



Designation: F 861 – 94 (Reapproved 1998)

Standard Specification for Commercial Dishwashing Racks¹

This standard is issued under the fixed designation F 861; 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 racks used in commercial spray type dishwashing machines and for storage of clean tableware.

1.2 The following safety hazard caveat pertains only to the test method portion, Section 8, of this specification: *This standard does not purport to address 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 167 Specification for Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet, and Strip²

2.2 *American National Standard*³

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

2.3 *NSF International*⁴

ANSI/NSF 3 Commercial Spray-Type Dishwashing and Glasswashing Machines

ANSI/NSF 51 Food Equipment Materials

NSF Food Service Equipment Listing

3. Classification

3.1 Commercial dishwashing racks shall be classified as follows:

3.2 *Type I*—Compartment tray/plate rack with six compartments.

3.2.1 *Type IA*—Service tray rack with six compartments.

3.2.2 *Type IB*—Flatware rack.

3.2.3 *Type IC*—Plate rack with seven compartments (nominal 16 × 16 in.).

3.2.4 *Type ID*—Flatware rack (nominal 16 × 16 in.).

3.2.5 *Type IE*—Circular plate rack.

3.2.6 *Type IF*—Plate rack.

3.3 *Type II*—Cup/Bowl rack.

3.3.1 *Type IIA*—Tumbler rack.

3.3.2 *Type IIB*—Cup rack.

3.3.3 *Type IIC*—Compartmented cup rack.

3.3.4 *Type IID*—Cup/Bowl rack (nominal 16 × 16 in.).

3.3.5 *Type IIE*—Circular compartmented cup, bowl, and flatware rack.

3.4 *Type III*—Carrier cylinder.

3.4.1 *Type IV*—Flatware cylinder (plastic).

3.5 *Type V*—Flatware cylinder (corrosion-resistant steel).

3.6 *Type VI*—Special racks (see 6.7).

4. Ordering Information

4.1 Purchasers should select the preferred options permitted herein and include the following information in the procurement document:

4.1.1 Title, designation, and year of issue of this specification.

4.1.2 Type and style.

4.1.3 Material (See 5.2.1 and 5.2.2).

4.2 The overall height and the maximum diameter, excluding the handle of the cup, must be submitted when ordering racks to meet Type IIC (see 6.3).

4.3 When ordering special racks (Type VI), dimensional data of overall height and maximum diameter of ware must be furnished. For cups, exclude handle from overall diameter measurement (see 6.3).

5. Materials and Manufacture

5.1 *Materials:*

5.1.1 *Corrosion-Resistant Steel*—Corrosion-resistant steel shall conform to requirements of any 300 series stainless steels specified in Specification A 167.

5.1.2 *Molded Plastic*—Racks shall conform to ANSI/NSF 51 or ANSI/NSF 3.

5.2 *Manufacture:*

5.2.1 *Racks*—The frame or body for racks may be made of plastic material conforming to the requirements of 5.1.2. The diagonal distance between corners of finished racks shall not vary more than $\pm \frac{1}{8}$ in. ($\frac{3}{18}$ mm). Outside dimension of racks

¹ This specification is under the jurisdiction of ASTM Committee F-26 on Food Service Equipment and is the direct responsibility of Subcommittee F26.01 on Cleaning and Sanitation Equipment.

Current edition approved Nov. 15, 1994. Published January 1995. Originally published as F 861 – 84. Last previous edition F 861 – 84 (1990).

² *Annual Book of ASTM Standards*, Vol 01.03.

³ Available from American National Standards Institute, 11 W. 42nd St., 13th Floor, New York, NY 10036.

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



shall not deviate from the nominal dimension by more than $\frac{1}{8}$ in. (3.18 mm). Racks shall be designed for stacking.

5.2.2 *Silverware Cylinders*—Cylinders shall be made either of plastic material conforming to the requirements of 5.1.2 or may be made of corrosion-resistant steel conforming to the requirements of 5.1.1.

6. Physical Requirements

6.1 Unless otherwise specified, the dishwashing racks shall be nominal $19\frac{3}{4}$ by $19\frac{3}{4}$ in. overall dimensions, and shall have four-way indexing capability.

6.2 *Type I (Compartment Tray/Plate (Six compartments))*—Rack shall be suitable for holding 9 in. (229 mm) dinner plates, or trays measuring approximately $15\frac{1}{2}$ in (394 mm) long by $11\frac{5}{8}$ in. (295 mm) wide by $\frac{3}{4}$ in. (19 mm) deep. The rack shall be divided to hold six of these trays or 12 plates for washing and sanitizing in a commercial dishwashing machine.

6.2.1 *Type IA, (Service Tray (Six Compartments))*—Rack shall be suitable for holding cafeteria-type service trays measuring approximately 15×20 in. (381×508 mm). The rack shall be divided to hold no less than six such trays for washing and sanitizing in a commercial dishwashing machine.

6.2.2 *Type IB (Flatware)*—Rack shall be suitable for horizontal racking of flatware for washing and sanitizing in a commercial dishwashing machine. Bottom of rack shall be of a design to permit free flow of water and prevent loss of flatware through the bottom, or bottom of rack shall be fitted with a flat insert. Rack shall be of a design to discourage overloading of flatware.

