



# Standard Specification for Bread Slicing Machines<sup>1</sup>

This standard is issued under the fixed designation F2646; 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 ( $\epsilon$ ) indicates an editorial change since the last revision or reapproval.

## 1. Scope

1.1 This specification covers commercial, electrically operated, bread slicing machines.

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 *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:<sup>2</sup>

- A240/A240M Specification for Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications
- 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 Standards:<sup>3</sup>

- Z1.4 Sampling Procedures and Tables for Inspection by Attributes

### 2.3 BISSC Standards:<sup>4</sup>

- ANSI/BISSC Z50.2–2003 Sanitation Standard for the Design of Bakery Equipment

### 2.4 NEMA Standards:<sup>5</sup>

- MG 1 Motors and Generators

### 2.5 NSF/ANSI Standards:<sup>6</sup>

- NSF/ANSI 8 Commercial Powered Food Preparation Equipment

### 2.6 ANSI/UL Standards:<sup>7</sup>

- ANSI/UL 763 Motor-Operated Commercial Food Preparing Machines

- ANSI/UL 969 Marking and Labeling Systems

### 2.7 Federal and Military Documents:<sup>8</sup>

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

## 3. Terminology

### 3.1 Definitions:

3.1.1 *bread slicing machine, n*—machine with a motor-driven knife or knives for slicing the bread and having an infeed to position the whole loaf for slicing and an outfeed area for holding the sliced loaf awaiting manual removal from the machine.

3.1.2 *recovered materials, n*—materials that have been collected or recovered from solid waste and reprocessed to become a source of raw materials, as opposed to virgin raw materials.

<sup>1</sup> This specification is under the jurisdiction of ASTM Committee F26 on Food Service Equipment and is the direct responsibility of Subcommittee F26.04 on Mechanical Preparation Equipment.

Current edition approved Dec. 1, 2021. Published December 2021. Originally approved in 2007. Last previous edition approved in 2016 as F2646 – 16. DOI: 10.1520/F2646-21.

<sup>2</sup> For referenced ASTM standards, visit the ASTM website, [www.astm.org](http://www.astm.org), or contact ASTM Customer Service at [service@astm.org](mailto:service@astm.org). For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

<sup>3</sup> Available from American National Standards Institute (ANSI), 25 W. 43rd St., 4th Floor, New York, NY 10036, <http://www.ansi.org>.

<sup>4</sup> Available from Baking Industry Sanitation Standards Committee (BISSC), P.O. Box 3999, Manhattan, KS 66505-3999, <http://www.bissc.org>.

<sup>5</sup> Available from National Electrical Manufacturers Association (NEMA), 1300 N. 17th St., Suite 1752, Rosslyn, VA 22209, <http://www.nema.org>.

<sup>6</sup> Available from NSF International, P.O. Box 130140, 789 N. Dixboro Rd., Ann Arbor, MI 48113-0140, <http://www.nsf.org>.

<sup>7</sup> Available from Comm 2000, 1414 Brook Dr., Downers Grove, IL 60515, <http://www.comm-2000.com>.

<sup>8</sup> Available from Standardization Documents Order Desk, DODSSP, Bldg. 4, Section D, 700 Robbins Ave., Philadelphia, PA 19111-5098, <http://www.dodssp.daps.mil>.

#### 4. Classification

4.1 *General*—Bread slicing machines covered by this specification are classified by type, class, and style.

##### 4.2 *Type*:

4.2.1 *Type I*—Bread slicing machine, gravity feed,

4.2.2 *Type II*—Bread slicing machine, mechanical single-loaf feed, and

4.2.3 *Type III*—Bread slicing machine, mechanical multiple-loaf feed.

##### 4.3 *Class*:

4.3.1 *Class I*—Reciprocating knife,

4.3.2 *Class II*—Circular knife,

4.3.3 *Class III*—Sickle knife, and

4.3.4 *Class IV*—Continuous (band) knife.

##### 4.4 *Style*:

4.4.1 *Style I*—Countertop or stand mounted,

4.4.2 *Style 2*—Floor mounted, and

4.4.3 *Style 3*—Portable.

