

treatment, then the original dip time must be extended for an additional 10 minutes. Hydrocooling is optional but may be done only at temperatures of 70 °F or above.

**§305.22 Hot water immersion treatment schedules.**

(a) *T102-d*. (1) Fruit must be grown and treated in Hawaii.

(2) Fruit must be submerged at least 4 inches below the water's surface in a hot water immersion treatment tank certified by APHIS.

(3) The fruit must be submerged for 20 minutes after the water temperature reaches at least 120.2 °F in all locations of the tank. The water must circulate continually and be kept at 120.2 °F or above for the duration of the treatment. Temperatures exceeding 121.1 °F can cause phytotoxic damage.

(4) Hydrocooling for 20 minutes at 75.2 °F is recommended to prevent injury to the fruit from the hot water immersion treatment.

(b) *T102-d-1*. (1) Fruit must be at ambient temperature before treatment begins.

(2) Fruit must be submerged at least 4 inches below the water's surface in a hot water immersion treatment tank certified by APHIS.

(3) The fruit must be submerged for 20 minutes after the water temperature reaches at least 120.2 °F in all locations of the tank. The water must circulate continually and be kept at 120.2 °F or above for the duration of the treatment. Temperatures exceeding 121.1 °F can cause phytotoxic damage.

(4) Hydrocooling for 20 minutes at 75.2 °F is recommended to prevent injury to the fruit from the hot water immersion treatment.

(c) *T102-e*. (1) Fruit must be submerged at least 4 inches below the water's surface in a hot water immersion treatment tank certified by APHIS.

(2) Water must circulate continually and be kept at 120.2 °F or above for 20 minutes. Treatment time begins when the water temperature reaches at least 120.2 °F in all locations of the tank. Temperatures exceeding 125.6 °F or treatment times significantly exceeding 20 minutes can cause phytotoxic damage.

(3) Cooling and waxing the fruit are both optional and are the sole responsibility of the processor.

**§305.23 Steam sterilization treatment schedules.**

Treatment schedule	Temperature (°F)	Pressure	Exposure period (minutes)	Directions
T303-b-1		10 lbs	20	Use 28" vacuum. Steam sterilization is not practical for treatment of bales with a density of greater than 30 pounds per cubic foot.
T303-b-2		10 lbs	20	
T303-d-2	260	20 lbs	15	Use 28" vacuum. If without initial vacuum, bleed air until steam vapor escapes. Steam sterilization is not practical for treatment of bales with a density of greater than 30 pounds per cubic foot.
	250	15 lbs	20	
T309-c	240	10 psi	20	Use 25 Prime vacuum.
T406-d	140	NAP <sup>1</sup>	60	Steam at NAP, tarpaulin or tent. For treatment enclosures of 4,000 ft <sup>3</sup> or less, the minimum air temperature must be 40 °F. For treatment enclosures greater than 4,000 ft <sup>3</sup> and less than or equal to 6,000 ft <sup>3</sup> , the minimum air temperature must be 60 °F. Treatment is not recommended for treatment enclosures greater than 6,000 ft <sup>3</sup> .
T408-b	250	15 psi	30	Preheat laboratory autoclaves. Restrict soil depth to 2 inches when treating quantities of soil in trays. Restrict each package weight to 5 pounds or less when treating individual packages. Load with adequate spacing. Large commercial steam facilities that operate at pressures up to 60 pounds psi will permit treatment of greater soil depth.
T503-1-3 or T503-2-3 (nonbaled).	240	NAP	10	
T503-1-3 or T503-2-3 (baled).	240	10 lbs	20	
T504-1-2, T504-2-2	242	10 lbs	20	

Treatment schedule	Temperature (°F)	Pressure	Exposure period (minutes)	Directions
T506-2-3 Loose masses of material.	.....	20 lbs .....	10	Introduce live steam into a closed chamber containing the material to be treated until the required temperature and pressure are indicated. The temperature/pressure relationship must be maintained at or above this point for the required exposure period. No initial vacuum is needed, but air must be released until steam escapes.
		15 lbs .....	15	
		10 lbs .....	20	
T506-2-3 Closely packed material (such as soil).	.....	.....	.....	Exhaust the air in the chamber to a high vacuum, and then introduce live steam until the required positive pressure is reached.
T510-1 .....	212	.....	.....	Live steam from jet of nozzle into loose masses of material until all parts reach 212 °F.
T518-2-2 .....	260	20 lbs .....	15	
	250	15 lbs .....	20	
T519-1 .....	.....	10 lbs .....	20	Introduce steam into 28" vacuum.
T519-2 .....	259	20 lbs .....	10	Introduce steam into 28" vacuum (or if without initial vacuum, "bleed" air until steam vapor escapes).
	240	10 lbs .....	20	

<sup>1</sup> Normal atmospheric pressure.

[70 FR 33269, June 7, 2005, as amended at 70 FR 41092, July 15, 2005]

**§ 305.24 Vapor heat treatment schedules.**

(a) *T106-a-1, T106-a-2, T106-a-3, T106-a-4.* (1) The temperature of the fruit pulp must be increased gradually to 110 °F until the center of the fruit reaches that temperature in 8 hours.

(2) The fruit temperature must be held at 110 °F for 6 hours.

(b) *T106-a-1-1.* (1) The temperature of the fruit pulp must be increased to 110 °F until the center of fruit reaches that temperature in 6 hours. During the first 2 hours, the temperature must be increased rapidly. The increase over the next 4 hours must be gradual.

(2) The fruit temperature must be held at 110 °F for 4 hours.

(c) *T106-b-1, T106-b-2, T106-b-3, T106-b-4, T106-b-5, T106-b-6, T106-b-7, T106-b-8.* The temperature of the article must be increased using saturated water vapor at 112 °F until the approximate center of the fruit reaches 112 °F. The fruit temperature must be held at 112 °F for 8.75 hours; then immediately cooled.

(d) *T106-c (Quick run-up).* (1) The temperature of the article must be increased until the approximate center of fruit reaches 117 °F in a time period of at least 4 hours.

(2) During the last hour of treatment, the relative humidity in the chamber must be maintained at 90 percent or greater.

(e) *T106-d.* (1) The fruit must be sized before treatment. Temperature probes must be placed in the center of the largest fruits. The temperature of the fruit must be increased using saturated water vapor at 117.5 °F until the pulp temperature near the seed reaches 115.7 °F. The pulp temperature must be held at 115.7 °F or above for 30 minutes; then immediately cooled.

(f) *T106-d-1.* (1) The fruit must be sized before the treatment. Temperature probes must be placed in the center of the largest fruits.

(2) The temperature of the fruit must be increased using saturated water vapor at 117.5 °F until the center of the fruit reaches 114.8 °F in a minimum of 4 hours.

(3) The fruit temperature must be maintained at 114.8 °F for 10 minutes.

(g) *T106-e.* (1) Raise temperature of the fruit using saturated water vapor at 116.6 °F until the approximate center of the fruit reaches 114.8 °F within a minimum time period of 4 hours.

(2) Hold fruit temperature at 114.8 °F or above for 20 minutes. If post-treatment cooling is conducted, wait 30 minutes after the treatment to start the forced cooling process.

(h) *T106-f.* (1) The temperature probes must be placed in the approximate center of the largest fruits at the seed's surface.

(2) The temperature of the fruit must be increased to 117 °F. The total runup time for all sensors must take at least 60 minutes.