

Food Storage

 churchofjesuschrist.org/study/manual/gospel-topics/food-storage

Overview

“Our Heavenly Father created this beautiful earth, with all its abundance, for our benefit and use. His purpose is to provide for our needs as we walk in faith and obedience. He has lovingly commanded us to ‘prepare every needful thing’ (see [Doctrine and Covenants 109:8](#)) so that, should adversity come, we may care for ourselves and our neighbors, and support bishops as they care for others.”

“We encourage members worldwide to prepare for adversity in life by having a basic supply of food and water and some money in savings. We ask that you be wise, and do not go to extremes. With careful planning, you can, over time, establish a home storage supply and a financial reserve.” (See [All Is Safely Gathered In.](#))

What am I supposed to have in my food storage?

There are three main components of food storage:

- Food supply (three-month and long-term)
- Water supply
- Financial reserve

Store foods that are a part of your normal diet in your three-month supply. As you develop a longer-term storage, focus on food staples such as wheat, rice, pasta, oats, beans, and potatoes that can last 30 years or more. [Learn more about a long-term food supply.](#)

How much food storage do I need?

Take the amount of food you would need to purchase to feed your family for a day and multiply that by 7. That is how much food you would need for a one-week supply. Once you have a week’s supply, you can gradually expand it to a month, and eventually three months.

For longer-term needs, and where permitted, gradually build a supply of food that will last a long time and that you can use to stay alive, such as wheat, white rice, and beans. A portion of these items may be rotated in your three-month supply. (See [All Is Safely Gathered In.](#))

Where should I store my food storage?

Make sure your food storage is properly packaged and stored in a cool, dry place.

If water comes directly from a good, pretreated source, then no additional purification is needed; otherwise, pretreat water before use. Store water in sturdy, leak-proof, breakage-resistant containers. Consider using plastic bottles commonly used for juices or soda. Keep water containers away from heat sources and direct sunlight. [Learn more about water storage and purification.](#)

How much does it cost?

Costs may vary depending on where and how you purchase your food storage. It is important to remember that you should not go to extremes; for instance, it is not prudent to go into debt to establish your food storage all at once. Develop it gradually to diffuse the overall cost over time so that it will not become a financial burden.

Longer-Term Food Storage

churchofjesuschrist.org/topics/food-storage/longer-term-food-supply

For longer-term needs, and where permitted, gradually build a supply of food that will last a long time and that you can use to stay alive, such as wheat, white rice, and beans. These items can last 30 years or more when properly packaged and stored in a cool, dry place. A portion of these items may be rotated in your three-month supply. Consider using this resource from the BYU Department of Nutrition, Dietetics, and Food Science: “[An Approach to Longer-Term Food Storage](#).”

Foods Lasting 30 Years or More

Properly packaged, low-moisture foods stored at room temperature or cooler (24°C/75°F or lower) remain nutritious and edible much longer than previously thought, according to findings of recent scientific studies. Estimated shelf life for many products has increased to 30 years or more (see chart below for new estimates of shelf life).



Previous estimates of longevity were based on "best-if-used-by" recommendations and experience. Though not studied, sugar, salt, baking soda (essential for soaking beans), and vitamin C in tablet form also store well long-term. Some basic foods do need more frequent rotation, such as vegetable oil every 1 to 2 years.

While there is a decline in nutritional quality and taste over time, depending on the original quality of food and how it was processed, packaged, and stored, the studies show that even after being stored long-term, the food will help sustain life in an emergency.

Food	New "Life-Sustaining" Shelf-Life Estimates (in Years)
Wheat	30+
White rice	30+
Corn	30+
Sugar	30+
Pinto beans	30
Rolled oats	30
Pasta	30

Food	New "Life-Sustaining" Shelf-Life Estimates (in Years)
Potato flakes	30
Apple slices	30
Non-fat powdered milk	20
Dehydrated carrots	20

Product Recommendations

The following suggested amounts are for one adult.

Quantity for One Month	Recommended Products	Long-Term Storage Life
11.5 kg./ 25 lbs	Wheat, white rice, corn, and other grains	30+ years
2.5 kg. / 5 lbs	Dry beans	30+ years

You may also want to add other items to your longer-term storage such as sugar, nonfat dry milk, salt, baking soda, and cooking oil. To meet nutritional needs, also store foods containing vitamin C and other essential nutrients.

Packaging Recommendations

Recommended containers for longer-term storage include the following:

- Foil pouches (available through Church Distribution Services)
- PETE bottles (for dry products such as wheat, corn, and beans)

These containers, used with oxygen absorber packets, eliminate food-borne insects and help preserve nutritional quality and taste.

Under certain conditions, you can also use plastic buckets for longer-term storage of wheat, dry beans, and other dry products.

