



Standard Specification for Underfired Broilers¹

This standard is issued under the fixed designation F2835; 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 This specification covers underfired broilers which utilize gas or electrical heat sources for cooking food in commercial and institutional food service establishments.

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, health, and environmental practices and determine the applicability of regulatory limitations prior to use.*

1.4 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

2. Referenced Documents

2.1 ASTM Standards:²

- D3951 Practice for Commercial Packaging
- F760 Specification for Food Service Equipment Manuals
- F1166 Practice for Human Engineering Design for Marine Systems, Equipment, and Facilities
- F1695 Test Method for Performance of Underfired Broilers

2.2 ANSI Standards:³

- NSF/ANSI 4 Commercial Cooking, Rethermalization, and Powered Hot Food Holding and Transport Equipment
- ANSI/UL 197 Commercial Electric Cooking Appliances

¹ This specification is under the jurisdiction of ASTM Committee F26 on Food Service Equipment and is the direct responsibility of Subcommittee F26.02 on Cooking and Warming Equipment.

Current edition approved Jan. 1, 2023. Published February 2023. Originally approved in 2010. Last previous edition approved in 2017 as F2835 – 10 (2017). DOI: 10.1520/F2835-10R23.

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, <http://www.ansi.org>.

ANSI B1.1 Unified Inch Screw Threads (UN and UNR Thread Form)

ANSI Z1.4 Sampling Procedures and Tables for Inspection and Attributes

ANSI Z21.41 Quick-Disconnect Devices For Use With Gas Fuel Appliances

ANSI Z21.69 Connectors for Moveable Gas Appliances

ANSI Z83.11 Gas Food Service Equipment

2.3 Military Standards:⁴

MIL-STD-167/1 Mechanical Vibration of Shipboard Equipment (Type 1-Environmental and Type 2-Internally Excited)

MIL-STD-461 Requirements for the Control of Electromagnetic Interference Characteristics of Subsystems and Equipment

MIL-STD-1399/300 Interface Standard for Shipboard Systems Section 300A Electric Power, Alternating Current

2.4 Other Standards:⁵

CAN/CSA-B339 Cylinders, Spheres and Tubes for the Transportation of Dangerous Goods

3. Terminology

3.1 Definitions:

3.1.1 *underfired broiler, n*—as used in this specification, is a device for cooking food consisting of a grate and a high temperature heat source beneath the grate to cook food resting on the grate.

4. Classification

4.1 Broilers covered by this specification are classified by type, style, fuel class, and size.

4.2 Type:

4.2.1 *Type 1*—For counter top use.

4.2.2 *Type 2*—OEM stand mounted.

4.2.2.1 *Type 2A*—Stand with plain legs.

4.2.2.2 *Type 2B*—Stand with casters.

4.2.2.3 *Type 2C*—Stand with bolt-down legs.

4.2.3 *Type 3*—For flush installation (drop-in type)

⁴ Available from Standardization Documents Order Desk, DODSSP, Bldg. 4, Section D, 700 Robbins Ave., Philadelphia, PA 19111-5098, <http://dodssp.daps.dla.mil>.

⁵ Available from Canadian Standards Association (CSA), 5060 Spectrum Way, Mississauga, ON L4W 5N6, Canada, <http://www.csa.ca>.

4.3 *Style (Radiant System):*

4.3.1 *Style 1*—Ceramic briquettes, lava rock or other loose substances for radiant surface.

4.3.2 *Style 2*—Metal radiant surface.

4.3.3 *Style 3*—Glass radiant surface.

4.3.4 *Style 4*—None.

4.3.5 *Style 5*—Combination (any of the above styles together).

4.4 *Class:*

4.4.1 *Electric:*

4.4.1.1 *Class 1*—208V, 60 Hz, 1 phase.

4.4.1.2 *Class 2*—208V, 60 Hz, 3 phase.

4.4.1.3 *Class 3*—240V, 60 Hz, 1 phase.

4.4.1.4 *Class 4*—240V, 60 Hz, 3 phase.

4.4.1.5 *Class 5*—440V, 60 Hz, 3 phase.

4.4.1.6 *Class 6*—480V, 60 Hz, 3 phase.

4.4.1.7 *Class 7*—230V, 50 Hz, 1 phase.

