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Standard Specification for Food Processors, Electric¹

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1. Scope

1.1 This specification covers commercial food processors intended for bench, table, or floor mounting.

~~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.~~

1.2 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.

1.3 The following safety hazards caveat pertains only to the test methods portion, Section 9, 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 limitations prior to use.*

2. Referenced Documents

2.1 *ASTM Standards:*²

D 3951 Practice for Commercial Packaging

F 760 Specification for Food Service Equipment Manuals

F 1166 Practice for Human Engineering Design for Marine Systems, Equipment, and Facilities

~~2.2 ANSI Standards:~~ ANSI Standards:³

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

ANSI S1.13 Methods for Measurement of Sound Pressure Levels

~~2.3 NSF International Standard:~~ NSF International Standard:⁴

NSF/ANSI 8 Commercial Powered Food Preparation Equipment

~~2.4 UL Standards:~~ UL Standards:⁵

ANSI/UL 763 Motor-Operated Commercial Food Preparing Machines

ANSI/UL 969 Marking and Labeling Systems

~~2.5 Military Standards:~~ Military Standards:⁶

MIL-STD-167/1 Mechanical Vibration 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 *Definitions:*

3.1.1 ~~bowl~~ bowl, *n*—the container, with interlocked cover, used to hold a fixed quantity of food product.

3.1.2 ~~discharge chute~~ discharge chute, *n*—the part of the housing, generally located at the front of the unit, that directs the cut product downward for collection into a pan and also helps prevent operator contact with the backside of the slicer or shredder plate.

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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* Vol 15.09 volume information, refer to the standard's Document Summary page on the ASTM website.

³ Annual Book of ASTM Standards, Vol 15.08.

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

⁵ Annual Book of ASTM Standards, Vol 01.07.

⁶ Available from NSF International, P.O. Box 130140, 789 N. Dixboro Rd., Ann Arbor, MI 48113-0140.

⁷ Available from American National Standards Institute (ANSI), 25 W. 43rd St., 4th Floor, New York, NY 10036.

⁸ Available from comm2000, 1414 Brook Dr., Downers Grove, IL 60515.

⁹ Available from NSF International, P.O. Box 130140, 789 N. Dixboro Rd., Ann Arbor, MI 48113-0140.

¹⁰ Available from Standardization Documents Order Desk, Bldg. 4 Section D, 700 Robbins Ave., Philadelphia, PA 19111-5094, Attn: NPODS.

3.1.3 *feed head*feed head, n—the device for holding food product and directing it into the slicer or shredder plate. The feed head incorporates a food pusher that is interlocked to prevent motor operation whenever the pusher is not in the closed position over the slicer or shredder plate.

3.1.4 *food processor, n*—machine that reduces food product to a small particle size and uniform geometric shape. Reduction of food product is accomplished by the continuous, manual feeding of uncut food product into contact with a rotating plate or slicing/shredding a quantity of food product in a closed bowl. The food processor shall consist of the following principal parts: motor with housing, product hopper or bowl, hopper/bowl cover with interlock, plates and grids, and controls.

3.1.5 *food pusher*food pusher, n—the hand-operated device used to maintain the uncut food product in contact with the slicer or shredder plate.

3.1.6 *shredder and slicer plates*shredder and slicer plates, n—these devices attach to the food processor drive shaft and convert the rotary motion of the plate into the desired action on the foodstuffs within the feed head.

4. Classification

4.1 Food processors covered in this specification are of the following types, sizes, and classes:

4.2 *Types:*

4.2.1 *Type I*—This machine shall have a hopper of the continuous, manual-feed type.

4.2.1.1 *Size 1*—Slicer/shredder plates less than 8 in. in diameter.

4.2.1.2 *Size 2*—Slicer/shredder plates 8 in. or greater in diameter.

(1) *Class 1*—Table- or bench-mounted food processor.

(2) *Class 2*—Floor-mounted food processor.

4.2.2 *Type II*—This machine shall have a closed-bowl type of hopper.

4.2.2.1 *Size 1*—Bowl volume less than 4 qt (3.8 L). The machine shall be table- or bench-mounted.

4.2.2.2 *Size 2*—Bowl volume between 4 and 8 qt (3.8 and 7.6 L). The machine shall be table- or bench-mounted.

4.2.2.3 *Size 3*—Bowl volume shall be 30 qt (28.4 L). The machine shall be floor-mounted.

4.2.2.4 *Size 4*—Bowl volume shall be 45 qt (42.6 L). The machine shall be floor-mounted.

5. Ordering Information

5.1 Purchasers should select the food processor 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, size, and class of the food processor required (see Section 4),

5.1.3 Electrical power supply characteristics (current, voltage, phase, frequency),

5.1.4 Accessory equipment, options (slicer, dicer, grater, julienne, and shredder plates), spare parts, and maintenance parts required,

5.1.5 Labeling requirements (if different from Section 1513),

5.1.6 Quantity of food processors to be furnished,

5.1.7 Certification, if required, and

5.1.8 Any special requirements or deviations from this specification.

5.1.6 Quantity of food processors to be furnished, and

5.1.7 Any special requirements or deviations from this specification.

5.1.8 When specified, the purchaser shall be furnished certification that samples representing each lot have been 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.