Warning: Botulism poisoning may result if moist products are stored in packaging that reduces oxygen. When stored in airtight containers with oxygen absorbers, products must be dry (about 10% or less moisture content).

Storage Conditions

Storage life can be significantly impacted by the following conditions:

- **Temperature:** Store products at a temperature of 75°F/24°C or lower whenever possible. If storage temperatures are higher, rotate products as needed to maintain quality.
 - **Moisture:** Keep storage areas dry. It is best to keep containers off of the floor to allow for air circulation.
 - **Light:** Protect cooking oil and products stored in PETE bottles from light.
 - **Insects and rodents:** Protect products stored in foil pouches and PETE bottles from rodent and insect damage.
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Dry Products for Longer-Term Food Storage

Products intended for longer-term storage must be dry (about 10% or less moisture content).

Warning: Botulism poisoning may result if moist products are stored in packaging that reduces oxygen.

Dry products that are **not suitable** for longer-term storage due to moisture content, oils, or other concerns include:

Barley, pearled

Meat, dried (such as jerky)

Eggs, dried

Nuts

Flour, whole wheat

Rice, brown

Grains, milled (other than rolled oats)

Sugar, brown

Granola

Vegetables and fruits, dehydrated (unless dry enough, inside and out, to snap when bent)

PETE Bottles For Longer-Term Storage

Bottles made of PETE (polyethylene terephthalate) plastic can be used with oxygen absorbers to store products such as wheat, corn, and dry beans. PETE bottles are identified on the container with the letters PETE or PET under the recycle symbol.

Other types of plastic bottles typically do not provide an adequate moisture or oxygen barrier for use with oxygen absorbers. Do not use containers that were previously used to store nonfood items.

PETE bottles can also be used for shorter-term storage (up to 5 years) of other shelf-stable dry foods such as white rice.

Moisture content of stored foods should be about 10 percent or less. When moist products are stored in reduced oxygen packaging, botulism poisoning may occur.

Packaging in PETE Bottles

1. Use PETE bottles that have screw-on lids with plastic or rubber lid seals. You can verify that the lid seal will not leak by placing a sealed empty bottle under water and pressing on it. If you see bubbles escape from the bottle, it will leak.
2. Clean used bottles with dish soap, and rinse them thoroughly to remove any residue. Drain out the water, and allow the bottles to dry completely before you use them for packaging food products.
3. Place an oxygen absorber in each bottle. The absorbers can be used with containers of up to one-gallon capacity (4 liters).
4. Fill bottles with wheat, corn, or dry beans.
5. Wipe top sealing edge of each bottle clean with a dry cloth and screw lid on tightly.
6. Store the products in a cool, dry location, away from light.
7. Protect the stored products from rodents.
8. Use a new oxygen absorber each time you refill a bottle for storage.

Where to Get Oxygen Absorber Packets

Oxygen absorber packets are available online at store.ChurchofJesusChrist.org. Unused oxygen absorbers can be stored in glass jars with metal lids that have gaskets.

Oxygen Absorbers

Oxygen absorbers protect dry foods from insect damage and help preserve product quality. They are used when dry foods are packaged in sealed containers. Oxygen absorbers can be purchased from home storage centers and Church Distribution Services, or they can be ordered from store.ChurchofJesusChrist.org.

What are oxygen absorbers made of?

Oxygen absorbers are small packets that contain an iron powder. The packets are made of a material that allows oxygen and moisture to enter but does not allow the iron powder to leak out.

How do oxygen absorbers work?

Moisture in the packaged food causes the iron in the oxygen absorber to rust. As it oxidizes, the iron absorbs oxygen. Oxygen absorbers rated for 300 cubic centimeters (cc) of oxygen work well for properly packaged dry food in containers of up to one-gallon capacity (4 liters).

Is the use of oxygen absorbers equivalent to vacuum packaging?

Oxygen absorbers remove oxygen more effectively than vacuum packaging. Air is about 20 percent oxygen and 80 percent nitrogen. Absorbers remove only the oxygen. The air left in the container is mostly nitrogen and will not affect the food or allow the growth of insects.

What types of products can be stored using oxygen absorbers?

Products should be low in moisture and oil content. If the moisture content is not low enough (about 10 percent or less), storing products in reduced oxygen packaging may result in botulism poisoning.

What types of containers can be used with oxygen absorbers for food storage?

Oxygen absorbers should be used with containers that provide an effective barrier against moisture and oxygen. The following containers work well:

- Metal cans with seamed lids.
- Foil pouches (such as those provided by Church home storage centers and available from store.ChurchofJesusChrist.org).
- PETE plastic bottles with airtight, screw-on lids.
- Glass canning jars with metal lids that have gaskets.