#### 5. Ordering Information

5.1 *Ordering Data*—Purchasers shall select the bread slicing machine 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, class, and style of machine required,

5.1.3 Quantity to be furnished,

5.1.4 Electrical power supply characteristics: voltage, phase, frequency (see 7.2.1),

5.1.5 Accessory equipment, options, spare parts, and maintenance parts required,

5.1.6 When Federal/Military procurement is required, review and implement the applicable supplementary requirements (see S1 through S8),

5.1.7 When specified, the purchaser shall be furnished certification that samples representing each lot have been either tested or inspected as directed in this specification and the requirements have been met (when specified, a copy of the test results shall be furnished),

5.1.8 Level of preservation and packing required if other than as stated in Practice D3951 (see 18.1),

5.1.9 Labeling requirements (if different than 16.1), and

5.1.10 Whether the equipment shall meet the requirements of NSF/ANSI, ANSI/UL, or BISSC standards, or a combination thereof.

#### 6. Material

6.1 *General*—Materials used in the construction of bread slicing machines shall comply with the applicable requirements of NSF/ANSI 8 or ANSI/BISSC Z50.2-2003, or both. Materials used shall be free from 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. None of the above shall be interpreted to mean that the use of used or rebuilt products are allowed under this specification unless otherwise specified.

#### 7. Design and Construction

7.1 *General*—Bread slicing machines shall be delivered assembled, ready for mounting, connection to electricity, and use as applicable. The bread slicing machine shall be simple to disassemble and reassemble without special tools or equipment. It shall meet the then current requirements of NSF/ANSI 8 or ANSI/BISSC Z50.2-2003, or both, and ANSI/UL 763.

7.1.1 The bread slicing machine shall be designed to transversely slice loaves, which are a minimum of 12 in. (304 mm) long and 4½ in. square (114 mm). Slices shall be cleanly and evenly cut to the thickness specified. A crumb tray shall be provided which is suitable for catching crumbs that fall from the slicer. The crumb tray may be a pan or drawer. It shall be attached to the machine by mechanical means, and shall be readily removable for cleaning. Gravity feed and mechanical multiple-loaf feed models shall be equipped with loaf guides consisting of two full-length members one on each side of the chute. The separation between the two members shall be adjustable from 6 in. (152 mm) to a maximum of 16 in. (406 mm). Each member shall be provided with a mechanical clamping device or devices for rapid manipulation by hand and securely locating the member in the desired position. Countertop and stand-mounted models shall be furnished with 4 non-skid feet or be mechanically fastened to the stand. No tools or excessive force shall be required to make adjustments on the bread slicing machine, and during adjustment, there shall be no binding or jamming of moving parts. The bread slicing machine shall be capable of slicing both soft and hard loaves without jamming or stalling, and without tearing or crushing the loaves. There shall be no marked change in the shape of the loaf after being sliced.

7.1.2 *Compliance with NSF/ANSI 8*—Acceptable evidence of meeting the requirements of NSF/ANSI 8 shall be the NSF certification mark on the bread slicing machine and listing in the current edition of the NSF Official Listing of Food Service Equipment, a certified test report from a recognized independent testing laboratory acceptable to the user, or a certificate issued by NSF under its special one time contract evaluation/certification service.

7.1.3 *Compliance with ANSI/BISSC Z50.2-2003*—Acceptable evidence of meeting the requirements of ANSI/BISSC Z50.2-2003 shall be a photocopy of the current BISSC certificate of authorization for the bread slicing machine or a certified test report from a recognized, independent testing laboratory acceptable to the user.

7.1.4 *Compliance with ANSI/UL 763*—Acceptable evidence of meeting the requirements of ANSI/UL 763 shall be a UL Listing mark on the bread slicing machine, or a certified test report from a recognized, independent testing laboratory acceptable to the user.

##### 7.2 *Electrical Requirements*:

7.2.1 *Power Supply*—The bread slicing machine shall be furnished with a 6-ft. (1.83-m) minimum length cord and plug with ground or shall be double-insulated. The cord and plug shall be sized for and be the appropriate configuration for the specified electrical characteristics.

7.2.2 *Motor*—Electric motors used on bread slicing machines be of the continuous duty type and shall conform to

NEMA MG 1 and ANSI/BISSC Z50.2-2003. The motor shall be of sufficient horsepower and speed to meet the production capacity.

