

Freezing Meats and Seafood

SAFETY OF FROZEN MEATS

Wholesome food stored constantly at 0 °F will always be safe. Only the quality suffers with lengthy freezer storage. Freezing preserves food for extended periods because it prevents the growth of microorganisms that cause both food spoilage and foodborne illness. Once thawed, however, these microbes can again become active, multiplying under the right conditions to levels that can lead to foodborne illness. Since they will then grow at about the same rate as microorganisms on fresh food, handle thawed items as you would any perishable. Trichina and other parasites can be destroyed by sub-zero freezing temperatures. However, very strict government-supervised conditions must be met. It is not recommended to rely on home freezing to destroy trichina. Thorough cooking will destroy all parasites.

NUTRIENT VALUE

The freezing process itself does not destroy nutrients. In meat and poultry products, there is little change in nutrient value during freezer storage.

PACKAGING

Proper packaging helps maintain quality and prevent "freezer burn." It is safe to freeze meat or poultry directly in its supermarket wrapping, but this type of wrap is permeable to air. Unless you will be using the food in a month or two, overwrap these packages as you would any food for long-term storage using airtight heavy-duty foil, plastic wrap or freezer paper, or place the package inside a plastic bag. Use these materials or airtight freezer containers to repackage family packs into smaller amounts or freeze foods from opened packages. It is not necessary to rinse meat and poultry before freezing. Freeze unopened vacuum packages as is.

If you notice that a package has accidentally torn or has opened while food is in the freezer, it is still safe to use; merely overwrap or rewrap it.

FREEZER BURN

Freezer burn does not make food unsafe, merely dry in spots. It appears as grayish-brown leathery spots and is caused by air reaching the surface of the food. Cut freezer-burned portions away either before or after cooking the food. Heavily freezer-burned foods may have to be discarded for quality reasons.

COLOR CHANGES

Color changes can occur in frozen foods. The bright red color of meat as purchased usually turns dark or pale brown depending on its variety. This may be due to lack of oxygen, freezer burn or abnormally long storage.

Freezing doesn't usually cause color changes in poultry. However, the bones and the meat near them can become dark. Bone darkening results when pigment seeps through the porous bones of young poultry into the surrounding tissues when the poultry meat is frozen and thawed.

FREEZE RAPIDLY

Freeze food as quickly as possible to maintain its quality. Slow freezing creates large, disruptive ice crystals. During thawing, they damage the cells and cause meat to "drip" or lose juiciness. Ideally, food 2 inches thick should freeze completely in about two hours. If your home freezer has a "quick-freeze" shelf, use it. Never stack packages to be frozen. Instead, spread them out in one layer on the shelves, stacking them only after frozen solid.

REFRIGERATOR FREEZERS

If a refrigerator freezing compartment can't maintain 0 °F, or if the door is opened frequently, use it only for short-term food storage. Eat those foods as soon as possible for best quality. Use a free-standing freezer set at 0 °F or below for long-term storage of frozen foods. Keep a thermometer in your freezing compartment or freezer to check the temperature.

LENGTH OF TIME

Because freezing keeps food safe almost indefinitely, recommended storage times are for quality only. (See freezer storage chart on the last page.) If a food is not listed on the chart, you may determine its quality after defrosting. First check the odor. Some foods will develop a rancid or off odor when frozen too long and should be discarded. Some may not look picture-perfect or be of high enough quality to serve alone, but may be edible; use them to make soups or stews. Cook raw food and if you like the taste and texture, use it.

FREEZING GAME MEATS

Freshly slaughtered meat carcasses or pieces need to be cooled to below 40 °F within 24 hours to prevent souring or spoiling. The meat should be chilled to 32 to 36 °F. Variety meats (liver, heart or sweetbreads) are ready to be wrapped and frozen after they are cold. For more information, request HGIC 3516, *Safe Handling of Wild Game Meats*.

Quail, dove, duck, pheasant and other game birds should be dressed and gutted as soon as possible after shooting. Cool and clean properly. Remove excess fat on wild ducks and geese since it becomes rancid very quickly. Freeze as directed for poultry. For more information, request HGIC 3515, *Safe Handling of Wild Game Birds*.

Note: Do not stuff poultry or game birds before freezing them. During freezing or thawing, food poisoning bacteria could easily grow in the stuffing. Commercially-stuffed frozen poultry is prepared under special safety conditions that cannot be duplicated at home.

FREEZING FISH

Fish for freezing should be fresh as possible. Wash fish and remove scales by scraping fish gently from tail to head with the dull edge of the knife or spoon.