4.4.1.8 *Class 8*—400V, 50 Hz, 1 phase.

4.4.2 *Gas:*

4.4.2.1 *Class 8*—Natural Gas.

4.4.2.2 *Class 9*—LP Gas.

(1) *Class 9A*—Fixed LP fuel applications.

(2) *Class 9B*—Self-contained LP fuel applications.

4.4.2.3 *Class 10*—Other Gases (specify gas composition, heating value and specific gravity).

4.4.3 *Solid Fuel:*

4.4.3.1 *Class 11*—Solid Fuel without Gas Assist.

4.4.3.2 *Class 12*—Solid Fuel with Gas Assist.

4.5 *Size (Overall Width):*

4.5.1 18 in. (457 mm) nominal.

4.5.2 24 in. (610 mm) nominal.

4.5.3 36 in. (914 mm) nominal.

4.5.4 48 in. (1219 mm) nominal.

4.5.5 60 in. (1524 mm) nominal.

4.5.6 72 in. (1829 mm) nominal.

4.5.7 This specification does not purport to address all of the sizes, which may be available, but it is an overview of the most common sizes used in the industry today. Sizes not listed above may be designated using their nominal width.

5. Ordering Information

5.1 An order for a broiler(s) under this specification shall specify the following information:

5.1.1 ASTM specification number and year of issue,

5.1.2 Quantity to be furnished,

5.1.3 Type,

5.1.4 Style,

5.1.5 Class, and

5.1.6 Size.

5.2 The following options should be reviewed, and if any are desired, they also should be included in the order.

5.2.1 When federal/military procurement(s) is involved, refer to the supplementary requirements.

5.2.2 When other than manufacturer's standard, commercial, domestic packaging is required, specify packaging requirements.

5.2.3 Specify special requirements, such as inspections, accessories, additional nameplate data, and modifications.

5.2.4 When specified, a certification to ensure that samples representing each lot have been either tested or inspected as directed and the requirements have been met. When specified, a copy of the certification or test results, or both, shall be furnished to the purchaser.

5.2.5 When specified with a quick-disconnect gas supply, an approved quick disconnect (socket and plug) conforming to ANSI Z21.41 and a flexible connector conforming to AN-SIZ21.69 shall be provided with the broiler.

5.2.6 When connected to a self-contained gas fuel source, cylinder configuration (size, orientation, and number) should be specified along with the type of cylinder connection device.

5.2.7 For a product for outdoor use only and if the purchase is for a LP self contained appliance, the specifications should state: The broiler must be listed under Z81.11 for use with a self-contained LP system and the broiler shall furnished with all necessary LP connection components in accordance with ANSI Z83.11, Part I Construction subsection titled "Self Contained LP-Gas Supply Systems." These components shall be those recognized for use on the broiler under the broiler's listing to ANSI Z83.11.

5.2.8 As a part of a LP self contained system, if quoted that the self contained LP tank shall be provided with the broiler, the specifications shall state:

5.2.8.1 The LP tank shall be constructed and marked in accordance with the specifications for propane cylinders of the U.S. Department of Transportation (DOT) or the specification for LP-gas cylinders of the National Standard of Canada, CAN/CSA-B339, or both.

5.2.8.2 The LP tank connection shall be compatible with connection system components provided with broiler.

6. Materials and Manufacture

6.1 *General:*

6.1.1 Broilers shall conform to the applicable documents listed in Section 2.

6.1.2 Materials used shall be free from defects, which would affect the performance or maintainability of individual components or of the overall assembly.

6.1.3 Materials not specified herein shall be of the same quality used for the intended purpose in commercial practice.

6.1.4 Use of used or rebuilt products is not allowed under this specification.

6.2 *Hardware and Fittings*—Unless otherwise specified (see Section 5), all hardware and fittings shall be corrosion-resistant or suitably processed to resist corrosion in accordance with the manufacturer's standard practice.

6.3 *Threaded Parts*—All threaded parts shall conform to ANSI B1.1.

7. Design and Construction

7.1 *General:*

7.1.1 Broilers and accessories shall conform to ANSI/UL 197 or ANSI Z83.11, as applicable, and NSF/ANSI 4, as applicable.