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An American National Standard

Standard Specification for Slow Cook/Hold Ovens and Hot Food Holding Cabinets[1]

This standard is issued under the fixed designation F2202; 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.

1. Scope

1.1 This specification covers commercial electric slow cook/hold ovens and hot food holding cabinets.

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 The following safety hazards caveat pertains only to the test methods portion, Section 8, 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 and health practices and determine the applicability of regulatory requirements prior to use.*

2. Referenced Documents

2.1 *ASTM Standards:*[2]

D3951 Practice for Commercial Packaging

F760 Specification for Food Service Equipment Manuals

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

F2140 Test Method for Performance of Hot Food Holding Cabinets

2.2 *Military Publications:*[3]

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

MIL-STD-461 Military Standard for Electromagnetic Emission and Susceptibility Requirements for the Control of Electromagnetic Interference

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

2.3 *Other Publications:*

ANSI/UL No. 197 Standard for Commercial Electric Cooking Appliance[4]s

ANSI/NFPA 70 National Electric Code[5]

ANSI B1.1 Unified Inch Screw Threads (UN and UNR Thread Form)[6]

ANSI/NSF 4 Commercial Cooking, Rethermalization and Hot Food Holding and Transport Equipment[7]

3. Terminology

3.1 *Definitions:*

3.1.1 *cook function, n*—an operating mode for the cook/hold oven only. The cook function requires the ability to set a cooking temperature (200 to 325°F) at which the product is cooked. This function is completed at a preset time or when the product is cooked to a preset internal product temperature, measured with a product probe.

3.1.2 *cook/hold oven, n*—a device that can cook food products using natural convective hot air (without a circulating fan or blower). The cook/hold ovens have a typical maximum operating temperature of 325°F. These ovens automatically switch the operating mode from cook to a hold function at the completion of the cook function. The cook and hold functions are defined in 3.1.1 and 3.1.4, respectively.

3.1.3 *hot food holding cabinet (food warmer), n*—a device that can hold precooked food products to preset product holding temperatures. In general, hot food holding cabinet is a device by itself and has a typical maximum operating temperature of 200°F.

3.1.4 *hold function, n*—an operating mode for the cook/hold oven and also the main function of the hot food holding cabinet. The hold function allows holding a precooked product above a safe holding temperature as defined by the NSF guidelines (ANSI/NSF 4). In the case of cook/hold oven, the oven is switched to the hold mode automatically after the cook

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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.

[3] Available from Standardization Documents Order Desk, DODSSP, Bldg. 4, Section D, 700 Robbins Ave., Philadelphia, PA 19111-5098

[4] Available from Underwriters Laboratories (UL), Corporate Progress, 333 Pfingsten Rd., Northbrook, IL 60062.

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

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

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

function is completed. The hold function is always the default mode and remains active as long as electrical power to the cook/hold oven or hot food holding cabinet is ON.

3.1.5 *oven cavity, n*—portion or area of the oven in which food products are heated or cooked.

3.1.6 *pans, n*—containers used to hold the food product in the oven cavity: (*1*) a full-size bake or sheet pan is nominally 18 by 26 by 1 in. (457 by 660 by 25 mm), (*2*) a half -size bake or sheet pan is nominally 18 by 13 by 1 in. (305 by 508 by 25 mm), and (*3*) a steam pan is nominally 12 by 20 by 2.5 in. (305 by 508 by 64 mm).

3.1.7 *product monitoring system, n*—the cook function of the cook/hold oven is monitored for operating parameters such as starting and ending cook time, oven temperature, internal product temperature. Similarly, the hold function of the cook/hold oven and hot food holding cabinet is monitored for starting time and ending time of hold function, starting and ending oven and internal product temperature. The product monitoring system should at a very minimum be capable of providing the above-mentioned information, if specified.

3.1.8 *product probe, n*—a temperature sensing device supplied with cook/hold oven or hot food holding cabinet. The product probe measures the internal temperature of the food product that is cooked or held warm. The product probe may be used to control heat supplied to the oven.

4. Classification

4.1 Cook/hold ovens and hot food holding cabinets covered by this specification are classified by capacity, type, style and electrical class.

