Designation: F439 – 13

Standard Specification for Chlorinated Poly (Vinyl Chloride) (CPVC) Plastic Pipe Fittings, Schedule 80[1]

This standard is issued under the fixed designation F439; 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 U.S. Department of Defense.

1. Scope*

1.1 This specification covers chlorinated poly(vinyl chloride) (CPVC) Schedule 80 pipe fittings. Included are requirements for materials, workmanship, dimensions, and burst pressure.

NOTE 1—The threaded CPVC fittings covered by this specification were covered previously in Specification F437.

1.2 The text of this specification references notes, footnotes, and appendixes which provide explanatory material. These notes and footnotes (excluding those in tables and figures) shall not be considered as requirements of this specification.

1.3 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.

1.4 The following safety hazards caveat pertains only to the test method portion, Section 8, 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]

D618 Practice for Conditioning Plastics for Testing

D1599 Test Method for Resistance to Short-Time Hydraulic Pressure of Plastic Pipe, Tubing, and Fittings

D1600 Terminology for Abbreviated Terms Relating to Plastics

D1784 Specification for Rigid Poly(Vinyl Chloride) (PVC) Compounds and Chlorinated Poly(Vinyl Chloride) (CPVC) Compounds

D2122 Test Method for Determining Dimensions of Thermoplastic Pipe and Fittings

D2749 Symbols for Dimensions of Plastic Pipe Fittings

F412 Terminology Relating to Plastic Piping Systems

F437 Specification for Threaded Chlorinated Poly(Vinyl Chloride) (CPVC) Plastic Pipe Fittings, Schedule 80

F1498 Specification for Taper Pipe Threads 60° for Thermoplastic Pipe and Fittings

2.2 *Federal Standard:*

Fed. Std. No. 123 Marking for Shipment (Civil Agencies)[3]

2.3 *Military Standard:*

MIL-STD-129 Marking for Shipment and Storage[3]

2.4 *NSF Standard:*

Standard No. 14 for Plastic Piping Components and Related Materials[4]

Standard No. 61 for Drinking Water System Components—Health Effects[4]

3. Terminology

3.1 *Definitions*—Definitions are in accordance with Terminology F412 and abbreviations are in accordance with Terminology D1600, unless otherwise indicated. The abbreviation for chlorinated poly(vinyl chloride) is CPVC.

4. Classification

4.1 *General*—This specification covers Schedule 80 CPVC pipe fittings, intended for use with Iron Pipe Size (IPS) outside-diameter plastic pipe.

4.1.1 Fittings covered by this specification are normally molded. In-line fittings, such as couplings, unions, bushings, caps, nipples, and so forth, shall be molded or machined from extruded stock.

4.1.2 Fittings fabricated by back welding or butt fusion are not included in this specification.

[1] This specification is under the jurisdiction of ASTM Committee F17 on Plastic Piping Systems and is the direct responsibility of Subcommittee F17.10 on Fittings.

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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 Standardization Documents Order Desk, DODSSP, Bldg. 4, Section D, 700 Robbins Ave., Philadelphia, PA 19111-5098, http://www.dodssp.daps.mil.

[4] Available from NSF International, P.O. Box 130140, 789 N. Dixboro Rd., Ann Arbor, MI 48113-0140, http://www.nsf.org.

***A Summary of Changes section appears at the end of this standard**

NOTE 2—This specification does not include requirements for pipe and fittings intended to be used to vent combustion gases.

5. Materials and Manufacture

5.1 This specification covers CPVC pipe fittings made from compounds meeting the requirements of Class 23447 and Class 23448 as defined in Specification D1784.

NOTE 3—Mechanical strength, heat resistance and flammability requirements are covered in Specification D1784.

5.2 *Rework Material*—The manufacturers shall use only their own clean rework fitting material, and the fittings produced shall meet all the requirements of this specification.

