

If Your Freezer Stops

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Food and Nutrition Series | Food Safety

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If you have a full home freezer, you have made a major financial investment for food. If you grew the food and prepared it for freezing, you also have many hours of time invested. Considering these investments, it is important to take a few precautions to ensure against loss in case of a power or mechanical failure or other problem that may cause the freezer to stop or malfunction.

Thermometer. Purchase a refrigerator/freezer thermometer and keep it in the freezer. If your freezer goes out for any reason and is off for some time, you can see how warm the freezer has become. Knowing the highest temperature that food has reached is the most important factor to determine whether or not the thawed food in your freezer is safe. Having a freezer thermometer also gives you more control over the quality of your frozen food. Keep the freezer temperature at 0 degrees F.

Power source. It's best to plug your freezer into a dedicated outlet that is not connected to a circuit protected by a GFI (Ground Fault Interrupter) device. GFIs are easily tripped by power surges, shutting off power to your freezer.

Power failure. If for any reason you anticipate an extended power failure (i.e., snow storm, construction in the area), reduce the freezer temperature to -10 or -20 degrees F. The colder the food, the more time it takes to thaw.

New freezer. If you plan to purchase a new freezer, investigate models that have an alarm. No matter why the freezer is off, the alarm will sound if the temperature rises significantly and you will be warned of the problem.

Lock the door. Keep the freezer door locked if there are small children in the household. This prevents children from

leaving the door open or from accidentally getting trapped inside the freezer.

Check freezer. Check the freezer occasionally to be sure it works properly – particularly if the freezer is not in an area that you walk by daily.

Dry ice or alternate freezer site. Locate a source of dry ice if and when your freezer stops, or locate a supermarket or locker plant that has freezer space available for consumer use. If you locate these sources in advance, your stress will be lower if your freezer is out of operation for a few days. If there is neither a source of dry ice nor a locker plant available, keep canning supplies on hand to preserve food when there is no chance of using your freezer soon.

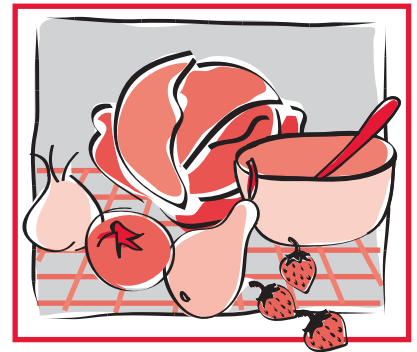
Length of Time Food Will Remain Frozen

As soon as your freezer goes off, determine how long the problem will last. If it is a power failure, ask the power company how long the power will be off. If it is a mechanical failure, check the instruction booklet that came with your freezer to see if you can remedy the problem. If not, schedule a repair service.

Once you know when your freezer is expected to be operational again, assess whether you can leave food in the freezer or if you need to take additional steps to ensure that your food remains frozen.

If you leave the freezer door shut, these factors affect how long food will stay frozen:

Amount of food in the freezer. Food in a full freezer will stay frozen about two days. Food in a freezer that is only half full may stay frozen up to one day. Keeping containers of ice in a partially filled freezer helps keep other foods frozen longer. Also, while the freezer is operating, less energy is required to keep the ice frozen than to keep empty space or air at 0 degrees F.



Quick Facts

- Because a freezer full of food is a major investment, prepare alternatives if it stops.
- Factors that affect how long food stays frozen if it is in the freezer with the door shut include: the amount of food in the freezer, the kind of food, the freezer temperature before it quit, the amount of freezer insulation, and the size of the freezer.
- If food is safe to eat, it is safe to refreeze. If ice crystals remain in foods, it's usually safe to refreeze them although there will be changes in the texture, flavor and color, and the nutritional value may be lower.

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Table 1. Using dry ice to keep freezer temperatures below 32 degrees F.

| Amount of dry ice | Size of freezer | Quantity of food in freezer | Time to remain in freezer |
|-------------------|-----------------|-----------------------------|---------------------------|
| (lbs) | (cubic ft) | | (days) |
| 25 | 10 | half-full | 2-3 |
| 25 | 10 | full | 3-4 |
| 50 | 20 | half-full | 3 |
| 50 | 20 | full | 4 |

Kind of food. A freezer full of meat will not warm up as fast as a freezer full of baked food.

Temperature in the freezer before it quit. The colder the food, the longer it will stay frozen.

Amount of freezer insulation. Obviously, a well-insulated freezer will keep food frozen much longer than one with little insulation.

Size of freezer. The larger the freezer, the longer the food will stay frozen, particularly if the freezer is full.

Keeping Food Frozen

If your freezer will be off longer than the one to two days there are several methods you can use to extend the time your food will remain frozen:

- Wrap the freezer with crumpled newspapers and then blankets. Don't cover the air vents in case the freezer begins operating.
- Use dry ice to keep the temperature low. Place heavy cardboard over packages of frozen food. Put the dry ice on top of the cardboard. If dry ice is obtained before the freezer temperature rises significantly, you can keep your freezer cold as shown in Table 1. Then keep your freezer closed. Be careful when using dry ice. Wear gloves so that it won't burn your hands. Keep the room ventilated.
- Call the supermarket or locker plant you made prior arrangements with to be sure they currently have room for your food. Place the food in ice chests or insulated boxes. Wrap the boxes in newspapers and blankets.
- Check with neighbors to see if their freezers have space for your food. If your packages are well labeled, you can easily retrieve them.

