



Standard Specification for Freezers, Ice Cream, Soft Serve, Shake¹

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This standard has been approved for use by agencies of the U.S. Department of Defense.

1. Scope

1.1 This specification covers commercial ice cream, soft serve, and shake freezers, which freeze and dispense frozen product (dairy, yogurt, custard, etc.) on a continuous basis. Included in this specification are conventional and heat-treatment freezers.

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 standard to comply with environmental regulations (see 7.5).

1.3 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.

1.4 *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

[A176 Specification for Stainless and Heat-Resisting Chromium Steel Plate, Sheet, and Strip \(Withdrawn 2015\)](#)³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](#)

¹ This specification is under the jurisdiction of ASTM Committee F26 on Food Service Equipment and is the direct responsibility of 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 The last approved version of this historical standard is referenced on www.astm.org.

[D3951 Practice for Commercial Packaging](#)

[F760 Specification for Food Service Equipment Manuals](#)

[F1166 Practice for Human Engineering Design for Marine Systems, Equipment, and Facilities](#)

[F2795 Test Method for Performance of Self-Contained Soft Serve and Shake Freezers](#)

2.2 *ANSI/UL Standard:*⁴

[Standard 621 for Ice Cream Makers](#)

2.3 *ANSI/NSF International Standard:*⁵

[Standard 6 for Dispensing Freezers](#)

[Standard 51 for Plastic Materials and Components Used in Food Equipment](#)

2.4 *ANSI Standards:*⁶

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

[Z1.4 Sampling Procedures and Tables for Inspection by Attributes](#)

2.5 *Military Standards:*⁷

[MIL-R-12323 Refrigerators and Related Equipment, Packaging and Packing](#)

[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](#)

3. Terminology

3.1 *corrosion-resistant steel, n*—corrosion-resisting steel shall conform to any of the 300 Series of Specification [A240/A240M](#), or the 400 Series of Specification [A176](#), where permitted by ANSI/NSF Std. 6.

⁴ Available from UL LLC, Inc., 333 Pfingsten Rd., Northbrook, IL 60062.

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

⁶ Available from American National Standards Institute, 11 W. 42nd St., 13th Floor, New York, NY 10036.

⁷ Available from Standardization Documents Order Desk, Bldg. 4 Section D, 700 Robbins Ave., Philadelphia, PA 19111-5094, Attn: NPODS.

3.2 *combination freezer, n*—a soft serve and shake machine employing two main compressors and two main condensers with one or more condenser fan motors and two separate freezer doors (or dispense head) (that is, one for soft serve and another for shake), designed to dispense shake and soft serve product in the same footprint.

3.3 *overrun, n*—the increase in volume due to the addition of air to frozen softserve and shake products, calculated by this formula:

$$\text{Overrun} = (\text{Weight of liquid mix} - \text{Weight of frozen product}) / \text{Weight of frozen product} \quad (1)$$

3.4 *refrigeration system type, n*—

3.4.1 *air cooled freezer, n*—a soft serve or shake freezer that uses air passing over a main condenser in the refrigeration system.

3.4.2 *heat-treatment freezers, n*—operate as conventional freezers and heat daily all product to 150°F (66°C) minimum for at least 30 min to destroy undesirable microorganisms.

3.4.3 *water-cooled freezer, n*—a soft serve or shake freezer which uses water passing through a twin tube condenser in the freezer cylinder refrigeration system.

3.5 *single spout freezer, n*—a freezer with a single main compressor and single main condenser with one or more condenser fan motors with single spout and a freezer door.

3.6 *twin single spout freezer, n*—a freezer employing either of the below configurations (Twin Twist freezer “A” or “B”) but with two single spout doors which can only dispense from one Freezer Cylinder.

3.7 *twin twist freezer “A”, n*—a freezer using two main compressors and two main condensers with one or more condenser fan motors and a freezer door (3 spout) which the center spout draws from both freezer cylinders.