Oxygen absorbers are not an effective treatment method for plastic buckets, milk bottles, or other types of plastic bottles not identified as PETE or PET under the recycle symbol (see right).

What is the proper way to use oxygen absorbers?

1. Cut open the top of the bag of absorbers. Do not open the individual absorber packets.
2. Remove the number of absorbers from the bag that you will use in the next 20 to 30 minutes, and spread them out on a tray. Remove additional groups of absorbers from the supply as you need them during the packaging process, but do not open and close the bag repeatedly to get only a few absorbers at a time.

3. Reseal the remaining supply of absorbers by one of the following methods. Do not store absorbers in ziplock bags.
 - Seal the bag of absorbers with the special blue clamp provided by the home storage center.
 - Seal the bag of absorbers with an impulse heat sealer.
 - For longer storage when an impulse sealer is not available, remove the absorbers from the bag and place them into a glass canning jar that has a metal lid with a gasket. A one-pint jar (500 ml) will hold 25 absorbers.
4. Place one absorber into each container of food as it is packaged.

Foil Pouches For Longer-Term Storage

What type of pouch is available at home storage centers, at Distribution Services, and online at store.ChurchofJesusChrist.org?

The pouches are made of multilayer laminated plastic and aluminum. The material is 7 mils thick (178 microns) and protects food against moisture and insects.

What types of foods can be packaged in pouches?

The pouches can be used to store foods that are dry (about 10% moisture or less), shelf-stable, and low in oil content. Botulism poisoning may result if moist products are stored in oxygen reduced packaging.

How much food does each pouch hold?

Each pouch holds 1 gallon (4 liters) of product. The weight varies by product. A pouch holds 7 pounds (3.2 kg) of wheat, 6.8 pounds (3.1 kg) of white rice, or 5 pounds (2.3 kg) of dry milk.

Do foods react with the aluminum in the pouch?

No. Foods do not come in contact with the aluminum because they are separated from it by a layer of food-grade plastic. The metal barrier is important in protecting the food from moisture and oxygen.

What is the best way to seal pouches?

Pouches should be sealed using an impulse sealer (see related instructions). Do not use an iron or another household heating device because it will not provide an adequate seal, especially for powdered products such as flour or dry milk. The impulse sealers used by Welfare Services (American International Electric AIE 305 A1 and Mercier ME 305 A1) meet the following specifications: 3/16-inch (5 mm) wide seal, 11.5-inch (305 mm) wide jaws, rated for up to 8-mil (205 microns) thick pouches, and equipped with a safety switch to cancel operation if the jaw is obstructed.

Where can I find an impulse sealer?

Impulse sealers are available at most home storage centers. Many stores also have impulse sealers available. If you prefer, you may purchase an impulse sealer from Distribution Services or online at store.ChurchofJesusChrist.org.

Is it necessary to remove all the air from the pouches?

No. Oxygen absorbers remove the oxygen from the air in the pouches. The low oxygen content eliminates food-borne insects and helps preserve product quality.

Is it normal for the sides of the pouch to pull in once the pouch is sealed?

With most products, the sides of sealed pouches will pull in slightly within a few days of packaging. This is more noticeable with granular foods than with powdered products.

How should pouches of food be stored?

The pouches store best in a cool, dry, rodent-free area. Storage containers should not be in direct contact with concrete floors or walls.

Are pouches rodent proof?

Pouches are not rodent proof. If rodents or other pests are a significant potential problem in the storage area, the pouches should be placed into containers that are rodent or pest proof. Do not store them in containers that have been used to store nonfood items.

Should emergency kits be packaged in pouches?

Many emergency supply items are not suitable for packaging in foil pouches. First aid items and food rations, such as granola bars, are best stored in containers with removable lids to allow for frequent rotation.

Pouch Sealer Instructions

For Portable Operation of AIE (and ME) 305 A1 Sealers

Please read the entire sheet before starting.

Setting up

1. Place the sealer on a sturdy surface about 5 inches (13 cm) above the table top. This will place the sealer jaw opening about 8½ inches (22 cm) above the table for the correct sealing position. Connect the foot switch to the back of the sealer, and place the foot switch on the floor. Plug in the power cord. *Caution: Do not allow children in the area when the sealer is plugged in.*

2. Set **Recycle** dial to 2, **Congeaing** dial to 6, **Sealing** dial to 4, and **Action Selector** switch to Manual. Open the bag containing oxygen absorbers. Remove the number of packets that you will use in the next 20–30 minutes. Reseal the bag with the impulse sealer.
3. Open and reseal the bag as you need additional groups of absorbers.

