Designation: F 1899 – 98 (Reapproved 2003)

Standard Specification for Food Waste Pulper Without Waterpress Assembly[1]

This standard is issued under the fixed designation F 1899; 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 (ε) indicates an editorial change since the last revision or reapproval.

1. Scope

1.1 This specification covers pulper assemblies intended for grinding of food scraps and limited amounts of cardboard, paper, and disposable plastic food service wear.

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

1.3 The following safety hazards caveat pertains only to the test method portion, Section 13, of this specification:

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:*

A 6/A 6M Specification for General Requirements for Rolled Structural Steel Bars, Plates, Shapes, and Sheet Piling[2]

A 29/A 29M Specification for Steel Bars, Carbon and Alloy, Hot-Wrought and Cold-Finished, General Requirements for[3]

A 120 Specification for Pipe, Steel, Black and Hot-Dipped Zinc-Coated (Galvanized) Welded and Seamless for Ordinary Uses[4]

A 126 Specification for Gray Iron Castings for Valves, Flanges, and Pipe Fittings[5]

A 167 Specification for Stainless Steel and Heat-Resisting Chromium/Nickel Steel Plate, Sheet and Strip[6]

A 269 Specification for Seamless and Welded Austenitic Stainless Steel Tubing for General Service[7]

A 276 Specification for Stainless Steel Bars and Shapes[6]

A 436 Specification for Austenitic Gray Iron Castings[5]

A 442/A 442M Specification for Pressure Vessel Plates, Carbon Steel, Improved Transition Properties[8]

A 505 Specification for Steel, Sheet and Strip, Alloy, Hot-Rolled and Cold-Rolled, General Requirements for[6]

A 513 Specification for Electric-Resistance-Welded Carbon and Alloy Steel Mechanical Tubing[7]

A 519 Specification for Seamless Carbon and Alloy Steel Mechanical Tubing[7]

A 532/A 532M Specification for Abrasion-Resistant Cast Irons[5]

A 554 Specification for Welded Stainless Steel Mechanical Tubing[7]

A 582/A 582M Specification for Free-Machining Stainless and Heat-Resisting Steel Bars[6]

A 681 Specification for Tools Steel Alloy[3]

B 43 Specification for Seamless Red Brass Pipe, Standard Sizes[9]

B 75 Specification for Seamless Copper Tube[9]

D 2000 Classification System for Rubber Products in Automotive Applications[10]

D 2287 Specification for Nonrigid Vinyl Chloride Polymer and Copolymer Molding and Extrusion Compounds[11]

D 3915 Specification for Rigid Poly (Vinyl Chloride) (PVC) and Chlorinated Ploy (Vinyl Chloride) (PVC) Compounds for Plastic Pipe and Fittings Used in Pressure Applications[12]

D 3951 Practice for Commercial Packaging[13]

E 674 Specification for Industrial Perforated Plate and Screens (Round Opening Series)[14]

F 104 Classification System for Nonmetallic Gasket Materials[10]

F 437 Specification for Threaded Chlorinated Poly (Vinyl Chloride) (CPVC) Plastic Pipe Fittings, Schedule 80[15]

F 439 Specification for Chlorinated Poly (Vinyl Chloride) (CPVC) Plastic Pipe Fittings, Schedule 80[15]

F 441/F 441M Specification for Chlorinated Poly (Vinyl

[1] This specification is under the jurisdiction of ASTM Committee F26 on Food Service Equipment and is the direct responsibility of Subcommittee F26.01 on Cleaning and Sanitation Equipment.

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[2] *Annual Book of ASTM Standards*, Vol 01.04.

[3] *Annual Book of ASTM Standards*, Vol 01.05.

[4] Discontinued; see 1986 *Annual Book of ASTM Standards*, Vol 01.01.

[5] *Annual Book of ASTM Standards*, Vol 01.02.

[6] *Annual Book of ASTM Standards*, Vol 01.03.

[7] *Annual Book of ASTM Standards*, Vol 01.01.

[8] Discontinued; see 1990 *Annual Book of ASTM Standards*, Vol 01.04.

[9] *Annual Book of ASTM Standards*, Vol 02.01.

