



Standard Test Methods for Performance of Steam Cookers¹

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1. Scope

1.1 These test methods evaluate the energy consumption and cooking performance of steam cookers. The food service operator can use these evaluations to select a steam cooker and understand its energy consumption.

1.2 These test methods are applicable to the following steam cookers: high-pressure, low-pressure and pressureless steam cookers (Specification F 1217 Types I, II, and III); convection and non-convection steam cookers; steam cookers with self-contained gas fired, electric, or steam coil steam generators, and those connected directly to an external potable steam source (Specification F 1217 Classes A, B, C, and D). The steam cookers will be tested for the following (where applicable):

- 1.2.1 Maximum energy input rate (see 10.2).
- 1.2.2 Boiler preheat energy consumption and duration (see 10.3).
- 1.2.3 Boiler idle energy rate (see 10.4).
- 1.2.4 Pilot energy rate (see 10.5).
- 1.2.5 Frozen green peas load cooking energy efficiency (see 10.7).
- 1.2.6 Frozen green peas load production capacity (see 10.7).
- 1.2.7 Whole potato cooking energy efficiency (see 10.9).
- 1.2.8 Whole potato production capacity (see 10.9).
- 1.2.9 Water consumption (see 10.7 and 10.9).
- 1.2.10 Condensate temperature (see 10.7 and 10.9).

1.3 The values stated in inch-pound units are to be regarded as standard. The SI units given in parentheses are for information only.

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

¹ This test method is under the jurisdiction of ASTM Committee F-26 on Food Service Equipment and is the direct responsibility of Subcommittee F26.06 on Productivity and Energy Protocol.

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2. Referenced Documents

2.1 ASTM Standards:

A 36/A 36M Specification for Structural Steel²

F 1217 Specification for Cooker, Steam³

2.2 ASHRAE Documents:⁴

ASHRAE Handbook of Fundamentals, “Thermal and Related Properties of Food and Food Materials,” Chapter 30, Table 1, 1989.

ASHRAE Handbook of Fundamentals, “Thermodynamic Properties of Water at Saturation,” Chapter 6, Table 2, 1989.

2.3 Other Document:⁵

Development and Application of a Uniform Testing Procedure for Steam Cookers

3. Terminology

3.1 Definitions:

3.1.1 *boiler, n*—self-contained electric, gas, or steam coil powered vessel wherein water is boiled to produce steam for the steam cooker. Also called a steam generator.

3.1.2 *boiler idle energy rate, n*—rate of energy consumed by the steam cooker while maintaining boiler operating pressure or temperature with no cooking taking place.

3.1.3 *boiler preheat, n*—process of bringing the boiler water from city supply temperature to operating temperature (pressure).

3.1.4 *boiler preheat duration, n*—total time required for preheat, from preheat initiation at controls to when the steam cooker is ready to cook.

3.1.5 *boiler preheat energy, n*—amount of energy consumed by the steam cooker during a preheat.

3.1.6 *condensate, n*—a mixture of condensed steam and cooling water, exiting the steam cooker and directed to the floor drain.

² Annual Book of ASTM Standards, Vol 01.04.

³ Annual Book of ASTM Standards, Vol 15.07.

⁴ Available from American Society of Heating, Refrigerating and Air Conditioning Engineers, Inc., 1791 Tullie Circle, NE, Atlanta, GA 30329.

⁵ Publication pending; available from Pacific Gas and Electric Co., 3400 Crow Canyon Rd., San Ramon, CA 94583.