3.8 *twin twist freezer “B”, n*—a freezer with single main compressor and single main condenser, with one or more condenser fan motors, with a freezer door (3 spout) which the center spout draws product from both freezer cylinders.

4. Classification

4.1 *General*—Ice cream freezers covered by this specification are classified by Type, Style (was group), Size/Capacity (was size), Class (new – was covered under 7.1.1 – Electrical Input), Grade (updated to include what was Class), and Group (new –added to cover mounting options which should be part of the specification section for this equipment).

4.2 *Type:*

4.2.1 *Type I*—Commercial soft-serve freezer.

4.2.2 *Type II*—Commercial shake freezer.

4.2.3 *Type III*—Combination commercial soft-serve and shake freezer.

4.3 *Style:*

4.3.1 *Style 1*—One freezing cylinder.

4.3.2 *Style 2*—Two freezing cylinders.

4.3.3 *Style 3*—Three freezing cylinders.

4.3.4 *Style 4*—Four freezing cylinders.

4.4 *Size/Capacity:*

4.4.1 *Size/Capacity 1*—1.0 to 4.9 gal/h (3.8 to 18.6 L/h) finished product output.⁸

4.4.2 *Size/Capacity 2*—5.0 to 9.9 gal/h (18.9 to 37.5 L/h) finished product output.⁸

4.4.3 *Size/Capacity 3*—10.0 to 14.9 gal/h (37.9 to 56.4 L/h) finished product output.⁸

4.4.4 *Size/Capacity 4*—15.0 to 19.9 gal/h (56.8 to 75.3 L/h) finished product output.⁸

4.4.5 *Size/Capacity 5*—20.0 to 29.9 gal/h (75.7 to 113.2 L/h) finished product output.⁸

4.4.6 *Size/Capacity 6*—30.0 to 39.9 gal/h (113.6 to 151.0 L/h) finished product output.⁸

4.5 *Class:*

4.5.1 *Class a*—120 V, 60 Hz, 1 Ph.

4.5.2 *Class b*—208 V, 60Hz, 1 Ph.

4.5.3 *Class c*—240 V, 60 Hz, 1 Ph.

4.5.4 *Class d*—208 to 230 V, 60 Hz, 1 Ph.

4.5.5 *Class e*—208 V, 60Hz, 3 Ph.

4.5.6 *Class f*—240 V, 60 Hz, 3 Ph.

4.5.7 *Class g*—208 to 230 V, 60 Hz, 3 Ph.

4.5.8 *Class h*—460 V, 60Hz, 3 Ph.

4.5.9 *Class i*—480 V, 60 Hz, 3 Ph.

4.5.10 *Class j*—230 V, 50 Hz, 3 Ph.

4.5.11 *Class k*—380 to 415 V, 50 Hz, 3 Ph.

4.5.12 *Class m*—380 V, 60 Hz, 3 Ph.

4.5.13 *Class n*—440 V, 60 Hz, 3 Ph (shipboard use).

4.6 *Grade:*

4.6.1 *Grade A*—Non-heat-treatment freezer with air-cooled condenser.

4.6.2 *Grade B*—Non-heat-treatment freezer with water-cooled condenser.

4.6.3 *Grade C*—Heat-treatment freezer with air-cooled condenser.

4.6.4 *Grade D*—Heat-treatment freezer with water-cooled condenser.

4.7 *Group:*

4.7.1 *Group a*—Floor with caster.

4.7.2 *Group b*—Floor with legs.

4.7.3 *Group c*—Floor with brackets.

4.7.4 *Group d*—Countertop with legs.

4.7.5 *Group e*—Countertop with brackets.

4.7.6 *Group f*—Countertop with seal (sealed to countertop).

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, style, size/capacity, class, grade, and group of freezer required (see 4.1);

5.1.3 When hardware and fittings are to be other than as specified (see 6.2);

5.1.4 If sampling and inspection procedures are required, see 10.2;

⁸ Per freezing cylinder. Combination freezers may require two size ratings, for example: 15 soft serve/20 shake.