



## Standard Specification for Commercial Coffee Brewers<sup>1</sup>

This standard is issued under the fixed designation F2988; 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 reappraisal. A superscript epsilon ( $\epsilon$ ) indicates an editorial change since the last revision or reappraisal.

### 1. Scope

1.1 This specification covers commercial single cup or batch coffee brewers which are used for brewing coffee in commercial and institutional facilities and does not include residential units. This specification is limited to standard coffee brewers and does not include espresso or specialty coffee drink machines.

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:<sup>2</sup>

~~A36/A36M Specification for Carbon Structural Steel~~

~~A167 Specification for Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet, and Strip (Withdrawn 2014)<sup>3</sup>~~

~~A176 Specification for Stainless and Heat-Resisting Chromium Steel Plate, Sheet, and Strip (Withdrawn 2015)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

~~A276 Specification for Stainless Steel Bars and Shapes~~

~~A366/A366M Specification for Commercial Steel (CS) Sheet, Carbon, (0.15 Maximum Percent) Cold-Rolled (Withdrawn 2000)<sup>3</sup>~~

~~D3951 Practice for Commercial Packaging~~

~~F760 Specification for Food Service Equipment Manuals~~

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

#### 2.2 ANSI Standards:<sup>4</sup>

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

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

~~ANSI/NFPA/ANSI 4 Commercial Cooking, Rethermalization and Powered Hot Food Holding and Transport Equipment~~

~~ANSI/UL 197 Commercial Cooking Appliances~~

~~ANSI/UL 1439 Test for Sharpness of Edges on Equipment~~

#### 2.3 National/International Safe Transit Association (NSTA/ISTA) Standard:

~~NSTA/ISTA Pre-Shipment Test Procedures~~

#### 2.4 Military Standards:

~~MIL-STD-167/1 Mechanical Vibrations of Shipboard Equipment Type I—Environmental and Type II—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~~

<sup>1</sup> This ~~test method~~ specification is under the jurisdiction of ASTM Committee F26 on Food Service Equipment and is the direct responsibility of Subcommittee F26.03 on Storage and Dispensing Equipment.

Current edition approved Nov. 1, 2012/Oct. 1, 2018, Published December 2012/October 2018. Originally approved in 2012. Last previous edition approved in 2012 as F2988 – 12. DOI: 10.1520/F2988-12, 10.1520/F2988-18.

<sup>2</sup> 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.

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

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

### 3. Terminology

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

- 3.1.1 *brew cycle, n*—the time required to complete and recover from brew event.
- 3.1.2 *brew energy, n*—energy consumed by the coffee brewer during a brew cycle.
- 3.1.3 *brew event, n*—dispensing of one serving or batch volume of coffee starting with the initiation of a brew cycle.
- 3.1.4 *brew volume, n*—the substantive delivered bulk beverage portion specified in ounces or gallons.
- 3.1.5 *coffee brewer, n*—commercial appliances designed to heat and deliver a portion of coffee.
- 3.1.6 *energy save mode, n*—a low power mode different from the ready-to-brew state designed to use less energy while the coffee brewer remains “on.”
- 3.1.7 *production capacity, n*—calculated maximum volume of coffee potentially brewed in one full hour.
- 3.1.8 *ready-to-brew (standby) energy, n*—energy required by the coffee brewer to maintain “ready-to-brew” conditions including energy required to keep the reservoir tank at the brew set temperature.
- 3.1.9 *recovery time, n*—the time required for the brew volume to be returned to the brew set temperature after a brew event.
- 3.1.10 *serving temperature, n*—the beverage serving temperature maintained by the Warmer plate(s) or the delivered temperature from Type II coffee brewers.
- 3.1.11 *warmer energy, n*—the required energy from the warmer to maintain the delivered brew volume at serving temperature.

### 4. Classification

4.1 *Types*—The coffee brewers covered by this specification shall be one of the following three types, each capable of providing heated potable water combined with coffee ground to produce a finished beverage of varying size and capacity.

- 4.1.1 *Type I*—Single Cup Coffee Brewer
- 4.1.2 *Type II*—Batch Coffee Brewer
- 4.1.3 *Type III*—Urn Coffee Brewer

4.2 *Grade*—Method of supplying water to Coffee Brewer

- 4.2.1 *Grade A*—Manual Fill (Pour Over)
- 4.2.2 *Grade B*—Automatic Water Fill (Potable water connection)
- 4.2.3 *Grade C*—Combination, Manual or Automatic Water Fill

4.3 *Class*—Electrical configuration

- 4.3.1 *Class 1*—120 V, 60 Hz, 1 phase
- 4.3.2 *Class 2*—208 V, 60 Hz, 1 phase
- 4.3.3 *Class 3*—208 V, 60 Hz, 3 phase
- 4.3.4 *Class 4*—240 V, 60 Hz, 1 phase
- 4.3.5 *Class 5*—240 V, 60 Hz, 3 phase
- 4.3.6 *Class 6*—230 V, 50/60 Hz, 1 phase
- 4.3.7 *Class 7*—400 V, 50/60 Hz, 3 phase
- 4.3.8 *Class 8*—440 V, 60 Hz, 3 phase
- 4.3.9 *Class 9*—Other