**7.3 Motor Controller**—The motor shall be controlled by an ON-OFF switch accessible to the operator. The switch shall either be provided with a guard or located to help prevent accidental actuation.

**7.4 Cutting Blade**—The cutting blade(s) shall be heat-treated carbon steel or heat-treated stainless steel conforming to Specification **A240/A240M**. The hardness of the cutting blade, measured within ¼ in. (6.4 mm) of the cutting edge, shall be not less than 50 nor more than 60 on the Rockwell C scale.

## 8. Performance Requirements

8.1 When tested in accordance with Section 11, the bread slicing machine shall operate without failure of the major functional components.

## 9. Workmanship, Finish and Appearance

9.1 All components and assemblies of the bread slicing machine shall be free from dirt and other extraneous materials, burrs, slivers, tool and grind marks, dents, and cracks. Castings, molded parts and stampings shall be free of voids, sand pits, blow holes, and sprues. External surfaces shall be free from kinks, dents, and other deformities. Forming and welding shall not cause damage to the metal and shall be done neatly and accurately.

## 10. Sampling

10.1 A representative production model shall be selected for performance testing.

10.2 When specified in the contract or purchase order, sampling for inspection shall be performed in accordance with ANSI Z1.4.

## 11. Test Methods

11.1 *Operational Test*—The bread slicing machine shall be operated, without a load, and meet the following requirements as applicable. Inability of the machine to operate as specified herein shall constitute failure of the test.

11.1.1 Proper operation of motor starting and stopping devices,

11.1.2 Proper operation of adjusting and operating devices within the limits specified in 7.1 without binding, excessive friction or excessive play.

11.1.3 Proper operation of parts,

11.1.4 No overheating of bearings, and

11.2 *Performance Test*—One dozen soft crusted loaves and one dozen hard crusted loaves, each measuring 12 in. (305 mm) to 14 in. (356 mm) long and 4 in. (102 mm) to 5 in. (127 mm) square shall be required for this test. No special adjustment should be made to the bread slicing machine during this test. The bread slicing machine shall cleanly and evenly slice the bread completely through to the specified thickness. There shall be no marked change in the shape of the loaf after being

sliced. Noncompliance with the requirements of 7.1 shall constitute failure of this test.

## 12. Sampling and Quality

12.1 When specified in the contract or purchase order, sampling for inspection shall be performed in accordance with ANSI Z1.4, which shall supersede implied sampling requirements stated elsewhere in this specification.

## 13. Inspection

13.1 *End Item Testing*—When specified in the contract or purchase order, one production item, selected at random from each lot, shall be tested by the manufacturer in accordance with the applicable paragraphs of Section 11. Performance results shall be recorded in a permanent file, and the information shall be available to the customer upon demand. Any subsequent change in design that would relate to performance shall require a new test record.

13.2 *Component and Material Inspection*—Incoming components and materials shall be inspected by the manufacturer to the design parameters as specified on drawings or purchase documents, or both.

## 14. Rejection and Rehearing

14.1 Material that fails to conform to the requirements of this specification may be rejected. Rejection should be reported to the producer or supplier promptly and in writing. In case of dissatisfaction with the results of the test, the producer or supplier may make claim for a rehearing.

## 15. Certification

15.1 When specified in the purchase order or contract, the purchaser shall be furnished certification that samples representing each lot have been either tested or inspected as directed in this specification and the requirements have been met. When specified in the purchase order or contract, a report of the test results shall be furnished (see 5.1.7).

## 16. Product Marking

16.1 Each bread slicing machine shall be provided with an identification plate securely affixed to the item. The plate shall be molded, die-stamped, etched on metal, indelibly stamped on labels secured by pressure-sensitive adhesive, or other means as specified in the purchase document. If pressure-sensitive labels are used, the requirements of ANSI/UL 969 or equivalent shall be met. The marking shall be durable and shall be legible and readily visible after the item is installed in the intended manner. The identification plate shall include the name, brand, or trademark of the manufacturer of such known character to be readily traceable to the manufacturer and shall state the electrical characteristics (voltage, amperage, and frequency) of the equipment. The plate shall also bear a distinctive number, letter or number, and letter code that will identify an individual item or production lot of a limited group of items. In addition, such information required by UL and NSF or BISSC as applicable, shall appear on the identification plate. The plate shall be located on an external surface on a permanent part of the unit.