



Standard Test Method for Performance of Rapid Cook Ovens¹

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1. Scope

1.1 This test method evaluates the energy consumption and cooking performance of rapid cook ovens. The food service operator can use this evaluation to select a rapid cook oven and understand its energy consumption.

1.2 This test method is applicable to gas and electric rapid cook ovens.

1.3 The rapid cook oven can be evaluated with respect to the following (where applicable):

- 1.3.1 Energy input rate (see 10.2),
- 1.3.2 Preheat energy consumption and time (see 10.3),
- 1.3.3 Idle energy rate (see 10.4),
- 1.3.4 Pilot energy rate (if applicable) (see 10.5), and
- 1.3.5 Cooking-energy efficiency, cooking energy rate, and production capacity (see 10.6).

1.4 The values stated in inch-pound units are to be regarded as standard. No other units of measurement are included in this standard.

1.5 *This test method may involve hazardous materials, operations, and equipment. This test method does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this test method to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 ASTM Standards:²

D3588 Practice for Calculating Heat Value, Compressibility Factor, and Relative Density of Gaseous Fuels

¹ This test method is under the jurisdiction of ASTM Committee F26 on Food Service Equipment and is the direct responsibility of Subcommittee F26.06 on Productivity and Energy Protocol.

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² For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

2.2 ASHRAE Documents:³

2013 ASHRAE Handbook of Fundamentals Chapter 1, Psychrometrics

2014 ASHRAE Handbook—Refrigeration Chapter 19, Thermal Properties of Foods

ASHRAE Guideline 2-1986 (RA90) Engineering Analysis of Experimental Data³

2.3 AOAC Document:⁴

AOAC Procedure 984.25 Moisture (Loss of Mass on Drying) in Frozen French Fried Potatoes

3. Terminology

3.1 Definitions:

3.1.1 *cooking-energy efficiency, n*—quantity of energy imparted to the specified food product, expressed as a percentage of energy consumed by the rapid cook oven during the cooking event.

3.1.2 *cooking energy rate, n*—average rate of energy consumption (Btu/h or kW) during the cooking-energy efficiency test.

3.1.3 *energy input rate, n*—peak rate at which a rapid cook oven consumes energy (Btu/h or kW).

3.1.4 *idle energy rate, n*—the rapid cook oven's rate of energy consumption (Btu/h or kW), when empty, required to maintain its cavity temperature at the specified thermostat set point or to otherwise maintain the oven in a ready-to-cook condition.

3.1.5 *oven cavity, n*—that portion of the rapid cook oven in which food products are heated or cooked.

3.1.6 *pilot energy rate, n*—rate of energy consumption (Btu/h) by a rapid cook oven's continuous pilot (if applicable).

3.1.7 *preheat energy, n*—amount of energy consumed (Btu or kWh), by the rapid cook oven while preheating its cavity from ambient temperature to the specified thermostat set point

³ Available from American Society of Heating, Refrigerating, and Air-Conditioning Engineers, Inc. (ASHRAE), 1791 Tullie Circle, NE, Atlanta, GA 30329, <http://www.ashrae.org>.

⁴ Available from AOAC International, 2275 Research Blvd., Suite 300, Rockville, MD 20850-3250, <http://www.aoac.org>.