

Residential Oven Testing Methodology

1. Install range according to manufacturer's specifications
2. Install five parallel-connected weighted thermocouples: one in the geometric center of the oven's useable baking space and the other four equally spaced between the center and the corners of the oven on the diagonals of a horizontal plane through the center of the oven. Each weighted thermocouple shall be constructed of a copper disc with a 1-inch diameter and 1/8-inch thickness, silver soldered to thermocouple wires.
3. Oven verification and temperature calibration:
 - a. Set the oven to bake at the 400°F test temperature and press start
 - b. Record the energy consumption during the initial heat-up and verify that the input rate during is within 5% of nameplate specification.
 - c. Once the oven temperature stabilizes, confirm that the oven temperature (as determined by the average temperature recorded by the five weighted thermocouples) is at 400°F ± 5°F.
 - d. If the average does not fall within 400°F ± 5°F, adjust the temperature setting accordingly until a stable average operation temperature of 400°F ± 5°F is reached.
 - e. Record this temperature setting for use in the preheat, idle and cooking tests.
 - f. Repeat the oven temperature calibration outlined in steps 3a-e for the oven's convection setting, if available.
4. Remove the five weighted thermocouples and install a verified, non-weighted thermocouple at the geometric center of the oven's useable baking space.
5. Conduct a preheat test:
 - a. Confirm the initial cavity temperature as read by the center thermocouple is at 75°F ± 5°F.
 - b. Set the oven to bake at a cavity temperature of 400°F ± 5°F, as determined during the temperature calibration step.
 - c. Record the time, electricity and gas consumption from when the oven is set to bake to when the thermocouple first reads 400°F.
6. Conduct an idle test:
 - a. An hour after first preheating the oven, check to confirm that the oven temperature has stabilized and is cycling consistently with an average temperature of 400°F ± 5°F.
 - b. At the end of the next oven burner cycle, start the idle test and record the time, electricity and gas consumption of the oven for at least three hours.
 - c. Stop the idle test, confirming that the stop point of the test also occurs at the very end of a burner cycle.
7. Conduct a cooking test:
 - a. Prepare two 12" by 20" shallow aluminum steam pans and record their weights.
 - b. Fill both pans with fifteen 100-count russet potatoes, such that the total weight of the potatoes is 7.25 ± 0.3 lb. Record the weights of the potatoes for both pans.
 - c. Verify ten thermocouples and embed them in the center of ten of the thirty potatoes, five for each pan and spread across different areas of the pan.
 - d. Verify that the oven temperature is stable and is cycling consistently with an average temperature of 400°F ± 5°F, and place the two pans of thermocouple potatoes into the oven.

- e. Record the time, electricity and gas consumption from when the potatoes are first placed within the oven until the average of the thermocouples embedded in the potatoes reaches 205°F.
 - f. Remove the potatoes from the oven, remove the thermocouples and record the weight of the cooked potatoes.
8. Repeat the tests outlined in steps 5-7 in the oven's convection mode, if available.