Designation: F 1371 – 99

Standard Specification for Vegetable Peeling Machines, Electric[1]

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1. Scope

1.1 This specification covers batch-type vegetable peeling 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 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:*

D 3951 Practice for Commercial Packaging[2]

F 760 Specification for Food Service Equipment Manuals[3]

F 1166 Practice for Human Engineering Design for Marine Systems, Equipment and Facilities[4]

2.2 *NSF International Standards:*[5]

ANSI/NSF 8 Commercial Powered Food Preparation Equipment

NSF Food Service Equipment Listing (current years)

ANSI/NSF Criteria C-2 Special Equipment and/or Devices

2.3 *Underwriters Laboratories Standard:*[6]

UL 763 Motor Operated Commercial Food Preparing Machines

2.4 *American Society of Sanitary Engineering Standard:*[7]

ASSE 1001 Commercial Food Waste Disposers

2.5 *ANSI Standard:*[8]

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

2.6 *Federal and Military Documents:*[9]

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 *Definition:*

3.1.1 *vegetable peeling machine, n*—a machine consisting of the following: a cylinder having an abrasive or ribbed wall; an abrasive disk with lobes; a peel trap (when waste disposer is not specified); a waste outlet; a water inlet and air-gap type sprayer; and a cylinder cover.

4. Classification

4.1 Vegetable peeling machines shall be of the styles and sizes:

4.1.1 *Style 1—Counter Mounted*:

4.1.1.1 *Size A*—15 lb (6.8 kg) of potatoes per charge.

4.1.2 *Style 2—Floor Mounted*:

4.1.2.1 *Size A*—15 lb (6.8 kg) of potatoes per charge.

4.1.2.2 *Size B*—30 lb (13.6 kg) of potatoes per charge.

4.1.2.3 *Size C*—50 lb (22.7 kg) of potatoes per charge.

5. Ordering Information

5.1 Purchasers should select the preferred options permitted in this specification and include the information given in the procurement document:

5.1.1 Title, number, and date of this specification;

5.1.2 Style and size arrangement required (see Section 4);

5.1.3 Whether a timer is required (see 6.12.4);

5.1.4 Electrical power supply characteristics (voltage, phase, and frequency) (see 6.12);

5.1.5 Whether a power supply cord is required (see 6.12.3);

5.1.6 Whether a disposer is required (see Section 6);

5.1.7 Quantity of peelers to be furnished;

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[2] *Annual Book of ASTM Standards*, Vol 15.09.

[3] *Annual Book of ASTM Standards*, Vol 15.07.

[4] *Annual Book of ASTM Standards*, Vol 01.07.

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

[6] Available from Global Engineering Documents, 15 Inverness Way East, Englewood, CO 80112.

[7] Available from American Society of Sanitary Engineering, P.O. Box 9712, Bay Village, OH 44140.

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

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

5.1.8 Whether a service supply valve is required (see 6.13.2); and

5.1.9 Labeling requirements (if different from Section 14).

6. Physical Requirements

6.1 *Design and Manufacture*—The vegetable peeler shall be complete so that when connected to the specified source of power the unit can be used for its intended function. The vegetable peeler shall meet the then current applicable requirements of ANSI/NSF 8 and UL Standard 763.

6.1.1 *Compliance with ANSI/NSF 8*—Acceptable evidence of meeting the requirements of ANSI/NSF 8 shall be the NSF certification mark on the vegetable peeler 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 one-time contract evaluation/certification service; and, where applicable, ASSE 1001.

6.1.2 *Compliance with UL 763*—Acceptable evidence of meeting the requirements of UL 763 shall be a UL Listing Mark on the vegetable peeler, 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 vegetable peelers shall comply with the applicable requirements of ANSI/NSF 8. Materials used shall be free from defects that would adversely affect the performance or maintainability of individual components of the overall assembly.

6.2 *Cylinder or Hopper*—The cylinder or hopper shall be sheet aluminum or stainless steel. The inside surface of the cylinder shall be as described in 6.2.1.