Remove entrails after cutting entire length of belly from vent to head. Remove head by cutting above collarbone. Break backbone over edge of cutting board or table. Remove dorsal or large back fin by cutting flesh along each side and pulling fin out. Do not trim fins with shears or a knife because bones will be left at the base of the fin. Wash fish thoroughly in cold running water.

Fish is now dressed or pan dressed, depending on size. Large fish should be cut into steaks or fillets for easier cooking. For steaks, cut fish crosswise into ¾-inch thick steaks. For fillets, cut down back of fish from tail to head. Then cut down to backbone just above collarbone. Turn knife flat and cut flesh along backbone to tail allowing knife to run over rib bones. Lift off entire side of fish in one piece, freeing fillet at tail. Turn fish over and cut fillet from other side.

Pretreating: Fish are categorized as either fat or lean fish by the amount of fat in their flesh. Fat fish include varieties such as mullet, mackerel, trout, tuna and salmon. Lean fish include flounder, cod, whiting, redfish, croaker, snapper, grouper, sheepshead and most freshwater fish.

Before freezing, fish can be pretreated to improve the quality of the stored fish. Fatty fish should be dipped for 20 seconds in an ascorbic acid solution made from 2 tablespoons ascorbic acid to 1 quart of cold water to control rancidity and flavor change. Lean fish may be dipped for 20 seconds in a brine of ¼ cup salt to 1 quart of cold water to firm the fish and decrease drip loss on thawing. (These pretreatments are not needed if a lemon-gelatin glaze is used.)

Methods of Freezing: Fish may be frozen using any of the following glazes. If several fish are placed in the same package, place freezer paper or wrap between them for easier separation.

Lemon-Gelatin Glaze: To prepare glaze, mix ¼ cup lemon juice and 1¾ cups water. Dissolve one packet of unflavored gelatin in ½ cup lemon juice-water mixture. Heat the remaining 1½ cups of liquid to boiling. Stir the dissolved gelatin mixture into the boiling liquid. Cool to room temperature. When cool, dip the cold fish into the lemon-gelatin glaze and drain. Wrap the fish in moisture- and vapor-resistant packaging, label and freeze.

Ice Glaze: Place unwrapped fish in the freezer to freeze. As soon as it is frozen, dip fish in near-freezing ice water. Place fish again in the freezer a few minutes to harden the glaze. Take fish out, and repeat the glaze until a uniform cover of ice is formed. Wrap the fish in moisture- and vapor-resistant paper or place in freezer bags. Label and freeze.

Water: Place fish in a shallow metal, foil or plastic pan; cover with water and freeze. To prevent evaporation of the ice, wrap the container in freezer paper after it is frozen, label and freeze.

Fish Roe: Thoroughly wash and package in freezer containers or bags and boxes, leaving ¼-inch headspace. Seal and freeze.

FREEZING SHELLFISH

Clams: Clams can be frozen either in the shell or shucked. To freeze the clams in the shell, simply place the live clams in moisture- and vapor-resistant bags. Press out excess air and freeze.

To freeze the clam meat, shuck the clams, then clean and wash the meat thoroughly. Drain and pack in freezer containers, leaving ½-inch headspace. Seal, label and freeze.

Crabs: Select only live crabs to prepare for freezing. Crab freezes better if not “picked” before freezing. Simply remove the back, legs, entrails and gills either before or after boiling the crab for five minutes. (Be sure to cool the crab quickly after it is cooked.) The claws and body or core of the crab that still contains the meat should then be wrapped or ice-glazed and wrapped in freezer wrap or paper. Seal, label and freeze.

Lobster: For best quality, lobster should be frozen uncooked. Freeze the lobster whole, or clean it and freeze just the shell portions that contain the edible meat. (Some lobsters have large front claws that contain edible meat, while others have edible meat mainly in the tail section.) Freeze lobster in the shell, to help keep the meat from drying out. Simply wrap the whole lobster or lobster portions in moisture- and vapor-resistant wrapping and freeze. Lobster can be cooked and then frozen, but the quality will not be as good.

Oysters: Oysters that are still in the shell should only be frozen live. A live oyster will keep its shell tightly closed or will close when tapped. If you have plenty of freezer space and want to freeze the oysters in the shell, simply wash the shells thoroughly and place in moisture- and vapor-resistant bags.

Shuck the oysters to save freezer space. First, wash the oyster shells, discarding any that have died. Shuck oysters into a strainer, saving the liquor, and remove any pieces of shell or sand. If necessary, the oysters can be rinsed to remove any sand. Place oysters and liquor in a plastic container or freezer bag, leaving ½-inch headspace. Seal and freeze.

Note: Freezing does change the texture and flavor of oysters. These oysters may be best used in casseroles or stews.

