



## Standard Specification for Cooker, Steam<sup>1</sup>

This standard is issued under the fixed designation F1217; 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 ( $\epsilon$ ) 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 food cookers and food reheaters which use steam as the heat source. These units are also known as steamers, steam ovens, and steam cookers which utilize steam generated by gas, electric heat, or steam coil sources, or a combination thereof, in commercial and institutional food service establishments. This specification can be used for sub-zero-pressure steamers, pressure steamers, combination pressure/pressureless steamers, boilerless steamers, and connectionless steamers, and does not cover steam cooking 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 SI values given in parentheses are provided for information only.

1.3 *This standard may involve hazardous materials, operations, and equipment. 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:<sup>2</sup>

A36/A36M Specification for Carbon Structural Steel

A176 Specification for Stainless and Heat-Resisting Chromium Steel Plate, Sheet, and Strip (Withdrawn 2015)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

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

A268/A268M Specification for Seamless and Welded Ferritic and Martensitic Stainless Steel Tubing for General Service

A269 Specification for Seamless and Welded Austenitic Stainless Steel Tubing for General Service

A276 Specification for Stainless Steel Bars and Shapes

A478 Specification for Chromium-Nickel Stainless Steel Weaving and Knitting Wire

A568/A568M Specification for Steel, Sheet, Carbon, Structural, and High-Strength, Low-Alloy, Hot-Rolled and Cold-Rolled, General Requirements for

A635/A635M Specification for Steel, Sheet and Strip, Heavy-Thickness Coils, Hot-Rolled, Alloy, Carbon, Structural, High-Strength Low-Alloy, and High-Strength Low-Alloy with Improved Formability, General Requirements for

A1011/A1011M Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy, High-Strength Low-Alloy with Improved Formability, and Ultra-High Strength

B108 Specification for Aluminum-Alloy Permanent Mold Castings

B209 Specification for Aluminum and Aluminum-Alloy Sheet and Plate (Metric) B0209\_B0209M

D3951 Practice for Commercial Packaging

F760 Specification for Food Service Equipment Manuals

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

F1484 Test Methods for Performance of Steam Cookers

2.2 *Underwriters Laboratories Standard:*<sup>4</sup>

UL/ANSI 197 Commercial Electric Cooking Appliances

<sup>1</sup> 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.

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<sup>2</sup> For referenced ASTM standards, visit the ASTM website, [www.astm.org](http://www.astm.org), or contact ASTM Customer Service at [service@astm.org](mailto:service@astm.org). For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

<sup>3</sup> The last approved version of this historical standard is referenced on [www.astm.org](http://www.astm.org).

<sup>4</sup> Available from Underwriters Laboratories (UL), 2600 N.W. Lake Rd., Camas, WA 98607-8542, <http://www.ul.com>.

### 2.3 ANSI Standards:<sup>5</sup>

- ANSI B1.1 Unified Inch Screw Threads (UN and UNR Thread Form)
- ANSI Z1.4 Sampling Procedures and Tables for Inspection by 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
- ANSI/NFPA 54 National Fuel Gas Code
- ANSI Z223/NFPA 70 National Electrical Code<sup>6</sup>

### 2.4 NSF Standards:<sup>7</sup>

- NSF/ANSI Standard No. 4 Commercial Cooking, Rethermalization, and Powered Hot Food Holding and Transportation Equipment

### 2.5 ASME Documents:<sup>8</sup>

- ASME Boiler and Pressure Vessel Code Section IV—Heating Boilers
- ASME Boiler and Pressure Vessel Code Section VIII—Division 1

### 2.6 Military Standards:<sup>9</sup>

- 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

## 3. Terminology

### 3.1 Definitions of Terms Specific to This Standard:

3.1.1 *boilerless steam cooker*—as used in this specification, is a device with one or more food steaming compartments in which the steam is generated within the food compartment without a separate steam generator.

3.1.2 *capacity*—the capacity of a steam cooker is determined by the number of steam table pans that it is designed to hold during cooking.

