

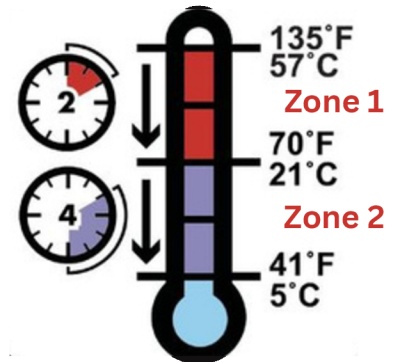
2-Zone Cooling & Cooling from Room Temperature (RT)

Correct cooling is critical to control the growth of microbes in food. Improperly cooled foods will increase the number of spore-forming and toxin-producing microbes in the food.

Time and Temperature Controlled for Safety Foods (TCS) must be cooled completely in a total of **6 hours**.*

Once foods reach **135°F**, they must cool to **70°F** within **2 hours** (**Zone 1**). Foods then need to cool to **41°F** within an additional **4 hours** (**Zone 2**).

Checking temperatures during the cooling process, using accurate thermometers, is necessary to control the growth of spore-forming and toxin-producing micro-organisms.



Formulas for 2-Zone Cooling:

Zone 1 Formula:

135°F - 70°F = 65°F
65°F ÷ 120 minutes (2hrs) = **.54°F/min (BASE RATE)**

FOOD	TEMPERATURE	TIME
Eggplant and Chicken Lasagna	1ST TEMP.	185°F
	2ND TEMP.	167°F
		-18°F
		30 min

18°F ÷ 30 minutes = 0.60°F drop per minute cooling rate. If greater than **.54°F**, cooling will meet requirements.

Zone 2 Formula:

70°F - 41°F = 29°F
29°F ÷ 240 mins (4hrs) = **.12°F/min (BASE RATE)**

FOOD	TEMPERATURE	TIME
Eggplant and Chicken Lasagna	1ST TEMP.	113°F
	2ND TEMP.	99°F
		-14°F
		30 min

14°F ÷ 30 minutes = 0.46°F drop per minute cooling rate. If greater than **.12°F**, cooling will meet requirements.

CORRECTIVE ACTION

Foods may be reheated to **165°F** and the cooling process re-started using a different cooling method if the food has:

Cooled at or below **70°F** in **2 hours** or less; **and**

Cooled at or below **41°F** in **6 hours** or less.

DISCARD IMMEDIATELY IF FOOD IS:

- Above **70°F** and more than **2 hours** into the cooling process.
- Above **41°F** and more than **6 hours** into the cooling process.
- *Above **41°F** for more than **4 hours** when cooling from **RT**.

Formula to Cool from Room Temperature (RT):

78°F (RT) - 41°F = 37°F
37°F ÷ 240 mins (4hrs) = **.15°F/min (BASE RATE)**

FOOD	TEMPERATURE	TIME
Mediterranean Tuna Salad	1ST TEMP.	78°F
	2ND TEMP.	69°F
		-9°F
		30 min

*Cooling from **RT** must be completed in **4hrs.** or less.

9°F ÷ 30 minutes = 0.3°F drop per minute cooling rate. If greater than **.15°F**, cooling will meet requirements.

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