Scallops: Scallops for freezing should be live until shucked. A live scallop will keep its shell tightly closed or will close it when tapped. To freeze, place shucked scallops in a freezer container, leaving ½-inch headspace, seal and freeze.

Shrimp: Select high-quality, fresh shrimp for freezing. Shrimp can be frozen cooked or raw, in or out of the shell. For maximum storage life and quality, freeze shrimp raw, with heads removed, but shells still on. Shrimp may also be frozen in water in a freezer container. Be sure to wash and drain the shrimp if frozen uncooked. Quickly chill cooked shrimp before freezing. Package in freezer containers or bags, leaving ¼-inch headspace. Seal and freeze.

SAFE DEFROSTING

Never defrost foods in a garage, basement, car, plastic garbage bag, out on the kitchen counter, outdoors or on the porch. These methods can leave your foods unsafe to eat. There are three safe ways to defrost food: in the refrigerator, in cold water or in the microwave. It's best to plan ahead for slow, safe thawing in the refrigerator. Small items may defrost overnight; most foods require a day or two. For large items like turkeys allow one day for each 5 pounds of weight.

For faster defrosting, place food in a leak-proof plastic bag and immerse it in cold water. (If the bag leaks, bacteria from the air or surrounding environment could be introduced into the food. Tissues can also absorb water like a sponge, resulting in a watery product.) Check the water frequently to be sure it stays cold. Change the water every 30 minutes. After thawing, refrigerate the food until ready to use.

When microwave-defrosting food, plan to cook it immediately after thawing because some areas of the food may become warm and begin to cook during microwaving. Holding partially cooked food is not recommended because any bacteria present wouldn't have been destroyed.

REFREEZING

Once food is thawed in the refrigerator, it is safe to refreeze it without cooking, although there may be a loss of quality due to the moisture lost through defrosting. After cooking raw foods that were previously frozen, it is safe to freeze the cooked foods. And if previously cooked foods are thawed in the refrigerator, you may refreeze the unused portion. If you purchase previously frozen meat, poultry or fish at a retail store, you can refreeze if it has been handled properly.

Cooking Frozen Foods

Raw or cooked meat, poultry or casseroles can be cooked or reheated from the frozen state. However, it will take approximately one and a half times the usual cooking time for food which has been thawed. Remember to discard any wrapping or absorbent paper from meat or poultry.

When cooking whole poultry, remove the giblet pack from the cavity as soon as you can loosen it. Cook the giblets separately. Read the label on USDA-inspected frozen meat and poultry products. Some, such as pre-stuffed whole birds, MUST be cooked from the frozen state to ensure a safely cooked product.

FREEZER STORAGE CHART (0 °F)

Note: Frozen foods remain safe indefinitely; storage recommendations are for quality only.

FOOD	FREEZER
MEATS, FRESH	
Beef or venison, roasts, steaks	6-12 months
Chicken or turkey, pieces	9-12 months
Chicken or turkey, whole	1 year
Ducks, geese, game birds	6 months
Ground meat or stew, giblets	3-4 months
Lamb, roasts or chops	6-9 months
Pork, roasts or chops	4-6 months
Pre-stuffed chops or chicken breasts	*
Sausage	1-2 months
Variety meats: heart, liver, etc.	3-4 months
MEATS, COOKED	
Smoked breakfast sausage	1-2 months
Ham, hotdogs, luncheon meats	1-2 months
Cooked, leftover meat, gravy	2-3 months
Cooked, leftover poultry	4-6 months
Leftover chicken nuggets	1-3 months
SEAFOOD FRESH	
Fresh lean fish: cod, flounder, trout, haddock, halibut, pollack, perch	4-6 months
Fresh fatty fish: mullet, salmon, swordfish mackerel, bluefish, tuna smelt	2-3 months
Shellfish	3 months
COOKED FISH	
Fish sticks, commercial	18 months
Breaded shrimp, commercial	1 year
Breaded scallops, commercial	16 months
Cooked pieces	3 months
*Not recommended due to safety issues.	

Sources:

1. FSIS/USDA (1994). *Focus on: Freezing*. [WWW document]. URL <http://www.fsis.usda.gov/OA/pubs/freezing.htm>
2. Reynolds, Susan and Paulette Williams (1993). *So Easy to Preserve*, Bulletin 989. University of Georgia Cooperative Extension Service. Revised by Judy Harrison.

This information has been reviewed and adapted for use in South Carolina by P.H. Schmutz, HGIC Information Specialist, and E.H. Hoyle, Extension Food Safety Specialist, Clemson University.

This information is supplied with the understanding that no discrimination is intended and no endorsement by the Clemson University Cooperative Extension Service is implied. All recommendations are for South Carolina conditions and may not apply to other areas. (New 6/99)