6.2.3 *Type IC (Nominal 16 in. \times 16 in. Plate (7 compartments))*—Rack shall be suitable for holding 9-in. (229-mm) dinner plates. The rack shall be divided to hold seven of these plates for washing and sanitizing in a single tank commercial dishwashing machine.

6.2.4 *Type ID (Nominal 16 in. \times 16 in., Flatware)*—Rack shall be suitable for horizontal racking of flatware for washing and sanitizing in a single tank commercial dishwashing machine. Bottom of rack shall be of a design to prevent flatware from protruding and to permit a free flow of water, or bottom of rack shall be fitted with a flat insert. Rack shall be of a design to discourage overloading of flatware.

6.2.5 *Type IE ((Circular), Plate)*—Rack shall be suitable for holding 9-in. (229-mm) dinner plates. The rack shall be divided to hold no less than eight plates for washing and sanitizing in a single tank commercial dishwashing machine of circular shape.

6.2.6 *Type IF (Plate)*—Rack shall be suitable for holding 9-in. (229-mm) dinner plates. The rack shall be divided to hold no less than sixteen plates for washing and sanitizing in a commercial dishwashing machine.

6.3 *Type II (Rack, Cup/Bowl)*—Rack shall be suitable for holding $10\frac{1}{2}$ oz (311 mL) or $5\frac{3}{4}$ -in. (146-mm) diameter bowls. Rack shall hold not less than sixteen bowls for washing and sanitizing in a commercial dishwashing machine. The rack shall also be suitable for conveying a Type III carrier through a dishwashing machine. The frame or body of the rack should have an inside height of not less than $3\frac{11}{16}$ in. (937 mm).

6.3.1 *Type IIA (Tumbler)*—Rack shall be divided into not less than 36 compartments suitable for washing and storing

tumblers having maximum dimensions of 4 in. (102 mm) high by $2\frac{3}{4}$ in. (70 mm) diameter. Inside height of rack shall not be less than 4 in. (102 mm) nor more than $5\frac{1}{8}$ in. (130 mm).

6.3.2 *Type IIB (Cup)*—Rack shall be suitable for holding $10\frac{1}{2}$ ounce (311 mL) cups. Rack shall hold not less than 18 cups for washing and sanitizing in a commercial dishwashing machine. Rack shall be designed to provide for individual spacing or positioning of cups.

6.3.3 *Type IIC (Compartmented, Cup)*—Rack shall be suitable for holding cups and mugs for washing and sanitizing in a commercial dishwashing machine. Cups and mugs shall be supported at an angle to facilitate drainage. One full rack shall be able to stack on top of another full rack without the ware in the bottom rack touching the bottom of the top rack (See 4.3). Separation between compartments shall prevent contact between individual cups or mugs in accordance with the following styles:

6.3.3.1 *Style A*—16 compartments.

6.3.3.2 *Style B*—24 compartments.

6.3.3.3 *Style C*—25 compartments.

6.3.4 *Type IID (Nominal 16 in. \times 16 in., Cup/Bowl)*—Rack shall be suitable for holding cups and bowls. Rack shall hold not less than fifteen $10\frac{1}{2}$ oz (311-mL) cups or five $5\frac{3}{4}$ in. (146 mm) diameter bowls for washing and sanitizing in a single tank commercial dishwashing machine.

6.3.5 *Type IIE (Compartmented (Circular), Cup, Bowl, and Flatware)*—Rack shall be suitable for holding cups, bowls, and flatware for washing and sanitizing in a single tank commercial dishwashing machine of circular shape. The rack shall have a capacity of fourteen $10\frac{1}{2}$ oz (311-mL) cups or seven $5\frac{3}{4}$ in. (146 mm) diameter bowls. Bottom of rack shall be of a design to prevent flatware from protruding and to permit a free flow of water, or bottom of rack shall be fitted with a flat insert.

6.4 *Type III (Carrier Cylinder)*—Carrier shall be of the basket type, designed for transporting six Type IV or Type V cylinders to, through, and from dishwashing machines. The carrier shall be made of corrosion-resistant steel or plastic and shall have a body and a suitable handle. Overall dimensions of the body shall be 10 to 11 in. (254 to 279 mm) wide by 14 to 15 in. (356 to 381 mm) long. Corners of the body shall be rounded to a minimum radius of $\frac{1}{2}$ in. (13 mm). The carrier, when lifted and carried by the handle, shall support without distortion, 6 fully loaded Type IV or Type V cylinders by their flanges. The handle shall have its axis along the length of the basket and shall be fastened securely to the basket at the ends. The grip of the handle shall be of a height to clear by 1 in. (25.4 mm) the protruding end of an $8\frac{1}{2}$ in. (216 mm) long knife resting in any position within any of the six cylinders. When in the carrying position with the handle fully extended, the handle shall have provision to prevent the carrier with cylinders from tipping to either side because of unbalanced loading.

6.5 *Type IV (Cylinder (Plastic), Flatware)*—The wall and bottom thickness, exclusive of reinforcement ribs, shall be not less than 0.105 in. (2.67 mm). The overall height of the cylinder shall be $5\frac{5}{8}$ in. \pm $\frac{1}{4}$ in. (143 ± 6.35 mm). The top of the cylinder shall have a molded flange extending outward approximately $\frac{1}{2}$ in. (6.35 mm). The thickness of the flange shall not be less than the thickness of the body. The outside