



Standard Specification for Induction Cooktops, Counter Top, Drop-in Mounted, or Floor Standing¹

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1. Scope

1.1 This specification covers cooktops which utilize induction as a means for cooking and warming food in commercial and institutional food service establishments. Included are tabletop units, drop-in units and floor standing equipment with integral induction hobs.

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 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
- F1166 Practice for Human Engineering Design for Marine Systems, Equipment, and Facilities
- F760 Specification for Food Service Equipment Manuals
- F1521 Test Methods for Performance of Range Tops

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.

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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.

2.2 ANSI Standards:³

- NSF/ANSI 4 Commercial Cooking, Rethermalization, and Powered Hot Food Holding and Transport Equipment⁴
- ANSI/NFPA 70 National Electric Code⁵
- ANSI/UL 197 Standard for Commercial Electric Cooking Appliances⁶
- ANSI B1.1 Unified Inch Screw Threads (UN and UNR Thread Form)
- ANSI Z1.4 Sampling Procedures and Tables for Inspection and Attributes⁷
- ANSI Z83.11 Gas Food Service Equipment
- ANSI Z97.1 Safety Glazing Materials Used in Buildings – Safety Performance Specifications and Methods of Test

2.3 Other Standards:

- IEC61000-4-2 Electromagnetic Compatibility (EMC)—Part 4-2: Testing and Measurement Techniques—Electrostatic Discharge Immunity Test⁸
- FCC Part 18.305 and 18.307 Field Strength Limit and EMC Conduction Limit⁹

3. Terminology

3.1 Definitions of Terms Specific to This Standard:

3.1.1 *countertop unit*—an induction unit intended to be operated on a counter or table.

3.1.2 *drop-in unit*—an induction unit intended to be installed in a counter top or application specific cut-out.

³ Available from American National Standards Institute (ANSI), 25 W. 43rd St., 4th Floor, New York, NY 10036.

⁴ Available from NSF International, P.O. Box 130140, 789 N. Dixboro Rd., Ann Arbor, MI 48113-0140.

⁵ Available from National Fire Protection Association (NFPA), 1 Batterymarch Park, Quincy, MA 02269-9101.

⁶ Available from Underwriters Laboratories (UL) LLC, 333 Pfingsten Rd., Northbrook, IL 60062-2096, <http://www.ul.com>.

⁷ 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>.

⁸ Available from International Electrotechnical Commission (IEC), 3 rue de Varembe, Case postale 131, CH-1211, Geneva 20, Switzerland, <http://www.iec.ch>.

⁹ Available from Federal Communications Commission, <http://www.fcc.gov/css.html>.

3.1.3 *floor standing unit*—an induction unit intended to be operated standing on the floor.

3.1.4 *hob*—an individual heating or cooking zone, typically associated with an individual induction coil.

3.1.5 *hybrid unit*—an induction cooktop combined with another heating method.

3.1.6 *induction cooktop*—a commercial or institutional food cooking or warming device using magnetic induction as the heating energy source. In the context of this specification, this includes countertop, counter drop-in, and floor standing units.

3.1.7 *wok unit*—an induction cooking unit with a round bowl heating surface for heating woks.

4. Classification

4.1 Type:

4.1.1 *Type I*—Table or Counter top units

4.1.2 *Type II*—Drop-in units

4.1.3 *Type III*—Table or counter top wok unit

4.1.4 *Type IV*—Drop-in wok unit

4.1.5 *Type V*—Floor standing units

4.2 Group:

4.2.1 *Group A*—Induction only

4.2.2 *Group B*—Hybrid

4.3 Style:

4.3.1 *Single hob*

4.3.2 *Multihob*

4.4 Class:

4.4.1 *Class 1*—120 volts, 60 hertz, 1 phase

4.4.2 *Class 2*—208 volts, 60 hertz, 1 phase

4.4.3 *Class 3*—208 volts, 60 hertz, 3 phase

4.4.4 *Class 4*—240 volts, 60 hertz, 1 phase

4.4.5 *Class 5*—208–240 volts, 50 hertz, 1 phase

4.4.6 *Class 6*—208–240 volts, 60 hertz, 1 phase

4.4.7 *Class 7*—480 volts, 60 hertz, 3 phase

4.4.8 *Class 8*—230 volts, 50 hertz, 1 phase

4.4.9 *Class 9*—240 volts, 50 hertz, 1 phase

4.4.10 *Class 10*—400 volts, 50 hertz, 3 phase

4.4.11 *Class 11*—415 volts, 50 hertz, 3 phase

4.4.12 *Class 12*—380 volts, 50 hertz, 3 phase

5. Ordering Information

5.1 Orders for Induction Cooktops 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 Type,

5.1.4 Group,

5.1.5 Style, and

5.1.6 Class.

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

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

5.2.2 Electrical power connection if applicable—power cord with plug or conduit connection and size.

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

5.2.4 When other than the manufacturer's standard power input is required, specify the power input requirements.

6. Materials and Manufacture

6.1 General:

6.1.1 Induction cooktops shall conform to the applicable documents listed in 2.2.

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, 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 Induction cooktops may optionally include temperature control. If included, the temperature control shall have an accuracy of $\pm 10^{\circ}\text{F}$ (-12°C), measured at the bottom of the cooking/warming vessel. (See Section 10.)

7.2 Induction cooktops shall include a line current limiting capability.

7.3 Countertop induction cooktops shall be fixed or portable and provided with standard power plugs or hard wired as appropriate to the application.

7.4 Drop-in induction cooktops may optionally be supplied without a plug, with power wiring appropriate for direct power connection.

7.5 When specified, an induction cooktop shall include a replaceable fan air filter.

7.6 When specified, an induction cooktop shall include a cleanable fan air filter.

7.7 When specified, an induction cooktop shall have a power save/sleep mode.

7.8 Safety Features:

7.8.1 Induction cooktops shall include a "dry pan" feature, causing the unit to be shut off if an excessive unit top surface temperature of 600°F (316°C) is reached. (See Section 10.)

7.8.2 Induction cooktops shall include a minimum load determination capability to ensure that only intended objects/cookware will be heated. (See Section 10.)

7.8.3 Induction cooktops shall include internal safety measures to ensure unintended on-states may not occur.

7.8.4 Multi-hob induction cooktops shall include a clear (graphical) depiction of the association of controls with hobs.