4.4 ~~*Capacity*~~—*Capacity (per Brew Head)*:

- 4.4.1 *Capacity a*—Single Cup, ~~less than 12.1 ozs (357 mL)~~ 6 to 24 oz (357 mL)
- 4.4.2 *Capacity b*—Small Batch, ~~12.1 to 128 ozs (357 to 3785 mL)~~ 12.1 to 128 oz (357 to 3785 mL)
- 4.4.3 *Capacity c*—Medium Batch, 128.1 to 256 oz (3788 to 7570 mL)
- 4.4.4 *Capacity d*—Large Batch, 256.1 oz and up (7573 mL)

4.5 *Style*:

- 4.5.1 *Style I*—Single Brew Head
- 4.5.2 *Style II*—Multiple Brew Head. When specifying a style II coffee brewer, the number of brew heads on the unit will be specified as well.

### 5. Ordering Information

5.1 Purchasers should select the Coffee Brewer and any preferred options and include the following information in the purchasing document:

- 5.1.1 Title, number and date of this specification.
- 5.1.2 Type, grade, class, capacity, and style of machine required (see Section 4).
- 5.1.3 Labeling requirements (if different from Section 12).
- 5.1.4 Quantity of coffee brewers to be furnished.

- 5.1.5 Accessory equipment, spare, and maintenance parts required.
- 5.1.6 Any special requirements or deviation from this specification.

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

- 5.2.1 When Federal/Military procurement(s) is involved, refer to the supplemental pages.
- 5.2.2 When other than manufacturer's standard, commercial, and domestic packaging is required, specify packaging requirements.
- 5.2.3 When special or supplemental requirements, or both, such as inspections, options, accessories, modifications, changes for correctional facilities use, additional nameplate data, etc. are required.
- 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 and/or test results shall be furnished to the purchaser.
- 5.2.5 When water hook-up is required a water filter (strainer) shall be specified in the incoming water line as close as possible to the tank or heat exchange. Proper flow shall be indicated by the arrows or working on the water filter.
- 5.2.6 When hard water is specified a water treatment device shall be specified.
- 5.2.7 When special holding devices are required guardrails shall be specified.

## 6. Materials and Manufacture

6.1 Materials used in the construction of the machine shall comply with NSF No. 4 and UL Standard 197. Materials not definitely specified shall be of the quality normally used by the manufacturer in making coffee brewing equipment, providing the completed items comply with all provisions of the standard.

6.2 *Hardware and Fittings*—Unless otherwise specified, all hardware and fittings shall be corrosion-resistant to ASTM Specification A167 or ASTM Specification A176 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, unless otherwise specified.

## 7. Physical Properties

7.1 *General*—The coffee brewer shall be an electromechanical device for dispensing potable water over a ground coffee mixture either automatically or upon manual actuation. The coffee and water shall be combined in the single cup packet chamber (Type I) or in a brew basket (Type II, Type III) that can be removed to discard the mixture and rinsed clean at the end of each brew cycle. The coffee brewer shall be designed to comply with the requirements of ANSI/NSF 4 and ANIS/UL 197. Proof of compliance with ANSI/UL 197 shall be a listing in a third-party certification agency listing book or a certification test report from a nationally recognized testing laboratory acceptable to the purchaser. When specified by the purchaser proof of compliance with ANSI/NSF 4 shall be a listing in a third-party certification agency listing book or a certified test report from a nationally recognized testing laboratory acceptable to the purchaser.

NOTE 1—The third party certification agency may be different than the agency that created the standard.

## 8. Performance Requirements

8.1 When specified, a production model of the coffee brewer of interest shall be tested in accordance with the ASTM Standard Test Method for Commercial Coffee Brewers (WK Item #XXXXX) for the following items:

- 8.1.1 Maximum energy input rate.
- 8.1.2 Preheat energy and time.
- 8.1.3 Ready-to-Brew energy rate.
- 8.1.4 Heavy use brewing energy rate and production capacity will be tested by applying the appropriate method specified for Type I and Type II coffee brewers.

## 9. Workmanship, Finish, and Appearance

9.1 *Workmanship*—All components and assemblies of the machine shall be free from dirt and other extraneous material such as burrs, slivers, rough die marks, and tool and grind marks, dents, and cracks. Castings and molded parts, if used, shall be free of sand, fins, pits, blowholes, and sprue(s). External surfaces shall meet the UL 1439 Sharp Edge Test.

NOTE 2—Although 9.1 requires subjective judgments, its inclusion is considered important as a guide in evaluating and manufacturing equipment.

9.2 *Metal Fabrication*—Metal used in the fabrication of the machines shall be free from visually apparent defects. Forming and shearing shall not cause damage to the metal and the metal shall be free from trimming marks.

9.3 *Welding*—The surfaces of parts to be welded shall be free from rust, scale, paint, grease, and other foreign matter. Welds shall be smooth and free from cracks, burn holes, undercuts, or incomplete fusion.

9.4 *Fastening Devices*—Holes punched or drilled shall be free of burrs. Threaded fasteners shall not be broken, cracked, or stripped and shall be drawn tight. Rivets, when used, shall fill the hole completely and the head shall be in full contact with the surface of the member.