



Standard Specification for Dispensers, Powdered Iced Tea¹

This standard is issued under the fixed designation F1023; 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.

This standard has been approved for use by agencies of the Department of Defense.

1. Scope

1.1 This specification covers counter model, self-contained powdered iced tea dispensers.

1.2 The dispenser delivered under this specification shall be the manufacturer's standard product. Each dispenser model furnished by a particular manufacturer under this specification, including parts and assemblies thereof, shall be new and interchangeable.

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

1.4 The following safety hazards caveat pertains only to the test methods portion, Section 11, 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

[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/National Safe Transit Association Standard:*³

[ANSI/NSTA Pre-Shipment Test Procedures](#)

2.3 *National Sanitation Foundation Standards:*⁴

[NSF No. 18 Manual Food and Beverage Dispensing Equipment](#)

[NSF No. 51 Plastic Materials and Components Used in Food Equipment](#)

2.4 *ANSI/Underwriters Laboratories Standard:*⁵

[ANSI/UL Standard No. 73 Food Preparing Machines](#)

2.5 *American National Standards Institute Standard:*⁶

[ANSI Z 1.4 Sampling Procedures and Tables for Inspection by Attributes](#)

2.6 *Military Standards:*⁷

[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 of Terms Specific to This Standard:*

3.1.1 *tea dispenser, n*—commercial appliance designed to deliver a portion of tea, usually mixed with unrefrigerated tap water and dispensed into a container with ice.

3.1.2 *throw, n*—a quantity of powdered tea concentrate dispensed into a container with ice.

4. Classification

4.1 *Types*—The tea dispensers covered by this specification shall be of two types, each working with a powdered concentrate that is mixed with potable tap water to give a finished drink.

4.1.1 *Type I*—Tea dispenser designed to work with pure tea and set to dispense 0.035 to 0.070 oz (1 to 2 g) of concentrate per 8 oz (235 mL) of water. The dispenser is designed to be

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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 National Safe Transit Association, 6022 West Touhy Ave., Chicago, IL 60648.

⁴ Available from NSF International, P.O. Box 130140, 789 N. Dixboro Rd., Ann Arbor, MI 48113-0140.

⁵ Available from the Underwriters Laboratories Inc., 1655 Scott Blvd., Santa Clara, CA 95050; 333 Pfingsten Rd., Northbrook, IL 60062; 1285 Walt Whitman Rd., Melville, Long Island, NY 11746; or 2602 Tampa East Blvd., Tampa, FL 33619.

⁶ Available from American National Standards Institute (ANSI), 25 W. 43rd St., 4th Floor, New York, NY 10036.

⁷ Available from Standardization Documents Order Desk, DODSSP, Bldg. 4, Section D, 700 Robbins Ave., Philadelphia, PA 19111-5098

connected to a water line and have a nominal electrical rating of 115 V, single phase, 60 Hz.

4.1.2 *Type II*—Tea dispenser designed to dispense a sugared tea which may or may not be flavored, in the range of 0.35 to 0.70 oz (10 to 20 g) of product per 8 oz (235 mL) of water. The dispenser is designed to be connected to a water line and have a nominal electrical rating of 115 V, single phase, 60 Hz.

5. Ordering Information

5.1 Procurement documents should specify the following information:

- 5.1.1 Title, designation, and year date of this specification,
- 5.1.2 Type of dispenser (see Section 4),
- 5.1.3 Description of product intended to be dispensed, and
- 5.1.4 Special requirements.

6. Materials

6.1 Materials used in the construction of the dispenser shall comply with NSF No. 18 and 51, and UL Standard 73. Materials not definitely specified shall be of the quality normally used by the manufacturer for tea dispensers, providing the completed items comply with all provisions of the standard.

7. Design and Manufacture

7.1 *General*—The dispenser shall be an electromechanical device for dispensing either the pure tea or sugared tea powder and mixing it with tap water upon manual actuation of a momentary-on electrical switch. The instant tea and water shall be mixed in a chamber that will rinse clean at the end of the drink. The dispenser shall be designed to comply with the requirements of NSF 18 and UL 73. Evidence of compliance with NSF 18 and UL 73 is as follows:

7.1.1 *NSF*—Listing of the dispenser in the current edition of the NSF “Listing of Food Service Equipment” and display of the NSF seal on the finished dispenser.

7.1.2 *UL*—Acceptable evidence of meeting the requirements of UL 73 shall be the UL label or listing mark, indicating that the dispenser has been tested and conforms to the requirements of UL 73.

7.2 *Dimensions*—The maximum allowable dimensions for the dispensers are specified in [Table 1](#).

7.3 *Controls*—The dispenser shall be provided with a momentary contact lever-actuated switch that turns on the water and dispensing mechanism.

