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An American National Standard

Standard Specification for Reach-in Refrigerators, Freezers, Combination Refrigerator/Freezers, and Thaw Cabinets[1]

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1. Scope

1.1 This specification covers the basic design and function of temperature regulated, continuous duty commercial, and marine refrigerators, freezers, combination refrigerator/freezers and thaw cabinets. The equipment will be stationary and of a vertical or horizontal type.

1.2 Equipment covered under this specification may contain a substance (or be manufactured with a substance) that harms public health and environment by destroying ozone in the upper atmosphere. This specification does not purport to address environmental regulations. It is the responsibility of the user of this specification to comply with environmental regulations.

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

1.4 *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 limitations prior to use.*

2. Referenced Documents

2.1 *ASTM Standards:*[2]

A167 Specification for Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet, and Strip

B280 Specification for Seamless Copper Tube for Air Conditioning and Refrigeration Field Service

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/UL Standards:*[3]

ANSI/UL 303 Refrigeration and Air-Conditioning Condensing and Compressor Units

ANSI/UL 471 Commercial Refrigerators and Freezers

ANSI/UL 866 Outlet Boxes and Fittings for Use in Hazardous Locations, Class I, Groups A, B, C, and D and Class II, Groups E, F, and G

ANSI/UL 969 UL Standard for Marking and Labeling Systems

2.3 *NSF/ANSI International Standards:*[4]

NSF/ANSI 7 Food Service Refrigerators and Freezers

NSF/ANSI 51 Plastic Materials and Components Used in Food Service

2.4 *ASHRAE Standard:*[5]

ASHRAE 15 Safety Code for Mechanical Refrigeration

2.5 *NFPA Standard:*[6]

NFPA 70 National Electrical Code, Article 500, Hazardous Locations

2.6 *Canada National Standard/Canadian Standard:*[7]

CAN/CSA C22.2 #120-M91 Refrigeration Equipment

2.7 *Federal and Military Documents:*[8]

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

MIL-R-12323 Refrigerators and Related Equipment, Packaging and Packing

[1] This 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.

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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 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 American Society of Heating, Refrigerating, and Air-Conditioning Engineers, Inc. (ASHRAE), 1791 Tullie Circle, NE, Atlanta, GA 30329.

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

[7] Available from Canadian Standards Association (CSA), 178 Rexdale Blvd., Toronto, ON M9W1R3, Canada.

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

3. Terminology

3.1 *Definitions:*

3.1.1 *ambient air temperature*—temperature of the air surrounding the exterior of the cabinet or machinery compartment.

3.1.2 *automatic defrost*—process where heat is automatically introduced into the cooling coils to dissipate any ice or frost buildups on the coil.

3.1.3 *capacity*—term that refers to the total cubic foot area of the interior storage.

3.1.4 *condensing units*—each unit shall consist of a compressor, condenser, receiver (if required), fan, and motor.

3.1.5 *evaporator coils (forced air)*—forced circulation type cooling unit consists of a cooling coil, fan with motor, and enclosing casing.

3.1.6 *evaporator coils (static)*—refrigerated inner liner with the refrigerating coils incorporated in or attached to the walls of the unit.

3.1.7 *explosion proof*—refers to a specific requirement for equipment used in hazardous atmospheres.

3.1.8 *horizontal cabinet*—any cabinet of undercounter or counter height design.

3.1.9 *modular*—particular method of cabinet construction, which allows the cabinet and all of its components to be dissembled and reassembled for ease of installation.

3.1.10 *positive latching hardware*—any latching mechanism that requires that the latch be disengaged before the door can be opened.

3.1.11 *thaw*—equipment designed to accelerate the defrosting process of perishable products.

3.1.12 *undercounter*—cabinet which has a maximum height of no more than 36 in. (916 mm).

3.1.13 *unitary*—single piece cabinet construction.

3.1.14 *vertical cabinet*—any cabinet with single or multiple door arrangements whose height is its greatest dimension and is in excess of 36 in. (914 mm).

4. Classification

4.1 *General*—Refrigerators, freezers, combination refrigerator/freezers or thaw cabinets covered by this specification are classified by types, grades, classes, styles, and sizes.