Filling pouches

1. Fill a pouch with one gallon (4 liters) of product. (Overfilling will result in a poor seal.) A two-quart (2-liter) pitcher, cut off at the two-quart (2-liter) line, is a good measure to use in when you are filling pouches. Fill with two level measures, tapped down.
2. Place an oxygen absorber packet on top of the product in each pouch.
3. For powdered products, wipe product dust from inside the seal area using a dry towel.

Sealing pouches

1. Turn the **Power** switch on. (Do not allow small children in the area when the sealer is on.)
2. Place the pouch in an upright position in front of the sealer. Rest its weight on the table or shelf; do not let it hang.
3. Close the pouch by grasping the side seams and firmly pulling them outward. Fold the top 1½ inches of the pouch (30–40 mm) over at a right angle, and push down on the pouch to expel extra air from the package. Settle the product, and flatten the pouch opening. If the top will not flatten and fold over easily, check if the pouch is too full.
4. Hold the pouch by the side seams, and insert the top edge of the pouch into the jaw opening. Keep fingers clear of the jaw.
5. Position the pouch to seal it near the top. Stretch outward on the side seams to remove wrinkles. Press the foot switch to activate the sealer. Release hold on the pouch after the jaw closes. Remove the pouch when the cycle is finished.
6. Label the pouch with contents and packaging date.

Testing seals

1. Inspect the seams to ensure that they are adequate and without burned spots. The seam should resemble factory seams.
2. Check to see if the seam can be pulled apart.
3. Push on the pouch to see if air or product can be forced out.
4. If seams pull apart, check for inadequate cleaning of seam area or for overfill. If necessary, increase sealing setting by ¼ step (for example, from 4 to 4.25). Verify that the congealing setting is at 6.
5. If seams are burned, decrease the sealing setting by ¼ step.

Notes

1. The sealer comes from the factory with two bolts protruding from the front of the machine. These bolts are for holding the shelf provided in the box. Remove the bolts, and do not use the shelf unless it is used as part of a separate stand.
2. If the Teflon cover on the lower jaw is burned, unplug the sealer, loosen and lift up the cover, and carefully clean off any burrs that may be on the heat strip. Advance the cover approximately 1/2 inch (12 mm), trim excess, and retighten.
3. If the sealer fails to operate, check the two fuses mounted in the lower back of the case. If necessary, replace them with fuses of the correct size.
4. Dry foods that are packaged for long-term storage should be limited to those that best retain flavor and nutritional value. These foods should be low in moisture (approximately 10 percent or less), of good quality, and insect free. Avoid exposing dry foods to humid, damp conditions when packaging them. *Warning: Products that are too high in moisture should not be stored in reduced oxygen packaging because botulism poisoning may result.* Visit providentliving.org for specific product guidelines.

Plastic Buckets For Longer-Term Storage

Plastic buckets may be used to store food commodities that are dry (about 10 percent moisture or less) and low in oil content. Only buckets made of food-grade plastic with gaskets in the lid seals should be used. Buckets that have held nonfood items should not be used.

To prevent insect infestation, dry ice (frozen carbon dioxide) should be used to treat grains and dry beans stored in plastic buckets. Treatment methods that depend on the absence of oxygen to kill insects, such as oxygen absorbers or nitrogen gas flushing, are not effective in plastic buckets. Avoid exposing food to humid, damp conditions when packaging them.

Dry Ice Treatment Instructions

1. Use approximately one ounce of dry ice per gallon (7 grams per liter) capacity of the container. Do not use dry ice in metal containers of any kind or size because of the potential for inadequate seals or excessive buildup of pressure.
2. Wear gloves when handling dry ice.
3. Wipe frost crystals from the dry ice, using a clean, dry towel.
4. Place the dry ice in the center of the container bottom.
5. Pour the grain or dry beans on top of the dry ice. Fill the bucket to within one inch (25 mm) of the top.
6. Place the lid on top of the container and snap it down only about halfway around the container. The partially sealed lid will allow the carbon dioxide gas to escape from the bucket as the dry ice sublimates (changes from a solid to a gas).
7. Allow the dry ice to sublimate completely before sealing the bucket. Feel the bottom of the container to see if the dry ice is all gone. If the bottom of the container is very cold, dry ice is still present.

8. Monitor the bucket for a few minutes after sealing the lid. If the bucket or lid bulges, slightly lift the edge of the lid to relieve pressure.
9. It is normal for the lid of the bucket to pull down slightly as a result of the partial vacuum caused when carbon dioxide is absorbed into the product.

Storage of Plastic Buckets

- Store plastic buckets off the floor by at least ½ inch (1.3 cm) to allow air to circulate under the bucket.
- Do not stack plastic buckets over three high. If buckets are stacked, check them periodically to ensure that the lids have not broken from the weight.