

Cauliflower

Revised 2008

Thermal Properties

	English	Metric
Moisture, %	91.91	--
Protein, %	1.98	--
Fat, %	0.10	--
Carbohydrate, %	5.30	--
Fiber, %	2.50	--
Ash, %	0.71	--
Specific Heat Above Freezing	0.96 Btu/lb*°F	4.02 kJ/(kg*K)
Specific Heat Below Freezing	0.44 Btu/lb*°F	1.84 kJ/(kg*K)
Latent Heat of Fusion	132 Btu/lb	307 kJ/kg

Storage Conditions

	Fresh	Frozen
Temperature	32°F (0°C)	0°F (-18°C)
Relative Humidity	98 to 100%	Vapor-tight packaging
Storage Period	2-4 weeks	1 year +
Highest Freezing Point	30.6°F (-0.8°C)	

Cold storage slows decay and loss of compactness due to opening up of the curd (riciness). If in good condition, cauliflower can be held satisfactorily for up to 4 weeks at 32°F (0°C). The storage life is about 2 weeks at 37°F (3°C), 7 to 10 days at 41°F (5°C), 5 days at 50°F (10°C), and 3 days at 59°F (15°C).

The curds tend to darken if held above 41°F (5°C). Slightly immature, compact heads keep better than more mature heads. Successful cold storage depends not only on preventing decay, spotting, and water soaking but also on retarding browning and riciness of the head, or curd, and in preventing the leaves from wilting, yellowing, and dropping off. A high relative humidity of at least 95% is desirable to prevent wilting.

Exposure to ethylene will cause more rapid leaf yellowing and abscission.

Handling

Slatted crates or bins should be used so that moderate air circulation can remove the heat of respiration generated by the cauliflower, but the curds become flabby unless humidity is high. Controlled atmosphere (CA) storage is not recommended because less than 2% O₂ and greater than 5% CO₂ both induce off-odors and off-flavors that are detectable only in the cooked product and less extreme atmospheres show little or no benefit.

Much of the cauliflower now marketed is field packed by closely trimming the leaves, overwrapping the heads in perforated film, and packing in fiberboard containers. The overwraps should have four to six 5-mm (1/4") holes to allow adequate ventilation or be a non-fogging type of film. Cauliflower is very sensitive to fluctuations in temperature during storage. Such fluctuations cause darkening of the otherwise near-white curds.

Cooling after harvest is very beneficial. While much cauliflower is currently room cooled or forced air cooled, both hydrovac cooling and hydrocooling are better methods of lowering the product temperature. Trimmed (not overwrapped) cauliflower can be hydrocooled from 70°F (21°C) to 41°F (5°C) in about 20 minutes in 34°F (1°C) water. Film-wrapped cauliflower can be vacuum cooled to obtain a similar temperature drop in 30 minutes if pre-wetted. It is recommended that potable water chlorinated at 50 ppm, or pH 7, be used for hydro-cooling in order to avoid transfer of decay and pathogenic organisms to the products.

Diseases and Injuries

<p>Bacterial Soft Rot</p>	<p>Soft rot is the most important decay of cauliflower. Symptoms are similar to those caused by Bacterial Soft Rot of Cabbage. This decay often follows bruising and freezing.</p> <p>Control: Low temperatures will keep most of this decay in check. Additional information is available in the Cabbage topic.</p>
<p>Brown Rot (Alternaria)</p>	<p>Brown or black spotting of the flower head or curd, size of spots varies. Develops even at low temperatures, although slowly, especially if curd is wet.</p> <p>Control: Field sanitization. Minimize mechanical injuries. Keep curds dry. Refrigerate promptly and adequately.</p>
<p>Freezing Injury</p>	<p>Stem and curd become water-soaked, discolor, soften, and acquire a strong spoiled cabbage odor. Soft rot rapidly invades tissues.</p> <p>Control: Protect from repeated or severe freezing by maintaining the storage temperature above the highest freezing point of 30.6°F (-0.8°C).</p>

Freezing

Cauliflower is an excellent frozen product if frozen quickly and if it is not over-mature. The base and stem are cut off and the leaves removed. The heads are then broken up into florets. After washing and cleaning, the material is blanched for about 4 minutes, depending on size, either in steam or hot water. The cooled, blanched florets are dewatered and either IQF frozen or packed into cartons to be frozen in a plate or blast freezer.

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