

# Storing Pecans

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Pecan nuts harvested in the fall can retain their fresh condition during the next year or until consumed, if handled and stored properly. Good storage helps keep the pecan's quality. The analysis of a good quality kernel will give a composition of 73–75% oil, 12–15% carbohydrates, 9–10% proteins, 3 to 4% water, and about 1.5% minerals. A high percentage of oil is indicated by plumpness, crispness, and solidity of kernels, compared with shriveling, sponginess, and hollowness. High oil content, and the fact that it is highly unsaturated (93%), or cholesterol free, is one of the most important factors, along with water and temperature, impacting the storability of pecans.

*Oil.* Because oil content in pecans is high, rancidity can develop at warm temperatures and is more noticeable than in most other nuts. Pecan oil is a mixture of several oils, although oleic and linoleic oils are the two principal ones, usually comprising about 95% or more of total oil. Both the amount of oil and degree of saturation vary with geographical locations. Linoleic acid is the primary chemical component responsible for oxidation and rancidity in pecan kernels. Linoleic acid varies widely in different varieties of well-matured and plump kernels, and it also varies from year to year in the same variety.

*Water.* Lowering the moisture content of pecan kernels is an important step for maximum storage life of pecans.

Pecans, like many other agricultural products, are harvested at moisture contents higher than those required for storage. Pecans harvested early can contain 25–30% moisture. Water content decreases in pecans harvested later in the season. Pecans should be stored at a moisture content of about 4%. Pecan moisture needs to be decreased as soon as practical after harvesting. This prevents molding, discoloration, and breakdown of the oil. Drying pecan nuts was originally done outdoors, by air and sun drying. This process took three to four weeks and molding often took place in the pecans. Artificial drying or drying with forced air is now used for pecans, speeding up the process considerably and eliminating molding problems.

Shelled pecans stored at non-freezing temperatures should be maintained in an atmosphere of about 65–70%

relative humidity to hold the 3–4% moisture content. Humidity above these values can cause kernel molding and pecan texture deterioration (pecans become soft and rubber-like), whereas lower humidities will cause excessive drying. In-shell pecan kernels will darken under high humidity as a result of the tannic acid being dissolved from the shell lining.

For vacuum or gas packed pecans, or those stored under freezing conditions, relative humidity control is not necessary.

*Temperature.* Lower temperatures usually result in longer storage life of nuts. Storage temperatures and predicted storage times of shelled and unshelled pecans are listed in table 1. Pecan pieces have a shorter shelf-life than pecan halves. This time reduction is in proportion to the surface exposure of the pieces. Storage of nutmeat pieces should be limited to 1 or 2 months at temperatures about 32°F. The greatest benefit of storing at low temperature is retention of fresh flavor, followed by color, aroma and texture.

Because pecan meats absorb odors and flavors readily from the surroundings, a storage area free of odoriferous materials and commodities is necessary. Even faint odors of paint, wood, asphalt, vegetables, and other fruits can accumulate and appear stronger in the nuts than in the surrounding environment. In-shell pecans can remain good for 4 months at 70°F, but can be stored successfully for 18 months at 32°F to 36°F. Storage life of in-shell nuts may extend to 5 years or more when stored at 0°F (table 1).

**Table 1. Relative storage life of pecans held at various temperatures**

Temperature	In-shell (Months)	Shelled (Months)
70°F	4	3
47–50°F	9	6
32–36°F	18	12
20–25°F	20–40	18–24
0°F	24–60	24–60

Burlap bags are satisfactory for holding in-shell pecans if the bags are clean or have been sterilized. Pecans stored in rat contaminated bags are subject to confiscation by the Food and Drug Administration.

An unbroken pecan shell is one of the best packages for kernels. But, an oil film will form from the broken areas of shelled pecans and spread over the kernels as rancidity develops.

When taking nuts out of frozen storage, thaw kernels slowly; this is called tempering and involves gradually raising the temperature to 45°F or 50°F before exposing to a higher temperature. If the pecans are subjected to unusually high temperatures upon removal from storage, moisture will condense on the kernels. Therefore, a series of gradually increasing temperatures is desirable.

It is usually recommended that nuts and nutmeats be stored only in brine or freon refrigerant cooled rooms; however, this may not always be possible. Storage in areas cooled by ammonia refrigeration systems may be unavoidable. Because of the rapid and

extreme blackening that occurs on contact with even a small concentration of ammonia gas, leakage prevention is mandatory. Ammonia damaged nuts and nutmeats cannot be salvaged. The package for shelled pecans must be impermeable to oil. The package should also prevent penetration of air and moisture. Metal, foil, glass, and flexible films are adequate and practical. An antioxidant on the inner surface of the container has proved effective.

At home, pecan kernels may be kept in the refrigerator in a covered glass jar or in plastic bags. In-shell pecans can be stored at room temperature for a short period of time. Keep in a refrigerator, if so desired, to keep for longer than 4 months. If pecans need to be stored for more than a year, either in the shell, cracked, or shelled, they have to be placed in the freezer.