5.1.9 When Federal/Military procurement is required, review and implement the applicable supplementary requirements (see S1 through S9).

6. Physical Requirements

6.1 *Design and Manufacture*—The food processor shall be complete so that when connected to the specified source of power, the unit can be used for its intended function. The food processor shall be simple to disassemble and reassemble without special tools or equipment. The food processor shall meet the then current applicable requirements of NSF/ANSI 8 and ANSI/UL 763.

6.1.1 *Compliance with NSF/ANSI 8*—Acceptable evidence of meeting the requirements of NSF/ANSI 8 shall be the NSF certification mark on the food processor and listing in the current edition of the NSF Official Listing of Food 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.

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

6.1.3 *Materials*—Materials used in the construction of food processors shall comply with the applicable requirements of NSF/ANSI 8.

6.1.4 *Human Factors Criteria*—Human factors engineering criteria, principles, and practices, as defined in Practice F 1166,

shall be used in the design of all food processors.

6.2 *Electrical Devices:*

6.2.1 *Power Supply*— The food processor 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.

6.2.2 *Motor*—The food processor motor shall be of the continuous duty type.

6.3 *Discharge Chute (Type I Machines)* —The discharge chute shall be designed to direct sliced or shredded food product into a tray or pan at the front of the unit. When tested in accordance with Section 9, processed food shall be directed from the discharge chute in a manner to permit collection in a container placed below the chute, and the processed food shall not be expelled out of the area of the pan or tray used for collection of the processed food.

6.4 *Interchangeability of Items* —All food processors of the same model number and bill of material furnished with similar options under a specific purchase order shall be identical to the extent necessary to ensure interchangeability of component parts, assemblies, and spare parts.

6.5 *Plates*—Manual feed food processors meeting the requirements of this specification must be available with a variety of sizes of slicer plates and shredder and grater plates. These plates may be offered as options to the basic food processor and shall be included with the ordering information detailed in 5.1.4.

6.6 *Lubrication*— All wearing parts of the food processor shall be provided with a means for lubrication or be permanently lubricated or sealed. Oil seals shall contain the lubricant. Lubricants used in the construction of the food processor shall comply with the applicable requirements of NSF/ANSI 8.

7. Hazard Protection

7.1 The food processor shall meet the requirements of ANSI/UL 763.

7.2 *Switch Guard*— The on/off control shall be guarded or fabricated in such a manner as to prevent unplanned activation.

7.3 *Controls Location*—The controls for the food processor shall be located such that they are visible and easily manipulated by the operator when standing in a comfortable position.

7.4 *Plate Brake*— The food processor shall be provided with a brake or other reliable means to stop the moving parts within 4 s after the unit has been turned off.

8. Performance Requirements

8.1 *Food Processing Quality and Uniformity:*

8.1.1 Type I food processors, with the various plates offered, shall cleanly and uniformly slice, dice, and grate the product without mashing.

8.1.2 Type II food processors shall chop meat, cheese, and vegetables and prepare well-developed bread dough. The Type II food processor shall also prepare meat and vegetable puree to yield a smooth product based upon the length of time the food is processed.

8.2 *Sound Level*— When tested in accordance with Section 9, the food processor, running under load, shall not exceed a sound level of 85 dBA.

9. Test Methods

9.1 *Operational Tests*—Install and electrically connect the food processor in an operating position in accordance with the manufacturer's instructions. After gaining familiarity with the unit, perform the following tests:

9.1.1 *Interlock Integrity*—Without food product in the unit, make attempts to operate the food processor with the pusher plate open or the feed head open, or both, (Type I machines) or bowl cover removed (Type II machines), such that the slicer or shredder plate or S-blade knife is exposed. Under no condition shall the food processor operate with slicer and shredder plates or S-blade knife exposed to the user.

9.1.2 *Plate Stopping Time*—Operate the food processor without food product. Measure the time needed for the slicer or shredder plate or S-blade knife to stop rotating when the unit is turned off. The plate must stop rotating in no more than 4 s following stop switch activation.

9.1.3 *Purpose*—The tests in 9.1.1 and 9.1.2 help ensure safe operation of the food processor.

9.1.4 *Type I Food Processor Operation Tests*—Type I food processors, when operated in accordance with the manufacturer's operating instructions, shall uniformly process the following items:

9.1.4.1 Use representative slicer plates to slice firm and ripe vegetables such as potatoes and cucumbers.

9.1.4.2 Products of moderate resistance such as cheddar cheese.

9.1.4.3 Hard products such as chocolate and Parmesan cheese.

9.1.4.4 Dice potatoes with the dicer plate/plates.

9.1.4.5 Use a representative shredder plate to grate cheddar cheese.

9.1.5 *Type II Food Processor Operation Tests*—Type II food processors, when operated in accordance with the manufacturer's operating instructions, shall uniformly chop or puree, or both, meat, cheese, and vegetables and process ingredients into a well-developed bread dough.