



Standard Test Method for Performance of Open Deep Fat Fryers¹

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1. Scope

1.1 This test method covers the evaluation of the energy consumption and cooking performance of open, deep fat fryers. The food service operator can use this evaluation to select a fryer and understand its energy efficiency and production capacity.

1.2 This test method is applicable to both counter and floor model gas and electric units with nominal frying medium capacity less than 60 lb (27 kg). For large vat fryers with a nominal frying medium capacity greater than 60 lb (27 kg), refer to Test Method F2144.

1.3 The fryer can be evaluated with respect to the following (where applicable):

- 1.3.1 Energy input rate (10.2),
- 1.3.2 Preheat energy and time (10.4),
- 1.3.3 Idle energy rate (10.5),
- 1.3.4 Pilot energy rate (10.6),
- 1.3.5 Cooking energy rate and efficiency (10.10), and
- 1.3.6 Production capacity and frying medium temperature recovery time (10.10).

1.4 This test method is not intended to answer all performance criteria in the evaluation and selection of a fryer, such as the significance of a high energy input design on maintenance of temperature within the cooking zone of the fryer.

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

1.6 *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
F2144 Test Method for Performance of Large Open Vat Fryers

2.2 ANSI Document:³

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

2.3 ASHRAE Document:⁴

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

3. Terminology

3.1 Definitions:

3.1.1 *open, deep fat fryer, n*—(hereafter referred to as fryer) an appliance, including a cooking vessel, in which oils are placed to such a depth that the cooking food is essentially supported by displacement of the cooking fluid rather than by the bottom of the vessel. Heat delivery to the cooking fluid varies with fryer models.

3.1.2 *test method, n*—a definitive procedure for the identification, measurement, and evaluation of one or more qualities, characteristics, or properties of a material, product, system, or service that produces a test result.

3.2 Definitions of Terms Specific to This Standard:

3.2.1 *cold zone, n*—the volume in the fryer below the heating element or heat exchanger surface designed to remain cooler than the cook zone.

3.2.2 *cook zone, n*—the volume of oil in which the fries are cooked. Typically, the entire volume from just above the heating element(s) or heat exchanger surface to the surface of the frying medium.

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 the American Society of Heating, Refrigeration, and Air Conditioning Engineers, Inc., 1791 Tullie Circle, NE, Atlanta, GA 30329.