[10] *Annual Book of ASTM Standards*, Vol 09.02.

[11] *Annual Book of ASTM Standards*, Vol 08.01.

[12] *Annual Book of ASTM Standards*, Vol 08.02.

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

[14] *Annual Book of ASTM Standards*, Vol 14.02.

[15] *Annual Book of ASTM Standards*, Vol 08.04.

Chloride) (CPVC) Plastic Pipe, Schedules 40 and 80[15]
F 443 Specification for Bell-End Chlorinated Poly (Vinyl Chloride) (CPVC) Pipe, Schedule 40[16]
F 760 Specification for Food Service Equipment Manuals[17]
2.2 *UL Standards:*[18]
UL 430 Waste Disposers
UL 508 Electrical Industrial Control Equipment
2.3 *NFPA Standard:*[19]
NFPA 70 National Electric Code
2.4 *ASSE Standard:*[20]
ASSE Standard 1012 Backflow Preventers With Intermediate Atmospheric Vent

3. Terminology

3.1 *General*—Pulpers are intended for grinding of food scraps and limited amounts of cardboard, paper, and disposable plastic food service wear. Materials are ground in a water filled tank (pulper) to produce a slurry, which is then passed into a disposal system or holding tank. Pulpers are not intended for grinding glass, china, metal, wood, clam, or oyster shell.

3.2 *Definitions of Terms Specific to This Standard:*

3.2.1 *pulper, n*—the pulper tank has a motor driven grinding disk to grind and cut waste material, and mixes this material with water to produce a slurry that is pumped to a disposal system or holding tank through a sizing screen. Pulpers may consist of the following principal parts: tank, motor, grinding disk, particle sizing ring, legs, feed chute, stationary cutters, and rotating cutters.

4. Classification

4.1 *General*—Pulper assemblies shall be of the following type, size, and options as specified.

4.2 *Type, Size, and Options*:

4.2.1 *Type A*—Free standing pulper with feed tray assembly and flanged feet.

4.2.2 *Type B*—Undercounter pulper for 34-in. (86-cm) high counter, with feed chute and flanged feet.

4.3 All equipment of the same model designation and options on the same purchase order shall have component interchangeability for serviceability.

5. Ordering Information

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

5.1.1 Title, number, and date of publication for this specification.

5.1.2 Classification of size and type.

5.1.3 Electrical power supply voltage range (see 9.1).

5.1.4 Electrical controls when specified to be remote from the unit (see 9.3).

5.1.5 Spare and maintenance parts required.

5.1.6 Designate special features required for installation, such as location of controls.

5.1.7 When naval shipboard use is intended (see Supplemental Requirements).

6. Materials

6.1 Unless otherwise specified, pulpers shall be fabricated of materials as specified below. Materials shall be free from defects, which would adversely effect the performance or maintainability of individual components or the overall assembly. The unit shall be manufactured for cleanability.

6.1.1 *Corrosion-Resistant Steel*—shall conform to the requirements of any 300 series steel specified in Specification A 167, Specification A 276, Specification A 554, and Specification A 582/A 582M.

6.1.2 *Corrosion-Resisting Material*—Corrosion-resisting material is other than corrosion resistant steel that is equivalent in the pulper application.

6.1.3 *Abrasion-Resistant Cast Iron*, shall conform to the requirements specified in Specification A 532.

6.1.4 *Austenitic Cast Iron*, shall conform to the requirements specified in Specification A 436.

6.1.5 *Copper Tube*, shall conform to the requirements specified in Specification B 75.

6.1.6 *Brass Pipe*, shall conform to the requirements specified in Specification B 43

6.1.7 *Alloy Steel*, shall conform to the requirements specified in Specifications A 6, A 29, A 505, A 513, A 519, and A 681.

6.1.8 *Black and Galvanized Pipe*, shall conform to the requirements specified in Specification A 120.

6.1.9 *Gaskets and Seals*, shall conform to the requirements specified in Specification D 2287, and Classifications D 2000 and F 104.

6.1.10 *Perforated Metal*, shall conform to the requirements specified in Specification E 674.

