

Mangos

Revised 2018

Thermal Properties

	English	Metric
Moisture, %	81.71	--
Protein, %	0.51	--
Fat, %	0.27	--
Carbohydrate, %	17.00	--
Fiber, %	1.80	--
Ash, %	0.50	--
Specific Heat Above Freezing	0.89 Btu/lb*°F	3.74 kJ/(kg*K)
Specific Heat Below Freezing	0.47 Btu/lb*°F	1.95 kJ/(kg*K)
Latent Heat of Fusion	117 Btu/lb	273 kJ/kg

Storage Conditions

Temperature	50-55°F (10-13°C)
Relative Humidity	85-90%
Storage Period	2 to 4 weeks
Cold Sensitive Point	47°F (8°C)
Freezing Point	30°F (-1°C)

Only fruit that is fully mature and free from Anthracnose should be put into storage. Mature green mangos are subject to chilling injury (CI) at temperatures below 50°F (10°C). After prolonged storage at 50°F (10°C), Keitt and some other varieties do not ripen to highest quality; therefore a slightly higher temperature is desirable. The best ripening temperature for mangos is 68-72°F (20-24°C). Exposure to 100 ppm ethylene for 1-2 days at these temperatures induces faster and more uniform ripening of mature green mangos. Soft-ripe fruit can be stored for several days at temperatures as low as 45°F (7°C).

Mangos shipped from regions infested with quarantined pests (especially fruits flies) to pests free regions are treated with a quarantine legal treatment, commonly immediately before packing. The most commonly used legal quarantine treatment used in most mango producing countries is hot water treatment at 115°F (45.1°C) for 65 to 110 minutes depending on fruit weight (longer times for heavier

fruit). Legal quarantine treatments based on hot air and irradiation have also been developed and approved, and are/have been used on a smaller scale. Packed mango, especially after receiving a heat treatment for disease or insect control, should be precooled using forced-air.

Diseases and Injuries

Anthracnose	Mostly latent infection that appears as small black spots which gradually increase in diameter until they may cover a large percentage of the fruit surface, ruining its appearance and flavor. These spots eventually develop pinkish masses of spores. Control: Copper sprays or other fungicides must be applied in the orchard during the growing season so that infections will not occur. Some varieties are fairly resistant to this disease. Immersing mature green fruit in hot water at 118°F (48°C) to 122°F (50°C) for 3 to 20 minutes (longest time at lowest temperatures) will retard Anthracnose development in storage.
Stem End Rot	Caused by <i>Diplodia</i> and other organisms. A softening of the flesh and darkening of the peel, usually at the stem end, giving a water-soaked appearance. Control: Careful handling to minimize mechanical injuries, postharvest fungicide treatment, and cooling to 55°F (13°C).
Chilling Injury	Develops at temperatures below 50°F (10°C) on the mature green fruit. Symptoms include a pitting of the peel, and the peel may take on a gray cast. Fruit injured in this way will not ripen properly. When it eventually softens, it is of poor quality. Control: do not maintain (store or transport) at chilling temperatures for extended periods of time.

Frozen Mango Puree

Mango purees are often concentrated to double strength. The freezing point is 30°F (-1°C) for single strength and 6°F (-14°C) for double strength concentrate. Storage at 0°F (-18°C) or lower is recommended for most fruit juices, purees, and concentrates to preserve fresh flavor. For best product quality maintenance, mango purees should be stored frozen at the lowest possible temperature. If kept much above freezing temperatures, purees tend to darken from non-enzymatic browning. The reactions are faster and more extensive at higher concentrations and temperatures. A storage life of up to 1 year or longer could be expected at 0°F (-18°C) or lower.

WFLO is indebted to Dr. Adel Kader, Department of Plant Sciences, University of California, Davis, and Dr. Elhadi Yahia, Universidad Autonoma de Queretaro, for the review and revision of this topic.
