



Standard Specification for Ovens, Microwave, Electric¹

This standard is issued under the fixed designation F1360; 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 commercial microwave ovens. These ovens use ultrahigh frequency electromagnetic radiation in the approved industrial, scientific, and medical bands to defrost, heat, and cook food.

1.2 *Limitations*—This specification does not include all types, sizes, groups, styles, and classes of the commodities indicated by the titles of the specification, or that are commercially available, but is intended to cover the types, sizes, groups, styles, and classes that are suitable for general requirements.

1.3 *Oven Selection And Application*—Prior to the use of the classifications given in 4.1, the user agency should ensure they are not restricted by some aspect of the microwave oven design such as a weight or external dimension limitation that would prevent the unrestricted use of the classifications given in 4.1.

1.4 *Microwave Oven Availability*—Although 4.1 lists a wide range of sizes, classes, groups, and styles for commercial types of ovens, not all combinations are available.

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

1.6 The following precautionary caveat pertains to the test method portion only, Section 10, of this specification: *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.*

1.7 *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.*

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 Feb. 1, 2024. Published March 2024. Originally approved in 1991. Last previous edition approved in 2023 as F1360 – 17 (2023). DOI: 10.1520/F1360-24.

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

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

F1317 Test Method for Calibration of Microwave Ovens

2.2 ANSI Standards:⁴

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

C62.41 Guide for Surge Voltages in Low Voltage AC-Power Circuits⁴

WD-6 Wiring Devices—Dimensional Requirements⁴

Z1.4 Sampling Procedures and Tables for Inspection by Attributes⁴

2.3 *International Electrotechnical Commission Standard:*⁴
Standard No. 705 Methods for Measuring the Performance of Microwave Ovens for Household and Similar Purposes

2.4 *National Sanitation Foundation Standard:*⁵

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

2.5 *Underwriters Laboratories Standard:*⁶

ANSI/UL 923 for Microwave Cooking Appliances

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.

⁵ Available from NSF International, P.O. Box 130140, 789 N. Dixboro Rd., Ann Arbor, MI 48113-0140.

⁶ Available from Underwriters Laboratories (UL) LLC, Corporate Progress, 333 Pfingsten Rd., Northbrook, IL 60062.

2.6 *Federal Standard*:⁷

FED-STD-123 Marking for Shipment (Civil Agencies)

2.7 *Military Standards*:⁷

MIL-STD-167-1 Mechanical Vibrations of Shipboard Equipment

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

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

2.8 *Federal Regulations*:⁸

Title 21, Food and Drugs, Subchapter J—Radiological Health

Title 29, Labor, Chapter 17, Occupational Safety and Health Administration, Department of Labor

3. Terminology

3.1 *Definitions of Terms Specific to This Standard*:

3.1.1 *cavity*—that portion of the microwave cooking appliance in which food may be heated, cooked, or defrosted.

3.1.2 *door*—the moveable barrier that permits access to the cavity for placement or removal of food, and whose function is to prevent emission of microwave energy from the passage or opening that provides access to the cavity.

3.1.3 *interlock*—a device or system, either electrical, mechanical, or electromechanical, that serves to prevent exposure to an electric shock, or physical injury, or excessive radiation emission when a door, cover, or access panel is opened or removed.

3.1.4 *magnetron*—a type of microwave energy generator usually used in microwave cooking appliances.

3.1.5 *microwave oven*—a device that uses ultrahigh frequency electromagnetic radiation in the bands of 915 ± 25 and 2450 ± 50 MHz to prepare food.

3.1.6 *microwave radiation emission*—the microwave energy to which persons might be exposed during operation or user servicing of a microwave cooking appliance.

3.1.7 *viewing screen*—that feature of a microwave appliance, usually part of the door assembly, that is opaque to microwave energy but visually transparent to provide for viewing the oven contents.

4. Classification

4.1 Microwave ovens covered by this specification are classified by types, sizes, groups, styles, and classes as follows:

4.1.1 *Type*:

4.1.1.1 *Type I*—Commercial microwave oven.

4.1.1.2 *Type II*—Combination commercial microwave and convection/radiant heat oven.

4.1.2 *Size*:

4.1.2.1 *Size 600*—600 to 1199 W microwave power output.

4.1.2.2 *Size 1200*—1200 to 1799 W microwave power output.

4.1.2.3 *Size 1800*—1800 and greater watt microwave power output.

4.1.3 *Group*:

4.1.3.1 *Group 1*—0.5 to 0.8 ft³ (0.014 m³ to 0.0226 m³) cooking cavity (minimum cooking cavity dimensions of 7.5 shall be met).

4.1.3.2 *Group 2*—Over 0.8 to 1.2 ft³ (0.0226 m³ to 0.034 m³) cooking cavity.

4.1.3.3 *Group 3*—Over 1.2 to 1.5 ft³ (0.034 m³ to 0.042 m³) cooking cavity.

4.1.3.4 *Group 4*—Over 1.5 ft³ (0.042 m³) cooking cavity.

4.1.4 *Style*:

4.1.4.1 *Style 1*—Dial type timer(s).

4.1.4.2 *Style 2*—Digital timer and touchpad controls (computer controlled).

4.1.4.3 *Style 3*—Dial or pushbutton timer(s), or both.

4.1.5 *Class*:

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

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

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

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

4.1.5.5 *Class 5*—120 V, 60 Hz, 1 phase.

4.1.5.6 *Class 6*—220 V, 60 Hz, 3 phase.

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

4.1.5.8 *Class 8*—230 V, 50 Hz, 3 phase.

5. Ordering Information

5.1 *Ordering Data*—Purchasers shall select the preferred options permitted herein and include the following information in procurement documents:

5.1.1 Title, number, and date of this specification,

5.1.2 Type, size, group, class, and style of oven required (see 1.2 and 4.1),

5.1.3 When oven accessories, colors, hardware, fittings, door, cooking cavity, and exterior materials are other than as specified (see 6.2, 6.4, 6.5, and 6.6),

5.1.4 When an automatic oven shutdown is required for vending operation use,

5.1.5 When surge voltage protection is required (see 7.4.2),

5.1.6 When an air intake filter is required (see 7.6),

5.1.7 When a heat control is to be provided (see 7.7),

5.1.8 When convection heating capability is to be provided (see 7.7),

5.1.9 When a temperature sensing probe is to be provided (see 7.7),

5.1.10 When an infrared temperature sensing device is to be provided (see 7.7),

5.1.11 When power level controls are to be other than specified, or when selection of microwave power in 10 % increments is offered (see 7.7.2),

5.1.12 Voltage and frequency (Hz) of input power, if other than specified (see 7.8.1),

5.1.13 When the power cord length is other than specified (see 7.8.2),

⁷ Available from Standardization Documents Order Desk, DODSSP, Bldg. 4, Section D, 700 Robbins Ave., Philadelphia, PA 19111-5098, 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 U.S. Government Printing Office Superintendent of Documents, 732 N. Capitol St., NW, Mail Stop: SDE, Washington, DC 20401.