7.4 *Concentrate Hopper*—The volume of the hopper shall be rated in cubic centimetres.

7.5 *Drip or Spillage Tray*—A drip tray having a cover for the container to rest upon shall be positioned for accessible and splash-free operation. The drip tray may have provisions for draining and drippings into a drain.

TABLE 1 Maximum Allowable Dimensions for Dispensers

	Type I Pure Tea	Type II Sugared Tea
Width	7 in. (17.8 cm)	9 in. (22.9 cm)
Height	22 in. (55.9 cm)	24 in. (61.0 cm)
Depth	10 in. (25.4 cm)	13 in. (30.3 cm)

7.6 *Product Moisture Protection*—The dispenser shall be designed to minimize the possibility of the product gumming up at the hopper outlet due to moisture.

7.7 *Base*—The base of the dispenser shall be provided with mounts to protect the counter from damage, and holes shall be provided in the base for counter fastening.

7.7.1 The dispenser shall be fully assembled and ready for operation when connected to the electrical and water supplies in the manner specified in the operating instructions.

7.8 *Electrical Requirements*—The dispenser shall operate at a nominal 120 V, single phase, 60 Hz current. Each dispenser shall be equipped with a flexible power supply cord with a suitable plug.

8. Performance Requirements

8.1 *General*—The dispenser shall automatically combine tea powder with potable tap water to provide a tea drink while maintaining an ingredient throw consistency of $\pm 10\%$ when tested as specified in [11.4](#).

8.2 *Energy Consumption*—By means of a watt-hour meter, the energy consumed in a 24-h period can be calculated as specified in [11.2](#).

8.3 *Water Flow*—There shall be 30 consecutive servings (water only), and each shall be within $\pm 3\%$ of the desired serving setting as specified in [11.3](#).

8.4 *Ingredient Throw*—There shall be 30 consecutive servings (ingredient only) and each shall be within $\pm 10\%$ of the desired setting as specified in [11.4](#).

8.5 *Humidity Test*—The hopper or container shall be emptied to within 5 % of the original ingredient weight before an unacceptable drink is drawn as specified in [11.5](#).

9. Workmanship, Finish, and Appearance

9.1 *Workmanship*—All components and assemblies of the dispenser shall be free from dirt and other extraneous material such as burrs, slivers, rough die, tool and grind marks, dents, and cracks. Castings and molded parts, if used, shall be free of sand, fins, pits, blowholes, and sprues. External surfaces shall meet the UL Sharp Edge Test.

NOTE 1—Although [9.1](#) requires subjective judgements, its inclusion is considered important as a guide in evaluating and manufacturing equipment.

9.2 *Metal Fabrication*—Metal used in the fabrication of the dispensers shall be free from visually apparent defects. Forming and shearing shall not cause damage to the metal and the metal shall be free from trimming marks.

9.3 *Welding*—The surfaces of parts to be welded shall be free from rust, scale, paint, grease, and other foreign matter. Welds shall be smooth and free from cracks, burn holes, undercuts, or incomplete fusion.

9.4 *Fastening Devices*—Holes punched or drilled shall be free of burrs. Threaded fasteners shall not be broken, cracked, or stripped and shall be drawn tight. Rivets, when used, shall fill the hole completely and the head shall be in full contact with the surface of the member.

9.5 *Finish*—Dispenser finishes shall be free from discoloration and stains. Stainless steel shall have a 2B or smoother finish.

10. Sampling and Quality Assurance

10.1 *Sampling*—When specified in the contract or purchase order, sampling for inspection should be performed in accordance with ANSI Z1.4.

10.2 Measure and inspect the dispensers prepared for shipment for performance, safety, and appearance by a qualified quality audit program.

11. Test Methods

11.1 *General*—Prior to the performance of the tests specified herein, the unit shall be operated for a period of time recommended by the manufacturer for adjustment of the unit. The room temperature may vary from 70 to 80°F (21 to 27°C); and tap water having a minimum of 30 psi and a maximum of 125 psi (206 and 861 kPa) flowing pressure may be used as no water heating is required.

11.2 Energy Consumption:

11.2.1 *Significance and Use*—The purpose of this test is to determine the energy consumption for the dispenser model being tested.

11.2.2 *Procedure*—The energy consumed by the dispenser includes the augering device and solenoid valve, which run only when a drink is dispensed, as well as a heater, if provided, to protect the powder from humidity. The energy used is related to the number of drinks drawn, as well as the humidity protective heater. To estimate the daily energy consumed, proceed as follows:

11.2.2.1 Measure kilowatts with the dispenser plugged in and the power switch, if provided, to “on” position, but without dispensing a drink. This will measure the humidity protective heater power if any is used.