4.2 *Type:*

4.2.1 *Type I*—Refrigerator.

4.2.2 *Type II*—Freezer.

4.2.3 *Type III*—Combination refrigerator/freezer.

4.2.4 *Type IV*—Thaw cabinet.

4.3 *Grades:*

4.3.1 *Grade 1*—Vertical cabinet.

4.3.2 *Grade 2*—Horizontal cabinet.

4.4 *Classes:*

4.4.1 *Class 1*—Modular construction.

4.4.2 *Class 2*—Unitary (single piece) construction.

4.5 *Sizes*—The following tables depict the sizes of the various types of units. This specification does not purport to address all of the sizes that may be available, but is an overview of the most common sizes used in the industry today.

4.5.1 *Vertical Cabinet, Style 1 (Refrigerator or Freezer):*

Sizes ft^3 (L)	Net Capacity Storage ft^3 (L)	Maximum Width in. (mm)	Maximum Overall Depth in. (mm)	Maximum Height without Legs in. (mm)
5 (142)	4 (113)	33 (838)	27 (686)	64 (1626)
10 (283)	9 (255)	32 (813)	29 (737)	66 (1676)
15 (425)	14 (396)	39 (991)	29 (737)	72 (1829)
20 (566)	19 (538)	51 (1295)	29 (737)	74 (1880)
30 (850)	29 (821)	58 (1473)	32 (813)	74 (1880)
40 (1133)	39 (1104)	68 (1727)	34 (864)	74 (1880)
65 (1841)	64 (1812)	86 (2184)	34 (864)	74 (1880)
85 (2407)	84 (2379)	112 (2845)	34 (864)	74 (1880)

4.5.1.1 Depth shown is maximum overall with door installed.

4.5.1.2 Height does not include legs when applicable.

4.5.2 *Horizontal Cabinet, Style 2 (Refrigerator or Freezer):*

Sizes ft^3 (L)	Net Capacity Storage ft^3 (L)	Maximum Width in. (mm)	Maximum Overall Depth in. (mm)	Maximum Height without Legs in. (mm)
5 (142)	4.5 (127)	40 (1016)	28 (711)	28 (711)
10 (283)	8 (227)	49 (1245)	28 (711)	28 (711)
20 (566)	18 (510)	84 (2134)	28 (711)	28 (711)
30 (850)	27 (765)	115 (2921)	28 (711)	28 (711)

4.5.2.1 Depth shown is maximum overall with door installed.

4.5.2.2 Height does not include legs when applicable.

4.5.3 *Combination Refrigerator/Freezer Cabinet:*

Sizes ft^3 (L)	Total Capacity Storage ft^3 (L)	Low Temperature Capacity ft^3 (L)	Maximum Width in. (mm)	Maximum Overall Depth in. (mm)	Maximum Height without Legs in. (mm)
10 (283)	9 (255)	3 (85)	31 (787)	29 (737)	66 (1676)
15 (425)	14 (396)	6 (170)	39 (991)	29 (737)	72 (1829)
20 (566)	19 (538)	8 (227)	51 (1295)	29 (737)	74 (1880)
30 (850)	29 (821)	13 (368)	64 (1626)	32 (813)	74 (1880)
40 (1133)	39 (1104)	18 (510)	68 (1727)	34 (864)	74 (1880)

4.5.3.1 Depth shown is maximum overall with door installed.

4.5.3.2 Height does not included legs when applicable.

4.5.4 *Thaw Cabinets:*

Size	Maximum Width in. (mm)	Maximum Depth in. (mm)	Maximum Height in. (mm)
One Section	48 (1219)	32 (813)	84 (2134)
Two Section	72 (1829)	32 (813)	84 (2134)

4.6 *Styles:*

4.6.1 *Style 1*—Manual loading, stationary or fixed shelving.

4.6.2 *Style 2*—Roll-in cart loading.

5. Ordering Information

5.1 *Ordering Data*—Purchasers shall select refrigerators, freezers, combination refrigerator/freezers or thaw cabinet equipment 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, style, and size of unit required,

5.1.3 Desired exterior and interior finishes,