

# Fruits, Dried

Revised 2018

## Storage Conditions

Temperature	32°F to 45°F and steady (0 to 7°C)
Relative Humidity	55-60%
Storage Period	Up to 1 year

Drying methods range from sun-drying to mechanical, forced hot air dehydrators.

**Temperature:** All dried fruits should be stored at 45°F (7°C) or below. A lower temperature is preferable, but temperatures nearer 45°F (7°C) may make it easier to obtain the proper relative humidity in some storage rooms. A uniform temperature is necessary to prevent moisture migration in large containers and subsequent mold growth or sugaring of fruit near the sides of the packages. Soft invert sugar dates need to be stored nearer 32°F (0°C) to help maintain color and reduce their proclivity to sugar.

**Relative Humidity:** In general, dried fruits should be stored at a relative humidity of 55-60%, with raisins being stored at the lower end. Dried fruits in consumer packages will tolerate slightly higher relative humidity because of the moisture barrier provided by the package.

**Fumigation:** Postharvest insect control is very critical for quality maintenance of dried fruits. Insects of concern are of two broad types: Direct field pests, and stored product pests. Tolerance for live insects at the consumer level is zero. Current insect control measures rely heavily on chemical fumigations, but other alternatives are being worked out including low temperature and modified (MA) and controlled atmospheres (CA). Fumigation is commonly used to disinfect large volumes of incoming product during harvest, as well as to control storage infestation. Most dried fruits and vegetables and nuts tolerate extreme modified atmosphere (MA) and controlled atmosphere (CA), including very high CO<sub>2</sub> and/or very low O<sub>2</sub>, levels that can be used to control insects. In 1981 the Environmental Protection Agency (EPA) approved MA and CA as a means to manage insects infesting dried fruits and tree nuts. However, current insect control measures for dried fruit and nuts still depend mostly on fumigation, and there is very little or almost no commercial application for MA and CA. Dried apples, peaches, apricots and golden raisins are fumigated with sulfur dioxide to inhibit browning and microbial growth.

**Moisture Content:** Prune moisture content should not exceed 20% for long term storage. Higher moisture content prunes are packaged to retain moisture and sorbates are added to inhibit microbial growth. The chemical deterioration of sorbate is accelerated with elevated temperatures. Swollen packages are indicative of microbial spoilage.

**Time in Storage:** The recommended storage conditions minimize problems from sugaring, mold growth and insect infestation, and also helps stabilize flavor, texture, color and moisture content of the fruit.

Sound fruit may be stored under these conditions for periods up to a year without excessive deterioration. Some dried fruits that have been packaged at a higher moisture level may desiccate somewhat during protracted storage, especially if the relative humidity is low.

## Frozen Storage

Dried fruits can be held in frozen storage. It is usually not necessary for storage periods up to a year, but may be desirable for extended periods, especially for the lighter cut-fruits. The freezing point of dried fruits is quite low, because of their high sugar content; therefore, they will probably remain unfrozen at normal freezer temperatures.

The greatest problem that could be encountered would probably be product desiccation and possibly sugaring, at least during protracted storage of over 2 years. Packaging is very important in frozen storage; the product should be sealed in a moisture vapor proof type packaging to prevent desiccation.

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