6. Requirements

6.1 *Dimensions and Tolerances:*

6.1.1 Fitting sockets, inside diameters (waterways), minimum wall thicknesses, and dimensions shall be as shown in Tables 1-6 when measured in accordance with Test Method D2122.

6.1.2 When multistep reducer bushings are cored out, the inner socket shall be reinforced from the outer wall by a minimum of three ribs extending from the top of the inner socket to the deepest extremity of the coring. The transition from D to DJ (Table 3) shall be straight, tapered as shown, or radiused. A positive taper in the same direction of the taper in the socket on the outside diameter of the bushing is optional (see XA/XB in Table 3). Any point measured along the outside diameter of the bushing (between XA and XB) shall not fall below minimum pipe OD.

6.1.3 The minimum wall thickness of fittings shall be 125 % of the minimum wall thickness of the corresponding size of Schedule 80 pipe for which they are designed to be used, except that for the socket, the wall thickness shall be at least equal to the minimum wall thickness of the corresponding size of Schedule 80 pipe.

6.1.4 The minimum inside diameter of the fittings shall be not less than the minimum specified inside diameter of the corresponding size of Schedule 80 pipe. This is calculated as follows:

$$(\text{minimum OD}) - 2 \times (\text{maximum wall}) = \text{minimum ID} \qquad (1)$$

6.1.5 Minimum dimensions have zero negative tolerance. Tolerances on other dimensions are shown in Tables 1 and 3.

6.1.6 *Fitting Not Illustrated*—All fittings, whether illustrated in Tables 1-5 or not, shall maintain the dimensions conforming to 6.1 and 6.2.

6.2 *Threads*—For all fittings having taper pipe threads, threads shall conform to Specification F1498 and be gaged in accordance with 8.4.

6.3 *Burst Pressure:*

6.3.1 The minimum burst strength of the fittings shall be not less than that calculated for the size and wall thickness of the pipe with which it is to be used, when calculated from the following equation and using a stress of 6400 psi for 8–in. and smaller fittings, and a stress of 5100 psi for fittings larger than 8–in.:

$$S = P(D_O - t)/2t \qquad (2)$$

where:

S = hoop stress, psi (MPa),
P = internal pressure, psi (MPa),
D_O = average outside diameter, in. (mm), and
t = minimum wall thickness, in. (mm).

Fittings tested in accordance with 8.5 shall withstand the minimum burst pressure shown in Table 6.

6.3.2 Pressures shown are minimum burst pressures and do not imply rated working pressures. The burst pressure shall be used only as an indication of quality.

7. Workmanship, Finish, and Appearance

7.1 The fittings shall be homogeneous throughout and free of cracks, holes, foreign inclusions, or other defects. The fittings shall be as uniform as commercially practicable in color, opacity, density, and other physical properties.

8. Test Methods

8.1 *Conditioning*—Condition of test specimens at 73.4 ± 3.6°F (23 ± 2°C) and 50± 5 % relative humidity for not less than 40 h prior to test in accordance with Procedure A of Practice D618, for those tests where conditioning is required.

8.2 *Test Conditions*—Conduct tests in the standard laboratory atmosphere of 73.4 ± 3.6°F (23 ± 2°C) and 50 ± 5 % relative humidity, unless otherwise specified in the test methods or in this specification.

8.3 *Sampling*—A sufficient quantity of fittings as agreed upon between the seller and the purchaser shall be selected at random from each lot or shipment and tested to determine that the basic design is in conformance with this specification.

NOTE 4—For individual orders or specifications where supplemental tests are required, only those tests and numbers of tests specifically agreed upon between the purchaser and the seller need be conducted.

8.4 *Threads*—All taper pipe threads shall be gaged in accordance with Specification F1498.

8.5 *Burst Pressure*—Determine the minimum burst pressure in accordance with Test Method D1599, Procedure B. The time of testing each specimen shall be between 60 and 70 s.