11.2.2.2 Connect a kilowatt hour meter to the dispenser and dispense one-hundred 8-oz. (235-mL) portions in 1 h. The energy measured will include the anti-humidity heater as well as the energy used for the augering device and the solenoid. To calculate the energy used for dispensing 100 drinks, subtract the kilowatt hours consumed by the anti-humidity device from the total energy consumed.

11.2.2.3 The energy for 24 h can be calculated as follows:

$$\text{Energy, kW h/24 h} = \text{anti - humidity heater kW} \times 24 \\ + \frac{(\text{estimated drinks } 8 \text{ oz (235 mL)/24 h})}{100} \times \text{kW h/100 drinks}$$

11.3 Water Flow:

11.3.1 *Significance and Use*—The purpose of this test is to ensure that the proper amount of water is dispensed.

11.3.2 *Procedure*—With the dispenser connected to a water line with a psig between 30 and 120 flow pressure, and the hopper removed or made inoperative, adjust the water flow for the nominal water flow required for the product throw determined in test specified in 11.5. After the adjustment, make 30 consecutive electric timer-controlled water portions. Each portion will be within $\pm 3\%$ of the volume.

11.4 Ingredient Throw:

11.4.1 *Significance and Use*—The purpose of this test is to ensure that the proper amount of powder ingredient is deposited for an 8-oz (235-mL) serving.

11.4.2 *Procedure*—With the water flow made inoperative, add the proper powder ingredient and adjust the powder ingredient time for an 8-oz (235-mL) serving. After this adjustment, make 30 consecutive portions (powder ingredient only) and each shall be within $\pm 10\%$ of the desired setting.

11.5 Humidity Test:

11.5.1 *Significance and Use*—The purpose of this test is to ensure that the dispenser will function properly in an environment of high humidity.

11.5.2 *Procedure*—Place the dispenser in an environmental chamber of $90 \pm 2^\circ\text{F}$ ($32.2 \pm 1^\circ\text{C}$) with $80 \pm 5\%$ humidity. Connect the water and install a full hopper. Record weight of powder at full hopper. During an 8-h period, draw at the standard setting enough portions, evenly spaced over the 8-h period, for the product to empty the hopper or container. If, during the test, it is noted that no powder, or virtually no powder, is dispensed during a dispensing cycle, terminate the test and note the number of visually acceptable portions. Remove and weigh the balance of the powder in the hopper; the balance shall not exceed 5% of the original powder weight.

12. Inspection

12.1 *End Item Testing*—Test one production item selected at random from each lot in accordance with applicable tests of Section 11. Record performance results in a permanent file with the information accessible to customers upon demand. Any subsequent change in design that would relate to performance shall require a new test record and evaluation of minimum requirements.

12.2 *Quality Conformance Inspection*—The manufacturing organization shall have an effective quality audit system.

12.3 *Component and Material Inspection*—Inspect incoming components and material to the design parameters as specified in drawings or purchase documents, or both.

13. Certification

13.1 When specified in the purchase order or contract, 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 in the purchase order or contract, a report shall be furnished on this testing and inspection.

14. Product Marking

14.1 Each dispenser shall be provided with an identification plate or adjacent plate(s) securely affixed to the item. The plate(s) and its markings shall meet UL 73 requirements for labels on indoor equipment.

15. Manuals

15.1 Format and content of applicable manuals shall be as indicated in Specification F760.

16. Packaging and Package Marking

16.1 The complete dispenser shall be packaged in accordance with the supplier’s standard practice.

16.2 The packaging shall meet the requirements of NSTA Pre-Shipment Test Procedures.

16.3 The package shall be marked showing the name of the product, model number, serial number, and manufacturer’s name.

**SUPPLEMENTARY REQUIREMENTS
FOR
FEDERAL AND MILITARY PROCUREMENT**

S1. Supplemental Requirements

S1.1 The supplemental requirements that follow apply to all Federal and Military procurements. Where provisions of this supplement conflict with the main body of this specification, this supplement shall prevail.

S2. Manual

S2.1 A manual complying with Specification F760 and its supplement shall be provided.

S3. First Article Inspection

S3.1 When required, the first article inspection shall be performed on one unit. The first article may be either a first production item or a standard production item from the supplier’s current inventory, provided the item meets the requirements of the standard and is representative of the design, construction, and manufacturing technique applicable to the remaining items to be furnished under the contract.

S4. Plates

S4.1 *Label Plates*—Ice tea dispensers shall be provided with data-name plates and instruction plates.

