



Designation: F1603 – 17

An American National Standard

Standard Specification for Kettles, Steam-Jacketed, 32 oz to 20 gal (1 to 75.7 L), Tilting, Table Mounted, Direct Steam, Gas and Electric Heated¹

This standard is issued under the fixed designation F1603; 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.

This standard has been approved for use by agencies of the U.S. Department of Defense.

1. Scope

1.1 This specification covers jacketed kettles that use steam as a heat source for cooking food in commercial and institutional food service establishments. This specification does not cover equipment used by food processors who normally package the food that they cook.

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

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

A176 Specification for Stainless and Heat-Resisting Chromium Steel Plate, Sheet, and Strip (Withdrawn 2015)³

A240/A240M Specification for Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications

A285/A285M Specification for Pressure Vessel Plates, Carbon Steel, Low- and Intermediate-Tensile Strength

A516/A516M Specification for Pressure Vessel Plates, Carbon Steel, for Moderate- and Lower-Temperature Service

A580/A580M Specification for Stainless Steel Wire

B456 Specification for Electrodeposited Coatings of Copper Plus Nickel Plus Chromium and Nickel Plus Chromium

D3951 Practice for Commercial Packaging

F760 Specification for Food Service Equipment Manuals

F1166 Practice for Human Engineering Design for Marine Systems, Equipment, and Facilities

F1785 Test Method for Performance of Steam Kettles

2.2 ANSI Standards:⁴

ANSI/UL 197 Commercial Electric Cooking Appliances

ANSI Z83.11 Gas Food Service Equipment—Kettles, Steam Cookers and Steam Generators

ANSI/NSF Std. 4 Commercial Cooking and Hot Food Storage Equipment

ANSI Z223.1 National Fuel Gas Code

ANSI/NFPA 70 National Electrical Code

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

2.3 ASME Standards:⁵

ASME Boiler and Pressure Vessel Code, Section IV Heating Boilers

ASME Boiler and Pressure Vessel Code, Section VIII—Division 1 Pressure Vessels

2.4 Military Standards:⁶

MIL-STD-167/1 Mechanical Vibration of Shipboard Equipment (Type I—Environmental, and Type II—Internally Excited)

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

Current edition approved Nov. 1, 2017. Published January 2018. Originally approved in 1995. Last previous edition approved in 2012 as F1603 – 12. DOI: 10.1520/F1603-17.

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

⁴ Available from American National Standards Institute (ANSI), 25 W. 43rd St., 4th Floor, New York, NY 10036, <http://www.ansi.org>.

⁵ Available from American Society of Mechanical Engineers (ASME), ASME International Headquarters, Three Park Ave., New York, NY 10016-5990, <http://www.asme.org>.

⁶ Available from Standardization Documents Order Desk, Bldg. 4 Section D, 700 Robbins Ave., Philadelphia, PA 19111-5094, Attn: NPODS; or Acquisition Streamlining and Standardization Information System (ASSIST) which is the official source of all documents listed in the DoD Index of Specifications and Standards. The ASSIST can be located at <http://dsp.dla.mil>.

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

3. Terminology

3.1 Definitions of Terms Specific to This Standard:

3.1.1 *jacketed kettle*—as used in this specification, a tilting or stationary, deep sided vessel (steam jacketed) of 32 oz to 20 gal (1 to 75.7 L) capacity for cooking food in a liquid.

3.1.1.1 *Discussion*—These kettles can be mounted onto the purchaser's table or be specified already mounted on any of the stands or bases described in 4.1.3. The energy in the steam moving through the jacket is transferred to the liquid and to the food by condensation of the steam on the vessel wall.

4. Classification

4.1 Jacketed kettles covered by this specification are classified by size (capacity), grade, style and class.

4.1.1 Size (Capacity):

4.1.1.1 32 oz (1 L) capacity.

4.1.1.2 66 oz (2 L) capacity.

4.1.1.3 2½ to 3 gal (9.5 to 11.4 L) capacity.