9. Retest and Rejection

9.1 If the results of any test(s) do not meet the requirements of this specification, the test(s) shall be conducted again only by agreement between the purchaser and the seller. Under such agreement, minimum requirements shall not be lowered, changed, or modified, nor shall specification limits be changed. If upon retest, failure occurs, the quantity of product represented by the test(s) does not meet the requirements of this specification.

10. Marking

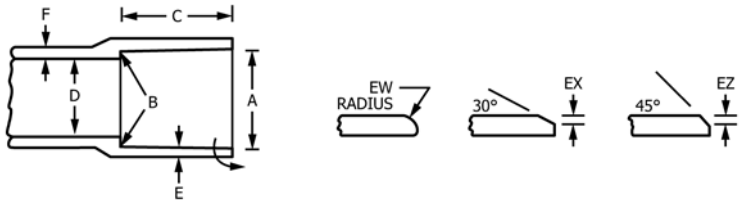
10.1 *Quality of Marking*—The markings shall be applied to the fitting in such a manner that they remain legible under normal handling and installation practices.

10.2 *Content of Marking:*

10.2.1 Fittings shall be marked with the following:

10.2.1.1 Manufacturer's name or trademark,

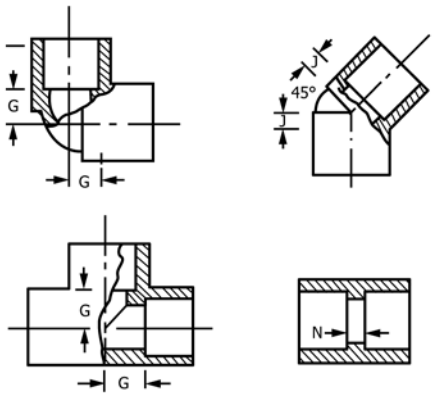
TABLE 1 Tapered Sockets for CPVC Pipe Fittings, Schedule 80, in. (mm)[A]



