



Standard Test Method for Performance of Steam Kettles¹

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1. Scope

1.1 This test method evaluates the energy consumption and cooking performance of steam kettles. The food service operator can use this evaluation to select a steam kettle and understand its energy consumption and performance characteristics.

1.2 This test method is applicable to direct steam and self-contained gas or electric steam kettles. The steam kettle can be evaluated with respect to the following, where applicable:

- 1.2.1 Maximum energy input rate (10.2).
- 1.2.2 Capacity (10.3).
- 1.2.3 Heatup energy efficiency and energy rate (10.4).
- 1.2.4 Production capacity (10.4).
- 1.2.5 Simmer energy rate (10.5).
- 1.2.6 Pilot energy rate, if applicable (10.6).

1.3 The values stated in inch-pound units are to be regarded as standard. The values given in parentheses are mathematical conversions to SI units that are provided for information only and are not considered standard.

1.4 *This standard 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 standard 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

- F1602 Specification for Kettles, Steam-Jacketed, 20 to 200 gal (75.7 to 757 L), Floor or Wall Mounted, Direct Steam, Gas and Electric Heated
- F1603 Specification for Kettles, Steam-Jacketed, 32 oz to 20 gal (1 to 75.7 L), Tilting, Table Mounted, Direct Steam,

Gas and Electric Heated

2.2 ANSI Standard:³

Z83.11 American National Standard for Gas Food Service Equipment

2.3 ASME Documents:⁴

Standard Specification for Kettles, Steam-Jacketed, 32 oz to 20 gal (1 to 75.7 L), Tilting, Table Mounted, Direct Connected, Gas Fired and Electric Fired

Standard Specification for Kettles, Steam-Jacketed, 20 to 200 gal (75.7 to 757 L), Floor or Wall Mounted, Direct Connected, Gas Fired and Electric Fired

2.4 ASHRAE Documents:⁵

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

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

3. Terminology

3.1 Definitions:

3.1.1 *control electric energy, n*—the electric energy, for example, for controls, fans, consumed by steam kettles whose primary fuel source is not electricity, that is, gas, direct steam. Control electric energy is measured and reported separately from primary fuel energy so that their respective fuel prices can be applied to estimate energy costs.

3.1.2 *fill-to-spill capacity, n*—the maximum food capacity (gal) of the steam kettle as determined by filling to the point of overflow.

3.1.3 *heatup energy, n*—energy consumed by the steam kettle as it is used to heat the specified food product to a specified temperature.

3.1.4 *heatup energy efficiency, n*—a quantity of energy imparted to the specified food product, expressed as a percentage of energy consumed by the steam kettle during the heatup event.

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.

³ Available from American National Standards Institute (ANSI), 25 W. 43rd St., 4th Floor, New York, NY 10036.

⁴ Available from American Society of Mechanical Engineers (ASME), ASME International Headquarters, Three Park Ave., New York, NY 10016-5990.

⁵ Available from American Society of Heating, Refrigerating, and Air-Conditioning Engineers, Inc. (ASHRAE), 1791 Tullie Circle, NE, Atlanta, GA 30329.