4.2 *Capacity*—The capacity of the cook/hold oven and hot food holding cabinet is determined by the number of bake or sheet pans, steam table pans, or a combination thereof that the oven is designed for cooking or holding. For capacity classification, the minimum vertical clearance between rows of pans shall be as follows: bake or sheet pans, 1 in. (25 mm); steam pans, 2.5 in. (64 mm).

4.3 *Type:*

4.3.1 *Type 1*—Cook/hold oven.

4.3.2 *Type 2*—Hot food holding cabinet.

4.4 *Style:*

4.4.1 *Style 1*—Table or countertop units.

4.4.1.1 *Class A*—Half-size single cavity construction; minimum steam pans: 3.

4.4.1.2 *Class B*—Full-size single cavity construction; minimum full size bake or sheet pans: 6.

4.4.2 *Style 2*—Floor standing units.

4.4.2.1 *Class A*—Full-size single compartment, single control; minimum half size bake or sheet pans: 16.

4.4.2.2 *Class B*—Full-size double compartment, double control; minimum full-size bake or sheet pans per cavity: 8.

4.4.3 *Style 3*—Roll-in/mobile units.

4.4.3.1 *Class A*—Roll-in units; minimum full-size bake or sheet pans: 8.

4.4.3.2 *Class B*—Mobile units; minimum steam pans: 16.

4.4.4 This standard does not purport to address all of the styles that may be available, but it provides an overview of the most common types and classes used in the industry.

4.5 *Electrical Class:*

4.5.1 *Class 1*—120 V, 50/60 Hz, 1 phase.

4.5.2 *Class 2*—208 V, 50/60 Hz, 1 phase.

4.5.3 *Class 3*—208 V, 50/60 Hz, 3 phase.

4.5.4 *Class 4*—240 V, 50/60 Hz, 1 phase.

4.5.5 *Class 5*—240 V, 50/60 Hz, 3 phase.

4.5.6 *Class 6*—480 V, 50/60 Hz, 3 phase.

5. Ordering Information

5.1 Orders for cook/hold ovens and hot food holding cabinets in accordance with this specification shall include the following information:

5.1.1 ASTM specification number and date of issue,

5.1.2 Quantity of units to be furnished,

5.1.3 Type,

5.1.4 Style and class, and

5.1.5 Electrical class.

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.

6. Physical Requirements

6.1 *Design and Manufacture*—The cook/hold ovens and hot food holding cabinets shall consist of an oven cavity, sealing type of door(s), heating elements/heating coil, oven racks for physically supporting the steam/sheet pans, and provision to limit condensate/grease drippings on the floor or tabletop surface. The ovens may include a door-sensing mechanism, vents, product probe, grease collection pan, and product monitoring system, if specified.

6.1.1 *Doors*—The door(s) shall have replaceable gaskets.

6.1.2 *Heating System*—The heaters should be attached in a recessed location so no accidental contact can be made. If open resistive coil type heaters are used, it should be electrically insulated from all metal contacts and should be protected from condensate/water dripping.

6.1.3 *Controls:*

6.1.3.1 The following control functions must be provided for the operation of the cook/hold oven:

(1) Able to set oven temperature for cook function and oven temperature for hold function,

(2) Able to set cooking interval-timer or an internal product probe, and

(3) Means to measure or indicate oven cavity temperature.

6.1.3.2 The following control functions must be provided for the operation of the hot food holding cabinet:

(1) Able to set temperature for the hold function, and

(2) Means to measure or indicate oven cavity temperature.

6.1.3.3 If specified, control functions such as door sensors, data/information transfer ports (RS232), product-monitoring capabilities, and water-resistant construction may be provided.

6.1.4 *Accessories*—If specified, accessories such as wire shelves, casters, stacking kit, built-in trims, and locks shall be provided.

6.2 *Standards and Compliance*—The oven(s) and the hot food holding cabinet(s) shall conform to the requirements of ANSI/UL 197 and ANSI/NSF 4, as applicable. Acceptable evidence of meeting these requirements shall be a current listing mark, label, or symbol of a recognized independent testing laboratory and a current listing in the testing laboratory's appropriate publication.