Nominal Pipe Size	*A* Socket Entrance Diameter			*B* Socket Bottom Diameter			C^B	D^C	Wall Thickness, min		Entrance, min	
	Diameter	Tolerance on Nominal Diameter	Maximum Out-of-Round	Diameter	Tolerance on Nominal Diameter	Maximum Out-of-Round	Socket Length, min	Inside Diameter, min	*E*	*F*	EW	EX, EZ
¼	0.552 (14.02)	±0.004 (0.10)	0.016 (0.41)	0.536 (13.61)	±0.004 (0.10)	0.016 (0.41)	0.625 (15.88)	0.258 (6.55)	0.119 (3.02)	0.149 (3.78)	0.02 (0.5)	0.02 (0.5)
⅜	0.687 (17.45)	±0.004 (0.10)	0.016 (0.41)	0.671 (17.04)	±0.004 (0.10)	0.016 (0.41)	0.750 (19.05)	0.379 (9.63)	0.126 (3.20)	0.158 (4.01)	0.03 (0.8)	0.03 (0.8)
½	0.848 (21.54)	±0.004 (0.10)	0.016 (0.41)	0.836 (21.23)	±0.004 (0.10)	0.016 (0.41)	0.875 (22.22)	0.502 (12.75)	0.147 (3.73)	0.184 (4.67)	0.03 (0.8)	0.03 (0.8)
¾	1.058 (26.87)	±0.004 (0.10)	0.020 (0.51)	1.046 (26.57)	±0.004 (0.10)	0.020 (0.51)	1.000 (25.40)	0.698 (17.73)	0.154 (3.91)	0.193 (4.90)	0.03 (0.8)	0.03 (0.8)
1	1.325 (33.66)	±0.005 (0.13)	0.020 (0.51)	1.310 (33.27)	±0.005 (0.13)	0.020 (0.51)	1.125 (28.58)	0.910 (23.11)	0.179 (4.55)	0.224 (5.69)	0.06 (1.5)	0.06 (1.5)
1¼	1.670 (42.42)	±0.005 (0.13)	0.024 (0.61)	1.655 (42.04)	±0.005 (0.13)	0.024 (0.61)	1.250 (31.75)	1.227 (31.17)	0.191 (4.85)	0.239 (6.07)	0.06 (1.5)	0.06 (1.5)
1½	1.912 (48.56)	±0.006 (0.15)	0.024 (0.61)	1.894 (48.11)	±0.006 (0.15)	0.024 (0.61)	1.375 (34.93)	1.446 (36.73)	0.200 (5.08)	0.250 (6.35)	0.06 (1.5)	0.06 (1.5)
2	2.387 (60.63)	±0.006 (0.15)	0.024 (0.61)	2.369 (60.17)	±0.006 (0.15)	0.024 (0.61)	1.500 (38.10)	1.881 (47.78)	0.218 (5.54)	0.273 (6.93)	0.06 (1.5)	0.06 (1.5)
2½	2.889 (73.38)	±0.007 (0.18)	0.030 (0.76)	2.868 (72.85)	±0.007 (0.18)	0.030 (0.76)	1.750 (44.45)	2.250 (57.15)	0.276 (7.01)	0.345 (8.76)	0.09 (2.3)	0.13 (3.3)
3	3.515 (89.28)	±0.007 (0.18)	0.023 (0.58)	3.491 (88.67)	±0.007 (0.18)	0.023 (0.58)	1.875 (47.63)	2.820 (71.63)	0.300 (7.62)	0.375 (9.53)	0.09 (2.3)	0.13 (3.3)
3½	4.016 (102.01)	±0.008 (0.20)	0.030 (0.76)	3.992 (101.40)	±0.008 (0.20)	0.030 (0.76)	2.125 (53.98)	3.280 (83.31)	0.318 (8.08)	0.398 (10.11)	0.09 (2.3)	0.13 (3.3)
4	4.517 (114.73)	±0.008 (0.20)	0.023 (0.58)	4.490 (114.04)	±0.008 (0.20)	0.023 (0.58)	2.250 (57.15)	3.737 (94.92)	0.337 (8.56)	0.420 (10.67)	0.09 (2.3)	0.13 (3.3)
5	5.583 (141.81)	±0.010 (0.25)	0.060 (1.52)	5.553 (141.05)	±0.010 (0.25)	0.060 (1.52)	2.625 (66.68)	4.713 (119.71)	0.375 (9.53)	0.469 (11.91)	0.09 (2.3)	0.13 (3.3)
6	6.647 (168.83)	±0.011 (0.28)	0.060 (1.52)	6.614 (168.00)	±0.011 (0.28)	0.060 (1.52)	3.000 (76.20)	5.646 (143.41)	0.432 (10.97)	0.540 (13.72)	0.13 (3.3)	0.19 (4.8)
8	8.655 (219.84)	±0.015 (0.38)	0.090 (2.29)	8.610	±0.015 (0.38)	0.090 (2.29)	4.000 (101.60)	7.490 (190.25)	0.500 (12.70)	0.625 (15.88)	0.13 (3.3)	0.19 (4.8)
10	10.780 (273.81)	±0.015 (0.38)	0.100 (2.54)	10.735 (272.67)	±0.015 (0.38)	0.100 (2.54)	5.000 (127.00)	9.407 (238.94)	0.593 (15.06)	0.741 (18.82)	0.125 (3.18)	0.187 (4.76)
12	12.780 (324.61)	±0.015 (0.38)	0.120 (3.05)	12.735 (323.47)	±0.015 (0.38)	0.120 (3.05)	6.000 (152.40)	11.197 (284.40)	0.687 (17.45)	0.859 (21.82)	0.125 (3.18)	0.187 (4.76)

[A] The sketches and designs of fittings are illustrative only.
[B] Socket depth, measured from socket entrance face to socket bottom face.
[C] See 6.1.4.