When Food is Safe to Refreeze

If food is safe to eat, it's safe to refreeze.

When you find that your freezer is off, check the temperature in two or three locations. Then take a look at the packages of food.

If foods still contain ice crystals and/or if the freezer is 40 degrees F or less and has been at that temperature no longer than one to two days, then food that was safe when it was originally frozen should be safe now. It can be refrozen or cooked and eaten.

If food has been held at 40 degrees F or less but kept at this temperature for some time, examine it more closely. If the color or odor of thawed beef, pork, lamb or poultry are poor or questionable, discard the meat away from possible human or animal consumption. If eaten, the food may give someone food poisoning.

Often you cannot tell by the odor whether vegetables, shellfish and cooked foods are spoiled. Bacteria multiply rapidly in these foods so don't eat or refreeze any that have thawed completely. If ice crystals remain in these foods, it's usually safe to refreeze them. However, the texture will be mushier, the nutritional value may be lower, and the flavor and color may not be top quality.

If the freezer is above 40 degrees F and you know it has been at that temperature more than two hours, then the food probably is not safe. Fruits and bread products are exceptions. Fruits ferment when they start to spoil, but a little fermentation won't make fruits unsafe to eat. Fermentation will eventually spoil the flavor and odor of fruit. You can refreeze completely thawed fruits if they still taste and smell good. Or you can use them in cooking and baking or for making jams and jellies.

Breads will be staler, but they still may be acceptable. Toasting, steaming in the oven in aluminum foil, or microwaving in paper toweling or plastic wrap will help freshen them.

If you need help to decide about the safety of particular products, call your Colorado State University Extension county office. Be prepared to provide information on the history of the foods: types of food, length of time the freezer was off, the highest temperature reached in the freezer, and about how long the food may have been at that temperature.

Refreezing Methods to Maintain Quality

For best quality, refreeze food quickly. The faster food freezes, the smaller the ice crystals that form within the food. When food freezes slowly, larger ice crystals develop and pierce the cell walls within the food and cause the food to be mushier and to lose more flavor, nutrients and color.

If your freezer is full of thawed food, it will not refreeze quickly. Therefore, you'll probably need to take the food to a locker plant to have it frozen quickly before moving it back to your home freezer. If a locker plant is unavailable, a neighbor may have space to refreeze a portion of your food.

The same rules apply to refreezing as to the initial freezing.

- Turn the freezer to its coldest setting.
- Use moisture- and vaporproof packaging and close packages securely. Label with date(s) of freezing and contents.
- Put no more unfrozen food into the freezer at one time than will freeze in 24 hours – usually 2 to 3 pounds per cubic foot of freezer capacity. If you have a

Once you know when your freezer is expected to be operational again, assess whether you can leave food in the freezer or if you need to take additional steps to ensure that your food remains frozen.

15-cubic-foot freezer, refreeze only 30 to 45 pounds of food at a time.

- Place packages at least 1 inch apart so cold air can reach all sides. Place thawed food against the freezer coils. Your freezer instruction booklet will tell you where the coldest portion of the freezer is.
- After the food is frozen, rearrange the packages so they are stored close together. Change the temperature setting back to normal so the freezer maintains 0 degrees F.
- Use refrozen and oldest foods first. Keep a list near the freezer, and check off packages as they are used. This lets you quickly see what food remains and plan for its use.

A common myth is that food must be cooked before it is refrozen. Frozen food will be of higher quality longer if it is not cooked (except for blanching vegetables). Cooked food can become unsafe faster if it is mishandled during thawing and preparation.

Cleaning and Removing Freezer Odors

If your freezer is full of warm, dripping or spoiled food, you need to take one or more of the following steps to clean and deodorize it before refilling it:

- Take out all removable parts and wash them with warm water and mild soap or detergent. Also, wash the gaskets and door liner. Rinse well and dry.
- Wash the interior walls with a solution of 2 tablespoons baking soda to 1 quart warm water.
- Pour baking soda onto large, flat pans and place pans on the freezer shelves to absorb odors.
- Spread activated charcoal onto large, flat pans and place on shelves inside the freezer. Leave the freezer empty and allow it to run at its highest temperature for a few days to allow odors to be absorbed. Activated charcoal usually is quite effective in absorbing odors and can sometimes be obtained at appliance stores.
- Place freshly ground coffee in small bowls inside the freezer and allow the freezer to run at its highest temperature for several days. Wash the inside of the freezer again to remove the slight coffee odor that will probably remain.
- Pack each freezer shelf with crumpled newspaper. Put a cup of water on the top shelf or sprinkle the newspaper lightly with water. Allow the freezer to run for approximately five to six days at its highest temperature.
- Get and follow manufacturer's directions for commercial products available for removal of refrigerator and freezer odors. These products often can be found at hardware, grocery or discount stores.

Often you cannot tell by the odor whether vegetables, shellfish and cooked foods are spoiled.

If these methods do not satisfactorily eliminate odor problems, drippings from meat or fish may have leaked into the freezer's insulation or gaskets. The problem may require a refrigerator technician to replace the liner or the insulation.

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