6.1.11 *Stainless Steel Pipe*, shall conform to the requirements specified in Specification A 269.

6.1.12 *Plastic Piping and Fittings*—shall conform to the requirements specified in Specifications A 442, D 3915, F 437, F 439, F 441/F 441M, and F 443.

6.1.13 *Austenitic Gray Iron Pipe Fittings*—shall conform to the requirements specified in Specifications A 126.

7. Design and Construction

7.1 The pulper shall be complete, ready for water, waste, and electrical connections. Undercounter units shall be ready for connection to tabling. Optional remote controls shall be complete and ready for wall mount and interconnection to the pulper. The pulper shall comply with the requirements of UL 430, 508, and ASSE Standard 1012.

7.2 *Valves*—Manual valves, water solenoid or motorized valves, backflow prevention valves or air gaps, and flow regulators shall be of corrosion-resistant materials. Solenoid or motorized valves shall be fully automatic and suitable for 100°F (37.8°C) water.

[16] Discontinued; see 1986 *Annual Book of ASTM Standards*, Vol 08.04.
[17] *Annual Book of ASTM Standards*, Vol 15.08.
[18] Available from Underwriters Laboratories (UL), Corporate Progress, 333 Pfingsten Rd., Northbrook, IL 60062.
[19] Available from National Fire Protection Association (NFPA), 1 Batterymarch Park, Quincy, MA 02269-9101.
[20] Available from The American Society of Safety Engineers (ASSE), 1800 E. Oakton St., Des Plaines, IL 60018.

7.3 *Tanks*—Tanks shall be of corrosion-resistant steel with minimum sheet metal thickness of 0.070 in. (1.78 mm). Any tank frame structure shall be of corrosion-resistant steel with minimum metal thickness of 0.120 in. (3.0 mm).

7.4 *Cutter*—Each pulper shall be supplied with suitable cutters. Cutters shall be of corrosion-resistant material.

7.5 *Sizing Ring*—Each pulper shall be supplied with a corrosion-resistant steel perforated ring.

7.6 *Pulper Disk*—The disk shall be of corrosion-resistant steel with a minimum thickness of 0.218 in. (5.54 mm), with at least two carbide cutting teeth attached.

7.7 *Pulper Motor Shaft Seal*—shall be a mechanical seal. The seal is to prevent soil and water leakage down the shaft from the pulper to the motor.

7.8 *Pulper Motor Slinger*—A slinger disk shall be mounted on the motor shaft, above the motor and below the shaft seal. The slinger is to prevent any leakage through the shaft seal from entering the motor.

7.9 *Motor*—Thermal overload protection shall be provided either on the motor or in the control circuitry. Overload protection shall require manual reset to restart the motor.

7.10 *Support Legs*—The pulper shall be supported by at least four legs, each with flange feet suitable for bolting to the floor. Feet shall be adjustable ±0.75 in. (19 mm) from nominal for leveling and setting the final installed height. Legs and feet shall be designed for cleanability.

7.11 *Plating, Coating, and Painting*—Pulpers or their individual components, if not made of corrosion-resistant steel or corrosion-resisting materials, shall be plated, coated, or painted for corrosion protection in accordance with the manufacturer's standard practice.

7.12 *Wiring, Controls, and Circuit Protective Devices*—All wiring, controls, and circuit protective devices shall be in accordance with UL 430, UL 508, or NFPA 70. The main electrical enclosure shall be of NEMA 4X construction and shall be provided with a main fused or circuit breaker disconnect device. Supplemental electrical enclosures, if provided, shall be of NEMA 4X construction.

8. Operation Requirements

8.1 The feed chute or feed tray assembly must be in position, as evidenced by an indicator light. Pulper motor shall not operate if the feed chute or feed tray assembly is not in position. Pulper motor shall stop and require a manual restart if the feed chute or feed tray assembly is removed during operation.

8.2 Pushing the "start" button shall open the water supply valve and start the pulper motor. Pushing the "stop" button shall close the water supply valve and stop the pulper motor.

9. Electrical Requirements

9.1 The equipment and controls shall meet the requirements of UL 430, UL 508, and NFPA 70. The pulper shell operate on one of the following power characteristics specified: (A) 200/3/60; (B) 230/3/60; and, (C) 460/3/60.