TABLE 2 Minimum Dimensions from Center to End of Sockets (Laying Length) for Couplings, Tees, 90° and 45° Elbows, CPVC Socket-Type Pipe Fittings, Schedule 80, in. (mm)[A]



Nominal Pipe Size	*G*, min	*J*, min	*N*, min
¼	0.31 (7.9)	0.16 (4.1)	0.06 (1.5)
⅜	0.38 (9.7)	0.19 (4.8)	0.09 (2.3)
½	0.50 (12.7)	0.25 (6.4)	0.09 (2.3)
¾	0.56 (14.2)	0.31 (7.9)	0.09 (2.3)
1	0.69 (17.5)	0.31 (7.9)	0.09 (2.3)
1¼	0.88 (22.4)	0.38 (9.7)	0.09 (2.3)
1½	1.00 (25.4)	0.44 (11.2)	0.09 (2.3)
2	1.25 (31.8)	0.63 (16.0)	0.09 (2.3)
2½	1.50 (38.1)	0.69 (17.5)	0.19 (4.8)
3	1.81 (46.0)	0.75 (19.1)	0.19 (4.8)
3½	2.13 (54.1)	1.00 (25.4)	0.19 (4.8)
4	2.31 (58.7)	1.00 (25.4)	0.19 (4.8)
5	3.00 (76.2)	1.38 (35.1)	0.19 (4.8)
6	3.50 (88.9)	1.75 (44.5)	0.25 (6.4)
8	4.50 (114)	2.00 (50.8)	0.25 (6.4)
10	5.687 (144.45)	2.25 (57.15)	0.25 (6.35)
12	6.875 (174.63)	2.50 (63.50)	0.375 (9.53)

[A] The sketches and designs of fittings are illustrative only.

10.2.1.2 Material designation CPVC for CPVC 23447 and designation CPVC 42 for CPVC 23448,

10.2.1.3 The seal or mark of the laboratory making the evaluation for potable water contact,

10.2.1.4 Size, and

10.2.1.5 This designation "F439," with which the fitting complies.

10.3 Where the size of the fitting does not allow complete marking, omit identification marking in the following sequence: size, material designation, F439, and the manufacturer's name or trademark.

10.4 Markings or symbols shall be molded, hot-stamped, or applied to fittings by any other suitable method, such as printing.

10.5 Where recessed marking is used, care shall be taken to see that in no case marking causes cracks or reduces the wall thickness below the minimum specified.

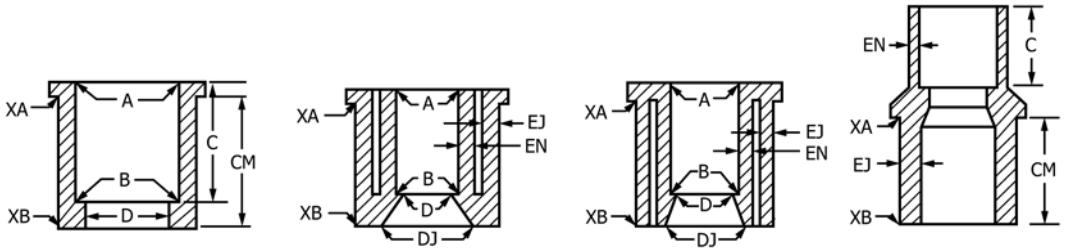
11. Quality Assurance

11.1 When the product is marked with this designation, F439, the manufacturer affirms that the product was manufactured, inspected, sampled, and tested in accordance with this specification and has been found to meet the requirements of this specification.

12. Keywords

12.1 CPVC; fittings; pressure; Schedule 80; sockets; threads

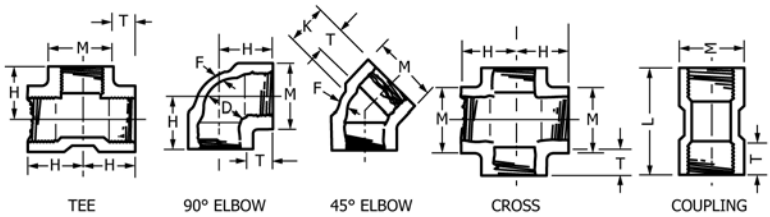
TABLE 3 Symbols for Dimensions of Reducer Blushings, CPVC Socket-type Pipe Fittings, Schedule 80[A] , in. (mm)