4.1.1.4 5 to 6 gal (19 to 22.7 L) capacity.

4.1.1.5 10 to 12 gal (37.9 to 45.5 L) capacity.

4.1.1.6 20 gal (75.7 L) capacity.

4.1.2 Grade:

4.1.2.1 *Grade 1*—Maximum Working Pressure Rating of 15 to 25 psig (103.4 to 172.4 KPa) or less.

4.1.2.2 *Grade 2*—Maximum Working Pressure Rating of 26 to 55 psig (179.3 to 379.2 KPa) or less.

4.1.2.3 *Grade 3*—Maximum Working Pressure Rating of 56 to 90 psig (386.1 to 620.5 KPa) or less.

4.1.3 Style:

4.1.3.1 *Style 1*—For table mounting on a counter.

4.1.3.2 *Style 2*—Table mounted on an open leg equipment stand.

4.1.3.3 *Style 3*—Table mounted on an enclosed cabinet stand.

4.1.3.4 *Style 4*—Table mounted on a 28 to 30-in. (711 to 762-mm) high enclosed cabinet base.

4.1.3.5 *Style 5*—Table mounted on a 28 to 30-in. (711 to 762-mm) high enclosed cabinet base with a Class D steam source.

4.1.4 Class:

4.1.4.1 *Class A*—Directly connected to an external steam source.

4.1.4.2 *Class B*—Self-contained, gas-fired steam generator.

4.1.4.3 *Class C*—Self-contained, electric steam generator.

4.1.4.4 *Class D*—A separate ASME Code, Section IV heating boiler as steam source. (Typically used as steam source for multiple table top kettles.)

5. Ordering Information

5.1 An order for a kettle(s) under this specification shall specify:

5.1.1 ASTM specification number and date of issue.

5.1.2 Quantity to be furnished.

5.1.3 Size (capacity).

5.1.4 Grade.

5.1.5 Style.

5.1.6 Class.

5.1.7 Assurance that:

5.1.7.1 Gas fired unit(s) will be installed in accordance with the installation instructions and the National Fuel Gas Code ANSI Z223.1.

5.1.7.2 Electric heat unit(s) will be installed in accordance with the installation instructions and the National Electrical Code ANSI/NFPA 70.

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

5.2.1 When a cover is required.

5.2.2 When required, the maximum allowable width for Style 2 through Style 5 (4.1.3.2 – 4.1.3.5).

5.2.3 When required, for Style 1 kettles, the desired pouring height to the table top (7.2.2).

5.2.4 When two identical side by side kettles are desired in Style 2, 3, 4 or 5 (4.1.3.2 – 4.1.3.5).

5.2.5 When a wire basket (7.1.6) is required.

5.2.6 When Federal/Military procurement(s) is involved, refer to the supplement pages.

5.2.7 When Class B and C kettles are to be shipped from the factory without the supply of water in the jacket (7.3.2 and 7.3.3).

5.2.8 If type 430 corrosion-resistant steel is not desired for the enclosed cabinet Styles 3 and 4 (4.1.3).

5.2.9 When a water faucet with a swing spout is required.

5.2.10 When fill level marks are to be etched on kettle interior.

5.2.11 When insulation is required on the outside of the kettle body or steam jacket.

5.2.12 Type of gas, if applicable: natural, propane or other (specify gas composition, heating value in BTU per cubic foot and specific gravity of gas).

5.2.13 Electrical power supply characteristics: voltage, frequency, phase, kW input, or amp load, as applicable.

5.2.14 When other than manufacturer's standard, commercial, domestic packaging is required, specify packaging requirements (14.3).

5.2.15 When special or supplement requirements such as inspections, accessories, mounting patterns, utility connections, etc.

5.2.16 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.

6. Materials

6.1 *General*—Steam jacketed kettles shall conform to the following:

6.2 *Kettle*—The kettle vessel shall be constructed of Type 304, 304L, 316, or 316L corrosion resistant steel conforming to Specification A176 or A240/A240M.