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An American National Standard

Standard Guide for Laboratory Requirements Necessary to Test Commercial Cooking and Warming Appliances to ASTM Test Methods¹

This standard is issued under the fixed designation F2875; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

1. Scope

1.1 The scope of this guide includes the laboratory and organizational requirements to test commercial cooking and warming appliances (for example, griddles, fryers, ovens, steam cookers, and hot food holding cabinets) for preheat energy consumption and time, idle energy rate, cooking-energy efficiency, and production capacity, in accordance with the appropriate ASTM test methods under the jurisdiction of Committee F26, including the following:

Test Method		F1275
Test Method		F1361
Test Methods		F1484
Test Method		F1496
Test Methods		F1521
Test Method		F1605
Test Method		F1639
Test Method		F1695
Test Method		F1784
Test Method		F1785
Test Method	1 Jeh Standard	F1786
Test Method	rich Standard	F1787
Test Method		F1817
Test Method	(https://gtandards.it	F1964
Test Method	(IIII)5.//Stanuarus.ii	F1965
Test Method		F1991
Test Method	Dogument Drovi	F2093
Test Method	Document Lievi	F2140
Test Method		F2142
Test Method		F2144
Test Method	A CED A TOOLE (10/0015)	F2237
Test Method	<u>ASTM F28/5-10(2015)</u>	F2238
Test Method	vetale a/standards/sist/72 f0 sh21 2271 1495 s4	F2239 105 172 115 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
Test Method	alalog/statidatus/sist//3190021-32/4-4083-84	F2380 / 49384 / 3403 / 8811 F128 / 3-102013
Test Method		F2473

- 1.2 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.
- 1.3 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

F1275 Test Method for Performance of Griddles

F1361 Test Method for Performance of Open Deep Fat Fryers

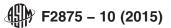
F1484 Test Methods for Performance of Steam Cookers

F1496 Test Method for Performance of Convection Ovens

¹ This guide 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.



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F1521 Test Methods for Performance of Range Tops
F1605 Test Method for Performance of Double-Sided Griddles
F1639 Test Method for Performance of Combination Ovens (Withdrawn 2012)<sup>3</sup>
F1695 Test Method for Performance of Underfired Broilers
F1784 Test Method for Performance of a Pasta Cooker
F1785 Test Method for Performance of Steam Kettles
F1786 Test Method for Performance of Braising Pans
F1787 Test Method for Performance of Rotisserie Ovens
F1817 Test Method for Performance of Conveyor Ovens
F1964 Test Method for Performance of Pressure Fryers
F1965 Test Method for Performance of Deck Ovens
F1991 Test Method for Performance of Chinese (Wok) Ranges
F2093 Test Method for Performance of Rack Ovens
F2140 Test Method for Performance of Hot Food Holding Cabinets
F2142 Test Method for Performance of Drawer Warmers
F2144 Test Method for Performance of Large Open Vat Fryers
F2237 Test Method for Performance of Upright Overfired Broilers
F2238 Test Method for Performance of Rapid Cook Ovens
F2239 Test Method for Performance of Conveyor Broilers
F2380 Test Method for Performance of Conveyor Toasters
F2473 Test Method for Performance of Water-Bath Rethermalizers
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3. Terminology

- 3.1 Definitions:
- 3.1.1 cooking-energy efficiency, n—quantity of energy imparted to the specified food product, expressed as a percentage of energy consumed by the appliance during the cooking event.
- 3.1.2 cooking energy rate, n—average rate of energy consumption during the cooking-energy efficiency tests, Btu/h (kJ/h) or kW.
 - 3.1.3 energy input rate, n—peak rate at which an appliance consumes energy, Btu/h (kJ/h) or kW.
- 3.1.4 *idle energy rate*, n—an appliance's rate of energy consumption while maintaining a ready-to-cook or hold state at a specified thermostat set point, Btu/h (kJ/h) or kW, .
 - 3.1.5 pilot energy rate, n—rate of energy consumption by an appliance's continuous pilot (if applicable), Btu/h (kJ/h).
- 3.1.6 *preheat energy, n*—amount of energy consumed by the appliance while warming the cooking or holding area from ambient temperature to the specified thermostat set point, Btu (kJ) or kWh.
- 3.1.7 preheat time, n—time required for the appliance to warm the cooking or holding area from ambient temperature to the specified thermostat set point, min.
- 3.1.8 *production capacity, n*—maximum rate at which an appliance can bring the specified food product to a specified "cooked" condition, lb/h (kg/h).
- 3.1.9 production rate, n—rate at which an appliance brings the specified food product to a specified "cooked" condition, lb/h (kg/h).
 - Note 1— Does not necessarily refer to maximum rate.
 - Note 2—Production rate varies with the amount of food being cooked.
- 3.1.10 *uncertainty, n*—measure of systematic and precision errors in specified instrumentation or measure of repeatability of a reported test result.