6.2.1 Machines intended for marine applications shall be furnished with a stainless steel cylinder. They shall include the following:

6.2.1.1 Silicon carbide fused to a cast iron cylinder;

6.2.1.2 Silicon carbide bonded with a thermosetting resin, or epoxy adhesive to a sheet aluminum cylinder, or a stainless steel cylinder;

6.2.1.3 A ribbed stainless steel cylinder;

6.2.1.4 Silicon carbide bonded with an asphalt compound to a sheet aluminum cylinder; and

6.2.1.5 Aluminum oxide fused to a sheet aluminum cylinder. When silicon carbide or aluminum oxide is used, it shall cover the inside surface of the cylinder completely and uniformly. The silicon carbide or aluminum oxide shall still be intact, without looseness or bare spots.

6.3 *Disk*—The disk shall be cast aluminum, formed stainless steel, or reinforced plastic. Each disk shall be removable through the top of the cylinder. The top surface of the disk shall be covered completely and uniformly with silicon carbide or aluminum oxide.

6.3.1 Machines intended for marine application shall be furnished with a stainless steel or reinforced plastic disk.

6.4 *Vegetable Outlet*—The cylinder shall be provided with a vegetable discharge outlet consisting of a hinged metal door of brass, stainless steel, or aluminum, with a door latching mechanism and a stainless or aluminum vegetable guide or chute. The height of the outlet on Style 2 machines shall be not less than 37 in. (940 mm) and not more than 42 in. (1016 mm) above the floor. The door shall open and close easily and shall have a positive locking action. The inside surface of the hinged metal door shall line up with the inside surface of the cylinder wall when in the closed position. The door shall be equipped with a gasket or O-ring seal to prevent leakage, or there shall be a trough and drain arranged around or under the door, so that any seeping water is returned automatically to the waste outlet of the cylinder.

6.5 *Peel Trap*—The peel trap for the Style 2 machine shall be either integral with the machine or an independent unit, and it shall consist of a covered compartment with a removable wire mesh or perforated sheet metal basket. The basket shall be constructed of stainless steel. The Style 1 machine shall be furnished with a peel trap basket for attachment to the discharge hose. A peel trap is not required when a disposer is provided.

6.6 *Waste Outlet*—For Style 2 machines, a threaded noncorrosive metal outlet shall be located below the level of the disk for connection to a waste drain. The outlet shall drain the compartment beneath the disk completely. The outlet shall be at least 1.5-in. (38-mm) iron pipe size (IPS) for Size A and B machines and at least 2-in. (51-mm) IPS for Size C machines.

6.7 *Water Inlet and Sprayer*—A noncorrosive water sprayer shall be designed to spray, wash, and flush the inside of the cylinder and the vegetables during the peeling operation. The sprayer shall be designed to spray through an opening in the cover, or it shall be attached permanently to the top inside cylinder wall and shall be so positioned that it does not interfere with cylinder loading. The supply line to the spray head shall be at least ¼-in. (6.35-mm) IPS or ⅜-in. (9-mm) tube.

6.8 *Cylinder Covering Ring*—The cylinder covering ring shall be cast aluminum, spun sheet aluminum, or fiberglass-reinforced plastic. The ring shall be either readily removable or hinged to the cylinder so as not to interfere with the removal of the disk. The ring shall prevent water from splashing out when the machine is peeling vegetables. The opening in the ring shall facilitate charging of the cylinder.

6.9 *Style 1, Counter Mounted*—The Style 1 machine shall be equipped with provisions for counter mounting.

6.10 *Style 2, Floor Mounted*—The supporting base shall be cast iron, steel, aluminum, or stainless steel. The base shall provide a rigid and stable support for all machine components. The base shall be equipped with adjustable legs, with provision for bolting the legs to the floor.

6.11 *Disposer, Waste*—When specified (see 5.1.6), the Style 2, Size B and C vegetable peeling machines shall be furnished with a waste disposer. The disposer housing shall be stainless steel, suitable for mounting to a 3.5-in. (88.9-mm) inside diameter throat opening, equipped with a UL-listed or recognized *On-Off* switch. The disposer motor shall be as specified in 6.12.2. A tailpiece of noncorrosive material shall be provided for a 1.5-in. (38-mm) drain connection. A peel trap is not required when a disposer is provided. The waste disposer shall operate smoothly, disposing of potato peelings without leakage.

6.12 *Electrical Devices*:

6.12.1 *Electrical Specifications*—Nominal electrical specifications are: 120/60/1, 208/60/1, 240/60/1, 208/60/3, 240/60/3, and 480/60/3.

