple as it sounds.
- The storage times listed in the following table are approximate months of storage for some food products assuming the food has been prepared and packaged correctly and stored in the freezer at or below 0°F. For best quality use the shorter storage times. After these times, the food should still be safe, just lower in quality.

Food	Approximate months of storage at 0°F
Fruits and Vegetables	8 – 12 months
Poultry	6 – 9 months
Fish	3 – 6 months
Ground Meat	3 – 4 months
Cured or Processed Meat	1 – 2 months

Refreezing Frozen Foods

Occasionally a home freezer stops running. The time the food will stay frozen depends on the amount of food in the freezer and the temperature of the food. A full load of food will stay for up to 2 days if the freezer is not opened. It is safe to refreeze fruits and vegetables that still have ice crystals in them. If the temperature has warmed above 40° F, foods may not be fit for refreezing.

REFERENCES

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IMPORTANT SAFETY NOTE

Research on food preservation is ongoing, and recommendations may change. Make sure your information is current. Always follow up-to-date, tested guidelines and recipes from reliable sources.

LOCAL CONTACT

For more information, contact the University of California Cooperative Extension office in your county. See your telephone directory for addresses and phone numbers, or visit http://mfp.ucanr.edu/Contact/Find_a_Program/.

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