3.1.3 *connectionless steam cooker or steamer*—as used in this specification, is a steam cooker without permanent water fill and drain connection and is typically intended for batch cooking. Such a steam cooker may be optionally fitted with a water fill connection or a drain connection, or both.

3.1.4 *pans*—containers used to hold the food product in the steamer cavity. A full size steam table pan is nominally 12<sup>3</sup>/<sub>4</sub> by 20<sup>3</sup>/<sub>4</sub> by 2<sup>1</sup>/<sub>2</sub> in. (324 by 527 by 64 mm).

<sup>5</sup> Available from American National Standards Institute (ANSI), 25 W. 43rd St., 4th Floor, New York, NY 10036.

<sup>6</sup> Available from National Fire Protection Association (NFPA), 1 Batterymarch Park, Quincy, MA 02269-9101.

<sup>7</sup> Available from NSF International, P.O. Box 130140, 789 N. Dixboro Rd., Ann Arbor, MI 48113-0140.

<sup>8</sup> Available from American Society of Mechanical Engineers (ASME), ASME International Headquarters, Three Park Ave., New York, NY 10016-5990.

<sup>9</sup> Available from Standardization Documents Order Desk, DODSSP, Bldg. 4, Section D, 700 Robbins Ave., Philadelphia, PA 19111-5098, <http://dodssp.daps.dla.mil>.

3.1.5 *pressure/pressureless steamer*—as used in this specification, is a device with one or more food steaming compartments in which the energy in steam is transferred to the food by direct contact. The pressure occurring in the food compartment of these steamers during cooking ranges from 0 to 15 psig (0 to 103.42 KPa).

3.1.6 *steam cooker with heating boiler*—as used in this specification, is a separate heating boiler that supplies steam to cooking compartment at a pressure range from 0 to 15 psig (0 to 103.42 KPa) and both the generator and cooking chamber are housed in a single unit.

3.1.7 *steam cooker with steam generator*—as used in this specification, is a separate steam generator that supplies steam to cooking compartment at a pressure of less than 0.5 psig (3.45 KPa) and both the generator and cooking chamber are housed in a single unit.

3.1.8 *sub-zero pressure steamer*—as used in this specification, is a device with one or more food steaming compartments in which the energy in steam is transferred to the food by direct contact. The food compartment of these steamers during cooking is at a vacuum of 1 in. of mercury (3.4 KPa) minimum or greater.

## 4. Classification

4.1 Steam cookers covered by this specification are classified by type (more than one type may be specified for the same equipment), grade, class, size, style, and capacity:

### 4.2 Type:

4.2.1 *Type IA*—Table or countertop units with permanent water inlet and drain connection.

4.2.2 *Type IB*—Table or countertop units without permanent water inlet and drain connection (connectionless steamer).

4.2.3 *Type II*—Floor mounted on an open stand.

4.2.4 *Type III*—Floor mounted on a cabinet base.

4.2.5 *Type IV*—Unit with a pressure or pressure-less separate steam generator.

4.2.6 *Type V*—Unit without a separate steam generator (boilerless steamer).

### 4.3 Grade:

4.3.1 *Grade A*—0 to 2.9 psig (0 to 19.99 KPa) compartment pressure.

4.3.2 *Grade B*—3.0 to 9.9 psig (20 to 68.90 KPa) compartment pressure.

4.3.3 *Grade C*—10.0 to 15 psig (68.95 to 103.42 KPa) compartment pressure.

4.3.4 *Grade D*—Vacuum of 1 to 29.8 in. (25.4 to 755 mm) of mercury.

NOTE 1—These pressure values refer to the continuous pressure or the maximum pressure reached during a cooking cycle.

### 4.4 Class:

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

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

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

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

4.4.5 *Class 5*—480 V, 60 Hz, 1 phase.

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

4.4.7 *Class 7*—120 V, 60 Hz, 1 phase.