6.12.2 *Motors*—Motors shall meet the requirements of UL 763. The peeler motor, and, if equipped, disposer motor, shall be of the continuous duty type. The motor shall be not less than ⅓, ¾, and 1 hp (248, 559, and 746 W) for Sizes A, B, and C machines, respectively. This disposer shall be ½ hp (373 W) minimum, 115 V, 60 Hz, and 1 phase. Individual thermal overload protection shall be provided for each motor.

6.12.3 *Wiring*—The machine shall be completely wired. When specified (see 5.1.5), a power supply cord shall be furnished.

6.12.4 *Timer*—When specified (see 5.1.3), the vegetable peeling machine shall be provided with a timer. The timer shall be adjustable in increments from 15 s up to at least 4 min, with the increments marked permanently on a timer dial.

6.12.5 *Switch*—The switch and wiring shall be located for convenient use, and located so as to preclude the possibility of their being splashed by water.

6.13 *Piping, Tubing, Fittings, and Valves (Installation)*—Connections shall be readily accessible to facilitate installation and maintenance. Whenever possible, piping, tubing, and valves shall be located on the exterior of the machine.

6.13.1 *Piping and Fittings*—Water fittings shall be of corrosion-resisting material. Fresh water supply to the hopper shall be discharged not lower than 1 in. (25.4 mm) above the maximum flood level rim, or an effective air gap or vacuum breaker shall be installed to prevent backflow. Backflow protection shall be in accordance with ASSE No. 1001. The drain and other plumbing connections shall be standard pipe or tubing connections. Drainage piping shall be either corrosion-resisting material or suitable heat-resisting plastic tubing with fittings.

6.13.2 *Valves*—Valves shall be of corrosion-resisting material. When specified, a separately packed service supply valve shall be provided for closing the supply of water to the vegetable peeling machine (see 5.1.8).

7. Hazard Protection

7.1 The peeler shall meet the requirements of UL Standard 763.

7.2 *Switch Guard*—The on/off switch shall be guarded, or the operator shall be designed in such a manner to prevent unplanned activation.

8. Performance Requirements

8.1 *Performance Standards Compliance*—When tested in accordance with 9.1.1, with the cylinder ¾ full, and within a period of 3 or 4 min, potatoes shall be considered peeled satisfactorily when all of the outer and under skins, except the eyes and the skin on low spots, have been removed. At rated capacity, the machine shall be capable of peeling all sizes of new and old potatoes conforming to U.S. Grade No. 1 without flats and without greater than 15 % weight loss. Vegetable peeling machines shall not leak when tested in accordance with Section 9. The motor shall be capable of starting with a full cylinder and building up to rated speed. Vegetable peeling machines shall conform to the requirements of UL 763 and ANSI/NSF 8 or ANSI/NSF Criteria C-2.

9. Test Methods

9.1 *Operational Test*—Each machine shall be tested thoroughly in accordance with the manufacturer's instructions in order to determine compliance with the requirements of ANSI/NSF 8 or ANSI/NSF Criteria C-2 and UL 763.

9.1.1 *Significance*—The significance of this test method is to determine the ability of the machine to peel potatoes under operating conditions.

9.1.2 The vegetable peeling machine shall be loaded with clean, unpeeled potatoes until three-fourths full. The machine shall be operated for not more than 4 min and stopped. The machine drain system and outlet shall drain the compartment beneath the disk completely. When a waste disposer is specified, the disposer shall operate smoothly, disposing of peelings without leakage.

9.2 *Leakage*—No leakage shall occur when testing at pressures of up to 125 % of the manufacturer's recommended supply line pressure.

9.2.1 *Significance*—The significance of this test method is to ensure that the machine will not leak under operating conditions.

9.2.2 The waste compartment below the bottom of the disk shall be filled with water after sealing the waste outlet and shall be operated for 15 min. There shall be no leakage of water from the cylinder or waste compartment at the end of this period.

10. Sampling

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

11. Inspection

11.1 *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 subsections of Section 9. 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.

11.2 *Quality Conformance Inspection*—The manufacturer shall have an effective quality audit inspection.

11.3 *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.

12. Rejection and Rehearing

12.1 *Rejection*—During inspection, any failure to perform in accordance with the requirements of this specification is cause for rejection of the lot.

12.2 *Rehearing*—The supplier will be given a rehearing on the remainder of the lot by inspection of additional peeler(s). Acceptance of the peeler that failed inspection is at the discretion of the purchaser.