



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 floor model gas and electric units with 35- to 60-lb frying medium capacity.

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:

D 3588 Method for Calculating Calorific Value and Specific Gravity Relative Density of Gaseous Fuels²

2.2 ANSI Document:³

ANSI Z83.13 American National Standard for Gas Food Service Equipment—Deep Fat Fryers

2.3 AOAC Documents:⁴

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

AOAC 983.23 Fat in Foods: Chloroform-Methanol Extraction Method

2.4 ASHRAE Document:⁵

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 Descriptions 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 *cooking energy, n*—total energy consumed by the fryer as it is used to cook french fries under heavy-, medium-, and light-load conditions.

3.2.3 *cooking energy efficiency, n*—quantity of energy to the french fries during the cooking process expressed as a percentage of the quantity of energy input to the fryer during the heavy-, medium-, and light-load tests.

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² *Annual Book of ASTM Standards*, Vol 05.05.

³ Available from American National Standards Institute, 11 W. 42nd St., 13th Floor, New York, NY, 10036.

⁴ *Official Methods of Analysis of the Association of Official Analytical Chemists*. Available from the Association of Official Analytical Chemists, 1111 N. 19th St., Arlington, VA 22209.

⁵ Available from the American Society of Heating, Refrigeration, and Air Conditioning Engineers, Inc., 1791 Tullie Circle, NE, Atlanta, GA 30329.