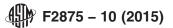
4. Summary of Guide

4.1 Guide to outline requirements for laboratories to test to ASTM performance specifications for commercial cooking appliances that include the necessary organizational structure, facility, equipment, instrumentation, procedures, reporting and proficiency testing.

5. Significance and Use

5.1 This guide provides criteria for evaluating the capability of a laboratory to properly perform commercial cooking appliance energy consumption and cooking-energy efficiency evaluations, and to establish essential characteristics pertaining to the organization, personnel, facilities, and quality systems of the laboratory.

³ The last approved version of this historical standard is referenced on www.astm.org.



6. Organization of the Laboratory

- 6.1 The following information concerning the organization of the laboratory shall be provided by documentation:
- 6.1.1 A description of the organization including:
- 6.1.1.1 The complete legal name and address of the main office,
- 6.1.1.2 The names and positions of the principal officers and directors,
- 6.1.1.3 The laboratory's ownership, managerial structure, and principal members,
- 6.1.1.4 The functional description of the laboratory's organizational structure, operational departments, and support departments and services. This may be demonstrated in the form of charts that depict all the divisions, departments, sections, and units and their relationships,
- 6.1.1.5 All relevant organizational affiliates of the laboratory and the principal officers of affiliates and directors of the affiliates, where applicable,
- 6.1.1.6 External organizations and organizational components, and their functions, that are utilized for significant technical support services, and
- 6.1.1.7 A brief history of the laboratory including its relationship with its organizational component affiliations and other supporting information.
 - 6.1.2 A general description of the type of users of the laboratory's services.
 - 6.1.3 A listing of the relevant technical services offered.

6.2 Independence:

- 6.2.1 If the testing laboratory is part of an organization performing activities other than testing or calibration, or both, the laboratory shall define the responsibilities of key personnel in the organization that have an involvement or influence on the testing, equipment purchase, test data, reports, and calibration activities, or combination thereof, of the laboratory in order to identify potential conflicts of interest.
- 6.2.2 When a laboratory is part of a larger organization, the organizational arrangements shall be such that departments having conflicting interests, such as design engineering, production, commercial marketing, or finance do not adversely influence the laboratory's compliance with the requirements of this guide.
- 6.2.3 If the laboratory wishes to be recognized as a third-party laboratory, it shall demonstrate that it is impartial and that it and its personnel are free from any undue commercial and financial pressures and job performance evaluations that might influence their technical judgment. The third-party testing or calibration laboratory shall not engage in any activities that may endanger trust in its independence of judgment and integrity in relation to its testing or calibration activities.

7. Responsibilities and Duties

- 7.1 An appliance testing laboratory's capabilities shall include, but not be limited to, the following (where applicable): preheat energy consumption and time, idle energy rate, cooking-energy efficiency, and production capacity, as defined in the appropriate ASTM test methods.
 - 7.2 It is the responsibility of the laboratory to ensure the following:
 - 7.2.1 It performs only examinations for which it is adequately equipped and staffed,
 - 7.2.2 Its employees perform only examinations for which they are adequately qualified,
 - 7.2.3 Its equipment is calibrated and its personnel are qualified, and
 - 7.2.4 All equipment, equipment calibrations, and personnel qualifications are properly maintained in accordance with this guide.
 - 7.3 The following duties are those usually performed by the laboratory:
 - 7.3.1 Performance of all testing in accordance with the specified ASTM test methods, and
- 7.3.2 Preparation of formal reports of all the results of the testing defined in 7.3.1. The laboratory shall be prepared to substantiate examination results when required.
 - 7.4 The laboratory shall maintain a records retention policy that is compatible with its mission.

8. Personnel

- 8.1 The laboratory shall document and maintain a record of the following:
- 8.1.1 Written outline or chart defining operational personnel positions and their lines of responsibility and authority,
- 8.1.2 Job description for each professional, scientific, supervisory, and technical position category, documenting the required education, training, or experience, or a combination thereof.
- 8.1.3 Records or resumes that document the qualifications, work experience, and training history of each person in a position described in 8.1.2.
- 8.1.4 The laboratory shall make available a description of its means of ensuring the continued competence of its personnel to perform commercial cooking appliance testing, including the maintenance of written records to document the results.