



Standard Specification for Food Waste Pulper Without Waterpress Assembly¹

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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 ware.

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 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:²

- A6/A6M Specification for General Requirements for Rolled Structural Steel Bars, Plates, Shapes, and Sheet Piling
- A29/A29M Specification for General Requirements for Steel Bars, Carbon and Alloy, Hot-Wrought
- A53/A53M Specification for Pipe, Steel, Black and Hot-Dipped, Zinc-Coated, Welded and Seamless
- A126 Specification for Gray Iron Castings for Valves, Flanges, and Pipe Fittings
- A240 Specification for Chromium and Chromium-Nickel Stainless Steel Plate, Sheet, and Strip for Pressure Vessels and for General Applications
- A269 Specification for Seamless and Welded Austenitic Stainless Steel Tubing for General Service
- A276 Specification for Stainless Steel Bars and Shapes
- A436 Specification for Austenitic Gray Iron Castings

- A505 Specification for Steel, Sheet and Strip, Alloy, Hot-Rolled and Cold-Rolled, General Requirements for
- A513 Specification for Electric-Resistance-Welded Carbon and Alloy Steel Mechanical Tubing
- A519 Specification for Seamless Carbon and Alloy Steel Mechanical Tubing
- A532/A532M Specification for Abrasion-Resistant Cast Irons
- A554 Specification for Welded Stainless Steel Mechanical Tubing
- A582/A582M Specification for Free-Machining Stainless Steel Bars
- A681 Specification for Tool Steels Alloy
- B43 Specification for Seamless Red Brass Pipe, Standard Sizes
- B75 Specification for Seamless Copper Tube
- D2000 Classification System for Rubber Products in Automotive Applications
- D2287 Specification for Nonrigid Vinyl Chloride Polymer and Copolymer Molding and Extrusion Compounds
- D3915 Specification for Rigid Poly(Vinyl Chloride) (PVC) and Chlorinated Poly(Vinyl Chloride) (CPVC) Compounds for Plastic Pipe and Fittings Used in Pressure Applications
- D3951 Practice for Commercial Packaging
- E674 Specification for Industrial Perforated Plate and Screens (Round Opening Series)
- F104 Classification System for Nonmetallic Gasket Materials
- F437 Specification for Threaded Chlorinated Poly(Vinyl Chloride) (CPVC) Plastic Pipe Fittings, Schedule 80
- F439 Specification for Chlorinated Poly (Vinyl Chloride) (CPVC) Plastic Pipe Fittings, Schedule 80
- F441/F441M Specification for Chlorinated Poly(Vinyl Chloride) (CPVC) Plastic Pipe, Schedules 40 and 80
- F760 Specification for Food Service Equipment Manuals

2.2 UL Standards:³

- UL 430 Waste Disposers
- UL 508 Industrial Control 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 Available from Underwriters Laboratories (UL), 333 Pfingsten Rd., Northbrook, IL 60062.

2.3 *NFPA Standard*:⁴

NFPA 70 National Electrical Code

2.4 *ASSE Standard*:⁵

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 optional 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

⁴ Available from National Fire Protection Association (NFPA), 1 Batterymarch Park, Quincy, MA 02269-9101.

⁵ Available from ASSE International, 18927 Hickory Creek Drive, Suite 220, Mokena, Illinois 60448.

defects, which would adversely affect 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 200, 300, or 400 series steel specified in Specification A240, Specification A276, Specification A554, and Specification A582/A582M.

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 A532/A532M.

6.1.4 *Austenitic Cast Iron*, shall conform to the requirements specified in Specification A436, A276.

6.1.5 *Copper Tube*, shall conform to the requirements specified in Specification B75.

6.1.6 *Brass Pipe*, shall conform to the requirements specified in Specification B43

6.1.7 *Alloy Steel*, shall conform to the requirements specified in Specifications A6/A6M, A29/A29M, A505, A513, A519, and A681.

6.1.8 *Black and Galvanized Pipe*, shall conform to the requirements specified in Specification A53/A53M.

6.1.9 *Gaskets and Seals*, shall conform to the requirements specified in Specification D2287, and Classifications D2000 and F104.

6.1.10 *Perforated Metal*, shall conform to the requirements specified in Specification E674.

6.1.11 *Stainless Steel Pipe*, shall conform to the requirements specified in Specification A269.

6.1.12 *Plastic Piping and Fittings*—shall conform to the requirements specified in Specifications D3915, F437, F439, and F441/F441M.

6.1.13 *Austenitic Gray Iron Pipe Fittings*—shall conform to the requirements specified in Specification A126.

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 Specification A126.

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.

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 or carbide.

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 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, which may have 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 4 or 4X construction.

8. Operation Requirements

8.1 The 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 to initially fill the pulper. When the water level is full, the pulper motor can be started by pushing the start button. 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 and NFPA 70. The pulper shall operate on the power characteristics (current, voltage, phase, frequency) specified.

9.2 *Controls*—All control equipment shall be capable of operation in an ambient room temperature of $115 \pm 9^\circ\text{F}$ ($46 \pm 5^\circ\text{C}$). 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.

13.2.1 During the test, the energy in kW-hours (mega joules) and water consumption in gallons per hour (litres per hour) shall be recorded and reported for information only.

14. Certification

14.1 Certification of conformance 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 procedures.
- 16.1.4 Service parts list.
- 16.1.5 Electrical schematics.

16.2 Manuals shall be in accordance with Specification **F760**.

17. Packaging and Packing Materials

17.1 The pulper shall be packaged and packed in accordance with Practice **D3951**.

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 and 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.

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