6.2.1 Certification of compliance with the standards cited in this specification shall be provided, if required, in the purchase document.

7. Materials

7.1 *General*—Cook/hold ovens and hot food holding cabinets shall conform to the applicable documents listed in Section 2. Materials used shall be free of defects that would affect the performance or maintainability of individual components or of the overall assembly. Materials not specified herein shall be of the same quality used for the intended purpose in commercial practice. Unless otherwise specified herein, all equipment, material, and components incorporated in the work covered by this specification are to be new or fabricated using materials produced from recovered materials to the maximum extent possible without jeopardizing the intended use. The use of used or rebuilt products is not allowed under this specification unless otherwise specified.

7.2 *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.

7.3 *Threaded Parts*—All threaded parts shall conform to ANSI B1.1.

8. Performance Requirements

8.1 *Performance Testing*—The cook/hold ovens and hot food holding cabinets shall be tested according to Test Method F2140 for its holding performance. The oven performance should meet or exceed the requirements.

9. Sampling and Quality Assurance

9.1 When specified in the contract or purchase order, sampling, testing, and quality assurance of finished units shall be performed in accordance to the requirements specified by ANSI/UL 197.

10. Product Marking

10.1 Each cook/hold oven and hot food holding cabinet shall be provided with an identification plate(s) in compliance with ANSI/UL 197.

11. Instruction Material and Manuals

11.1 Each cook/hold oven and hot food holding cabinet shall be furnished with an instruction manual and material, as may be required. Manuals shall comply with Specification F760.

12. Packaging and Package Marking

12.1 Each cook/hold oven and hot food holding cabinet shall be packaged and packed in accordance with the manufacturer's standard commercial domestic packaging. The package shall be marked showing the name of the product, model number, serial number, and manufacturer's name. When specified, packaging shall be in accordance with the requirements of Practice D3951.

13. Keywords

13.1 cook and hold oven; foodservice equipment; holding oven; hot food holding cabinet; low temperature cook oven; mobile warmer; oven; roll-in warmer; slow cook oven; warmer

SUPPLEMENTARY REQUIREMENTS

FOR FEDERAL/MILITARY PROCUREMENT

Where provisions of this supplement conflict with the main body, this supplement shall prevail.

S1. Manual

S1.1 A manual complying with Specification F760 and Supplement shall be provided.

S2. First Article Inspection

S2.1 When required, the first article inspection shall be performed on one unit. The first article may be either a first production or a standard production item from the supplier's current inventory, provided the item meets the requirements of the specification and is representative of the design, construction, and manufacturing technique applicable to the remaining items to be furnished under the contract.

S3. Data Nameplate

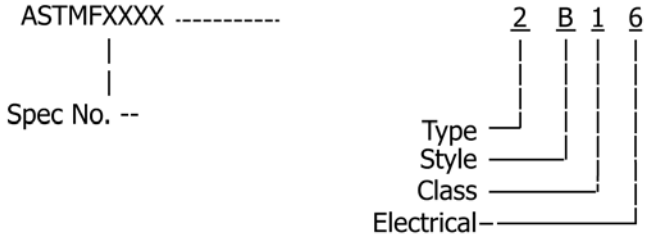
S3.1 When required by purchaser, a nameplate shall contain the following:

S3.1.1 National Stock Number (NSN).

S3.1.2 Government-approved manual number.

S4. Part Identifying Number

S4.1 The following part identifying numbering procedure is for government purposes and does not constitute a requirement for the contractor. These classes are the same as those in Section 4. The PINs to be used for items acquired to this ASTM document are as follows:



Type 1	Cook/hold oven
Type 2	Hot food holding cabinet
Style 1	Table or countertop units
Style 2	Floor standing units
Style 3	Roll-in/mobile units
Class A	Cavity construction—single cavity and half/full size or
Class B	Cavity construction—single/double and full size
Electrical Class 1	120 V, 50/60 Hz, 1 phase
Electrical Class 2	208 V, 50/60 Hz, 1 phase
Electrical Class 3	208 V, 50/60 Hz, 3 phase
Electrical Class 4	240 V, 50/60 Hz, 1 phase
Electrical Class 5	240 V, 50/60 Hz, 3 phase
Electrical Class 6	480 V, 50/60 Hz, 3 phase
Electrical Class 7	220 V, 60 Hz, 3 phase
Electrical Class 8	220 V, 50 Hz, 1 phase
Electrical Class 9	220 V, 50 Hz, 3 phase
Electrical Class 10	380 V, 50 Hz, 3 phase
Electrical Class 11	440 V, 60 Hz, 3 phase (shipboard use)

S5. Preservation, Packaging and Package Marking

S5.1 When other than normal commercial practice or conformance to Practice D3951 is desired, the preservation, packaging and package marking requirements shall be stated in the purchase order or contract.

S6. Naval Shipboard Requirements

S6.1 The following requirements are specific to Type 2 hot food holding cabinets/warmers:

S6.2 *Electromagnetic Compatibility*— When specified, electric Type 2 hot food holding cabinets/warmers designed and equipped for electromagnetic compatibility in accordance with MIL-STD-461, for surface ships and for submarines. The contractor shall furnish written certification that the equipment meets the emission and susceptibly requirements when tested in accordance with test methods of MIL-STD-461.

S6.3 *Inclined Operation*— When specified, the units shall operate satisfactorily, along with no spillage of product, when a Type 2 hot food holding cabinet/warmer is inclined for 30 s at an angle of 15° each side of the vertical in each of two vertical planes at right angles to each other. This test shall be run for 30 complete cycles in each of the two vertical planes.

S6.4 *Environmental Suitability*—Type 2 hot food holding cabinet/warmer shall be capable of withstanding ship's vibration and motion. When specified, the unit, under normal operating conditions, shall be tested in accordance with MIL-STD-167/1, Type I equipment. The unit shall be secured to the test machine in the same manner that it will be secured on board ship. The unit shall operate without malfunction.

S6.5 *Access*—Unless otherwise specified, units for naval surface vessels shall pass through a 26 in. (66 cm) wide and 66 in. (168 cm) high shipboard hatch without major disassembly. Equipment for submarines shall pass through a 25–in. (64–cm) diameter circular hatch without major disassembly.

S6.6 *Service Access*— The unit shall be designed for access of all serviceable components from the front of the unit or shall be designed to slide out the entire oven to access the components.

S6.7 *Power*— Unless otherwise specified, Type 2 hot food holding cabinet/warmers shall be supplied for 115/120 V, 50/60 Hz, 1 phase and conforming to MIL-STD-1399/300 standard.

S6.8 *High Voltage Label*—If a equipment is rated 440 VAC or higher, a "Danger High Voltage" label shall be affixed to the equipment outer case assembly, on or adjacent to each service access cover adjacent to one of the fasteners that secure the cover. The warning label shall also be placed near the high voltage components inside the equipment. The label shall include but is not limited to:

S6.8.1 A warning of high voltage,

S6.8.2 The power supply must be disconnected before servicing,

S6.8.3 Access covers must be in place during use, and

S6.8.4 Service should be done by authorized personnel.

S6.9 *Human Factors Criteria*—Human factors engineering criteria principles and practices, as defined in Practice F1166, shall be used in the design.

S6.10 *Instructions*—Instructions for startup, operation, and shutdown shall be provided at a clearly visible location in front of the Type 2 hot food holding cabinet/warmer oven.

S6.11 *Manufacturer's Certification*—If the manufacturer has successfully furnished the same equipment on a previous contact within the past three years, further inspection will not be required. The manufacturer shall certify in writing that the equipment to be furnished is the same as that previously furnished and approved and that no major design changes have been made to the equipment.

S6.12 *Accessories*— Items such as locking casters, stand, stacking kit, etc. should be supplied as specified.

APPENDIX

(Nonmandatory Information)

X1. ADDED FEATURES

X1.1 Typically, features are added to basic models at an additional cost. Any options that are required can be written into the procurement contract as desired.

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New York, NY 10018

ASTM
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NFPA
National Fire Protection Association
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NSF
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