Artichokes, Globe

Revised 2024

Thermal Properties

	English	Metric
Moisture, %	84.94	--
Protein, %	3.27	--
Fat, %	0.15	--
Carbohydrate, %	10.51	--
Fiber, %	5.40	--
Ash, %	1.13	--
Specific Heat Above Freezing	0.93 Btu/lb*°F	3.90 kJ/(kg*°K)
Specific Heat Below Freezing	0.48 Btu/lb*°F	2.02 kJ/(kg*°K)
Latent Heat of Fusion	122 Btu/lb	284 kJ/kg

Storage Conditions

	Fresh	Frozen	Pickled
Temperature	32°F (0°C)	-10 to 0°F (-23 to -17.8°C)	32 to 40°F (0 to 4.4°C)
Relative Humidity	95 to 100%	Vapor-proof packaging	
Storage Period	2 to 3 weeks	6 to 8 months	1 year +
Freezing Point	29.9°F (-1.2°C)		

The artichoke is an important article of commerce that is used fresh, frozen, or pickled. It is an immature flower bud and consists mainly of bracts with fleshy edible bases that are attached to a fleshy edible central portion. Fresh artichokes are highly perishable, with a very high respiration rate, and should be

cooled to below 41°F (5°C) within 4 hours after harvest. Hydrocooling, forced-air cooling, and package icing are all effective cooling methods for retarding decay, weight loss, and discoloration of the buds. Top icing of crates and cartons also serves as a source of moisture, but ice melt may also serve as a vehicle for spread of microorganisms. Therefore, it is required that ice be manufactured only from potable water chlorinated at 50 ppm and adjusted to pH 7 to avoid transfer of decay and pathogenic organisms to the products. Artichokes should be handled carefully since rough handling causes bruises, scratches, and split bracts, which detract from appearance and quality.

Globe artichokes can be stored at 32°F (0°C) for up to 3 weeks if the edible buds are uninjured when stored and water loss is prevented. Quality is lost twice as fast at 50°F (10°C) as at 32-35°F (0-1.7°C). In one study, storage life, based on maintenance of good bud appearance, was 2 weeks at 32°F (0°C), about 10 days at 41°F (5°C), and only 5 days at 50°F (10°C).

Artichokes are subject to wilting unless held at high relative humidity (at least 95%). Waxed cartons or perforated polyethylene liners with 24 to 48, 1/4-inch (6-mm) holes per square foot (0.09 square meters) will retard moisture loss. The artichoke will readily develop mold if kept at very high humidity at warmer temperatures (40°F/4.4°C or higher). The mold is seen as a gray, whiskery growth (Botrytis rot). Decay organisms enter through injuries. To control Botrytis rot, practice sanitation in packing and storing. Keep storage temperature at 32°F (0°C), since this mold grows slowly at low temperature.

Preharvest frost can cause artichoke buds to take on a white or bronzed, blistered appearance that may be referred to as “frost kissed.” This is a cosmetic defect that does not detract from eating quality, and factually imparts a nutty flavor that is preferred by some consumers. However, artichokes with freezing injury at harvest deteriorate about 1.5 times as rapidly as sound buds, especially if held at 41°F (5°C) or above.

Controlled atmosphere storage (CA) has been shown to offer little advantage for artichokes during usual marketing periods. However, if stored for 1 month at 35°F (1.7°C) artichokes keep better in an atmosphere containing about 3% O_2 plus 3% CO_2 than in air. Reduction of browning of the bracts is the chief advantage gained. At higher temperatures, the same CA can cause internal discoloration and stimulate bud opening.

Fresh artichokes are not particularly sensitive to ethylene exposure. Artichokes should never be stored with grapes treated with sulfur dioxide (SO_2) due to susceptibility to bleaching.

Diseases and Injuries

Bacterial Soft Rot	Appears as water soaked or greasy spots on bracts. Often develops on bruises, cracks, or other injuries. **Control:** Use care in handling to avoid cuts, bruises and other injuries. Store at 32°F (0°C), not above 35°F (2°C), and avoid freezing temperatures. Warehouse sanitation is important to prevent contamination.

Gray Mold (Botrytis) Rot	Water-soaked areas with white surface mold; later grayish-brown mold growth and granular spore masses. Usually lesions begin on wounds and spread to the rest of the bud. **Control:** Field sanitation is essential for proper control, but maintenance of refrigeration temperatures near 32°F (0°C) will retard spread. Cool and refrigerate buds promptly to below 41°F (5°C); store at 32°F (0°C), not above 35°F (1.7°C).
Freezing	The effects of field frost appear first on the outer bracts as blistering and white or bronze blistered appearance. More severe freezing injury ay occur in the field or in storage and makes the bracts appear water-soaked and the heart turn brown to black and gelatinous.

Freezing

The Globe artichoke is frozen after removing the green outermost leaves. Only the part containing the light yellow or white bracts is frozen. Frozen artichoke may be stored at below 0°F (-17.8°C) for 6 to 8 months. They need to be blanched before freezing to inactivate the enzymes responsible for color and flavor changes. Blanching can be done in 0.7% boiling citric acid solution for 5 to 7 minutes followed by cooling in cold water. Packaging and freezing is done by the usual procedures. As with most frozen products, artichokes should be frozen as rapidly as possible.

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