9.2 *Controls*—All control equipment shall be capable of operation in an ambient room temperature of 115 ± 9°F (46 ± 5°C). Start-stop push buttons and pilot lights shall be mounted in corrosion-resistant steel Nema 4X enclosures.

9.3 *Wiring and Circuit Safety Devices*—All wiring between the pulper components shall have provisions for connection at a recognized junction on the pulper.

10. Lubrication Requirements

10.1 Means for effective and adequate lubrication shall be provided when required. Lubricating points shall be readily accessible, and the pulper shall be lubricated with the proper amount of lubricant prior to delivery.

11. Finish Requirements

11.1 The pulper shall be treated and painted in accordance with the manufacturer's standard practice. All surfaces of the machine, other than corrosion-resistant materials, shall be protected against corrosion in the use environment and shall present a neat appearance.

12. Performance Requirements

12.1 The pulper shall meet the capacity requirements given in 12.2, and shall not leak when tested at 125 % of the manufacturer's recommended supply line pressure.

12.2 *Performance*—See below:

Pulper Hp	3
Food service capacity (lbs/h)	200

13. Test Methods

13.1 *Significance*—The purpose of this test method is to demonstrate the ability of the unit to meet the capacity requirements and to insure that there is no leakage during operation.

13.2 *Procedure*—The machine shall be tested at full load capacity in accordance with the manufacturer's operating instructions. The machine shall function as intended without interruption or malfunction.

14. Certification

14.1 Certification of compliance with the standards cited in this specification shall be provided to the purchaser if required in the purchase document.

15. Product Marking

15.1 *Machine Identification*—Identification shall be permanently and legibly marked directly on the pulper or on a corrosion-resistant material securely attached to the machine at the source of manufacture. Identification shall include the manufacturer's model, serial number and name, and trademark to be readily identifiable. In addition, information required by UL shall be included on the data plate.

15.2 *Instruction Plate*—An instruction plate of corrosion-resistant material shall be attached to each Type A machine and be visible to the operator.

16. Machine Manuals

16.1 The following information shall be supplied in the manuals:

16.1.1 Installation instructions.

16.1.2 Operating guide.

16.1.3 Maintenance and service procedures.

16.1.4 Service parts list.

16.1.5 Electrical schematics.

16.2 Manuals shall be in accordance with Specification F 760.

17. Packaging and Packing Materials

17.1 The pulper shall be packaged and packed in accordance with Practice D 3951.

18. Quality Assurance

18.1 Unless otherwise specified in the contract or purchase order, the manufacturer is responsible for the performance of all requirements as specified in the contract or order. The manufacturer may use his own or any other facility suitable for the testing of the machine requirements specified herein.

SUPPLEMENTARY REQUIREMENTS

(Pulpers for Use on Naval Shipboard)

S1. Shipboard Operation

S1.1 The Navy has specific design criteria for shipboard operation to conserve potable water for extended periods, provide on board spare parts, and permit specific installation techniques. Unless otherwise specified on the contract or purchase order, the provisions for shipboard operation are indicated as follows:

S1.1.1. Electrical voltage shall be 440/3/60.

S1.1.2 A single water connection shall be provided. A manual valve, an electrically actuated valve, and a flow regulator shall be provided on this service. This electrically actuated valve shall automatically open when the pulper motor is operating, and shall automatically close when the motor is stopped. The flow regulator shall limit the water flow to 6.0 gal/min.

S1.1.3 Dual (fresh and salt) water connections may be provided if specified. A manual valve, an electrically actuated valve, and a flow regulator shall be provided on each service. The appropriate electrically actuated water service valve shall be chosen by using a selector switch on the control enclosure. Only one valve shall automatically open when the pulper motor is operating, and both valves shall automatically close when the motor is stopped.

S1.1.4 Control enclosure(s) shall be furnished packed separately for bulkhead mounting.

S1.1.5 Feet the legs shall be constructed of stainless steel. The lowermost portion of each foot shall be removable and made of carbon steel to permit welding to the deck.