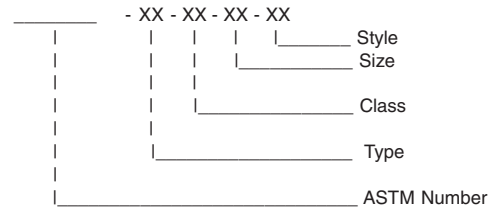
S4.2 *Data-Name Plates*—In addition to the manufacturer’s data plate, machines shall be provided with data-name plates readily visible to the operator during normal operating use and so as to not adversely affect the life and utility of the unit. Plates shall be attached to the front of the unit in such a manner as to meet the applicable National Sanitation Foundation sanitary requirements for this equipment. The plate shall contain the following information which shall be stamped, engraved, or applied by photosensitive means:

- S4.2.1 National stock number, and
- S4.2.2 Government approved manual number.

S4.3 *Instruction Plate*—An instruction plate shall be made of corrosion-resisting metal and shall be attached to the front of the ice tea dispenser. The instruction plate shall bear instructions for start-up, operation, and shutdown.

S5. Part Identifying Number

S5.1 The following part identifying numbering procedure is for government purposes and does not constitute a requirement for the contractor. The PINs to be used for items acquired to this specification are created similar to the format below.



S5.1.1 The above is an example of the PIN for an item in accordance with ASTM Standard F _____, type XX, class XX, size XX, style XX.

S6. Human Factors Criteria

S6.1 Human factors engineering criteria, principles, and practices, as defined in Practice F1166, shall be used in the design of all ice tea dispensers.

S7. Preservation, Packaging, and Package Marking

S7.1 When other than commercial practice or conformance to Practice D3951 is desired, the preservation, packaging, and package marking requirements shall be stated in the purchase order or contract.

S8. Manufacturer’s Certification

S8.1 If the manufacturer has successfully furnished the same equipment on a previous contract within the past three years, further inspection will not be required. The manufacturer shall certify in writing that the equipment to be furnished is the same as that previously furnished and approved, and that no major design changes have been made to the equipment.

S9. Naval Shipboard Requirements

S9.1 The following additional requirements apply when equipment is to be used for shipboard purposes.

S9.1.1 *Power Compatibility*—Unless otherwise specified (see 5.1), ice tea dispensers shall be compatible with 115 Vac, 60 Hz, single phase, alternating current for shipboard as specified in MIL-STD-1399/300.

S9.2 *Access*—Ice tea dispensers shall pass through a 26-in. (660-mm) wide by 66-in. (1676-mm) shipboard hatch without major disassembly. Machines for submarines shall pass through a 25-in. (635-mm) diameter circular hatch without major disassembly. When establishing accessibility requirements, both physical and visual access must be provided along with access for any tools, test equipment, or replacement parts needed.

S9.3 *Mounting*—Counter or dresser mounted ice tea dispensers shall be provided with four type 300 series stainless steel round legs, each a minimum 1-in. (25.4-mm) in diameter, 4-in. (102-mm) in length, for securing the unit to the dresser.

S9.4 *Environmental Suitability*—Ice tea dispensers shall be capable of withstanding ships vibration and motion. Controls, switches, moving parts, and electrical circuits shall operate under shipboard conditions without malfunction, binding, excessive looseness, or damage (see S9.6.3).

S9.5 *Inclined Operation*—Ice tea dispensers shall operate satisfactorily on surface ships when inclined at an angle of 15° each side of the vertical in each of two vertical planes at right angles to each other, with no spillage of fluid or product. For submarines the angle of inclination shall be 30°.

S9.6 *Quality Assurance Provisions:*

S9.6.1 *EMI Control Tests*—When specified, ice tea dispensers shall be tested by the contractor in accordance with test methods of MIL-STD-461 for surface ships and submarines. The first article or the initial production unit, as applicable, shall be tested. The contractor shall furnish written certification that the equipment meets the requirements of MIL-STD-461.

Nonconformance with the requirements specified shall constitute failure of the test.

S9.6.2 *Inclined Operational Test*—The ice tea dispenser shall be bolted to a test platform similar to shipboard installation and inclined at an angle of 15° (30° for submarines). The machine shall be filled to 75 % capacity with product, then be operated for 60 s, at each side of the vertical in each of two vertical planes at right angles to each other. Any nonconformance with specified requirements of S9.5 shall constitute failure of this test.

S9.6.3 *Shipboard Environmental Test*—When specified, the ice tea dispenser under normal operating conditions, shall be tested in accordance with MIL-STD-167/1, Type I equipment. The machine shall be secured to the test machine in the same manner that it will be secured on shipboard. Failure of the machine to perform its function during or after testing, or meeting the requirements of S9.4, shall constitute failure of this test. The government reserves the right to witness all tests of ice tea dispensers procured for Naval shipboard use, whether performed by the supplier or an independent testing agency.

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