



Standard Test Method for Performance of Conveyor Broilers¹

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1. Scope

1.1 This test method evaluates the energy consumption and cooking performance of conveyor broilers. The food service operator can use this evaluation to select a conveyor broiler and understand its energy consumption.

1.2 This test method is applicable to gas, electric, and hybrid gas/electric conveyorized broilers. This test method covers both units with continuously operating conveyors and batch-style units with intermittently operating conveyors.

1.3 The conveyor broiler 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 and temperature uniformity (see 10.4),
- 1.3.4 Pilot energy rate (if applicable) (see 10.5), and
- 1.3.5 Cooking energy efficiency, cooking uniformity and production capacity (see 10.8 and 10.9).

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 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

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 ANSI Standard:³

ANSI Z83.11 American National Standard for Gas Food Service Equipment

2.3 AOAC Documents:⁴

AOAC Official Action 950.46 Air Drying to Determine Moisture Content of Meat and Meat Products

AOAC Official Action 960.39 Fat (Crude) or Ether Extract in Meat

2.4 ASHRAE Standard:⁵

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

3. Terminology

3.1 Definitions of Terms Specific to This Standard:

3.1.1 *broiler cavity, n*—that portion of the conveyor broiler in which food products are heated or cooked.

3.1.2 *continuous conveyor, n*—broiler with a belt or chain that moves constantly through the broiler cavity and does not halt during the cooking process.

3.1.3 *conveyor broiler, n*—device, with a continuous belt and a heat source above and below the belt, for cooking food by high heat, usually by direct or radiant heat. Conveyor broilers are used primarily, but not exclusively, for cooking meats.

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

3.1.5 *cooking energy rate, n*—average rate of energy consumption (Btu/h or kW) during the cooking energy efficiency tests. Refers to both loading scenarios (heavy, light).

3.1.6 *cooking lane, n*—segment of broiler that food product passed through as it cooks. Each position on the conveyor where food product is placed represents a cooking lane.

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

⁴ Available from Association of Official Analytical Chemists, 1111 N. 19th Street, Arlington, VA 22209.

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