

Freeze Drying Food for Long-Term Storage

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August 25,2022

What is freeze-dried food?

- It is food that is dehydrated (water removed) at low temperatures
- Water is removed through sublimation
- Sublimation converts solid water (ice) directly into vapor (steam)
- The dried food retains its original shape and look (color and appearance), taste and very high percentage of original nutritional value
- Without moisture in it the food can be stored for many years if packaged for long-term storage--sealed mylar bags with oxygen absorbers recommended

What foods can be freeze-dried?

- All vegetables and fruits
- Low fat meats (fat does not hold much water and eventually goes rancid)—fish, chicken, turkey, beef, pork, venison, etc.
- Dairy products—cheese, yogurt, milk, cottage cheese, ice-cream
- Soups and entrees—all types—lasagna, stroganoff, chicken/rice, spaghetti, casseroles,
- Sauces and dressings (non-oil based), salsas
- Desserts—puddings, cheese cake, ice-cream, cakes, cookies, brownies

How are foods “freeze-dried”?

- Fresh or cooked foods are prepared and placed on trays
- Trays of food are placed in the freeze dryer
- The freeze drying process starts with the press of a button
- The food is frozen to an appropriately cold temperature
- A vacuum pump removes the air from the freeze-drying compartment
- Low temperature heaters turn on/off depending on vapor pressure in the freeze-drying compartment
- When rate of vaporization approaches zero then process is complete
- When process is complete, food is removed, packaged and stored

How is food packaged for the long haul?

- Dried food removed from the freeze dryer must be immediately packaged in order to avoid rehydration (lots of moisture in air)
- #10 cans with oxygen absorbers work well (must have a can/lid sealer)
- Mylar bags with oxygen absorbers also work well (must put in a box or container for convenient storage)—can be sealed over and over again
- Mason jars and lids work too—some have vacuum system for removing air from the jar (must store out of direct light)
- Cool and dark storage areas work best (heat accelerates oxidation of food, light has UV that also breaks down packaging and food)

What about kale, spinach, chard and the like?

- All of these can be freeze dried—just stack the leaves on the trays and process them through the freeze dryer
- Package by crushing the leaves into Mylar bags, add absorber and seal
- Great for smoothies and many kinds of recipes
- **Will not rehydrate to look like fresh!**
- Great nutritional retention!

How is food re-hydrated?

- Just add water! How much water? Depends on the food.
- Just add dry ingredients to the recipe—there may be enough moisture in the other ingredients to re-hydrate the freeze dried food
- Examples:
 - Meat—just soak in dish of water, remove and heat or eat
 - Vegetables/fruits—add equal parts water and vegetable or fruit
 - Yogurt—add equal parts water and yogurt, put in refrigerator to chill
 - Spinach/kale/chard—add to recipes or just add to dish of hot water, remove rehydrated leaves, season to taste and eat
 - Casseroles—add hot water, stir a little, add a little more water to achieve consistency desired
 - GO TO THE INTERNET—“Rehydrate Freeze Dried Food”—watch the videos!

Other benefits

- Buy in bulk and freeze for later freeze drying
- Preserve your garden and orchard harvests
- Preserve your meal 'left-overs'
- Make your own healthy snacks
- Increase the variety of long-term storage foods for emergency use
- Make your own herbal spices and blends
- Speed up the freeze drying process by pre-freezing the food