Nominal Size	Outside Diameter XA	Tolerance on Outside Diameter	Outside Diameter XB	Tolerance on Outside Diameter	Maximum Out of Roundness (max. minus min.)
¼ by ⅛	0.540 (13.72)	+ 0.007 - 0.004 (0.18 - 0.10)	0.540 (13.72)	±0.004 (0.10)	0.016 (0.41)
⅜ by ¼,⅛	0.675 (17.41)	+ 0.007 - 0.004 (0.18 - 0.10)	0.675 (17.41)	±0.004 (0.10)	0.016 (0.41)
½ by ⅜,¼	0.840 (21.34)	+ 0.007 - 0.004 (0.18 - 0.10)	0.840 (21.34)	±0.004 (0.10)	0.016 (0.41)
¾ by ½, ⅜, ¼	1.050 (26.67)	+ 0.007 - 0.004 (0.18 - 0.10)	1.050 (26.67)	±0.004 (0.10)	0.020 (0.51)
1 by ½ , ¾	1.315 (33.40)	+ 0.008 - 0.005 (0.20 - 0.13)	1.315 (33.40)	±0.005 (0.13)	0.020 (0.51)
1¼ by ½, ¾,1	1.660 (42.16)	+ 0.008 - 0.005 (0.20 - 0.13)	1.660 (42.16)	±0.005 (0.13)	0.024 (0.61)
1½ by ½, ¾ 1, 1¼	1.900 (48.26)	+ 0.010 - 0.006 (0.25 - 0.15)	1.900 (48.26)	±0.006 (0.15)	0.024 (0.61)
2 by ½ , ¾, 1, 1¼, 1½	2.375 (60.33)	+ 0.010 - 0.006 (0.25 - 0.15)	2.375 (60.33)	±0.006 (0.15)	0.024 (0.61)
2½ by 2	2.875 (73.03)	+ 0.012 - 0.007 (0.30 - 0.18)	2.875 (73.03)	±0.007 (0.18)	0.030 (0.76)
3 by 2½ , 2	3.500 (88.90)	+ 0.012 - 0.007 (0.30 - 0.18)	3.500 (88.90)	±0.007 (0.18)	0.023 (0.58)
3½ by 2½, 2	4.000 (101.60)	+ 0.013 - 0.008 (0.33 - 0.20)	4.000 (101.60)	±0.008 (0.20)	0.030 (0.76)
4 by 3½ , 3, 2½, 2	4.500 (114.30)	+ 0.014 - 0.008 (0.35 - 0.20)	4.500 (114.30)	±0.008 (0.20)	0.023 (0.58)
5 by 4	5.563 (141.30)	+ 0.017 - 0.010 (0.43 - 0.25)	5.563 (141.30)	±0.010 (0.25)	0.060 (1.52)
6 by 5	6.625 (168.28)	+ 0.018 - 0.011 (0.46 - 0.28)	6.625 (168.28)	±0.011 (0.28)	0.070 (1.78)
8 by 6	8.625 (219.08)	+ 0.025 - 0.015 (0.64 - 0.38)	8.625 (219.08)	±0.015 (0.38)	0.090 (2.29)
10 by 6	10.750 (273.05)	+ 0.025 - 0.015 (0.64 - 0.38)	10.750 (273.05)	±0.015 (0.38)	0.100 (2.54)
10 by 8	10.750 (273.05)	+ 0.025 - 0.015 (0.64 - 0.38)	10.750 (273.05)	±0.015 (0.38)	0.100 (2.54)
12 by 6	12.750 (323.85)	+ 0.025 - 0.015 (0.64 - 0.38)	12.750 (323.85)	±0.015 (0.38)	0.120 (3.05)
12 by 8	12.750 (323.85)	+ 0.025 - 0.015 (0.64 - 0.38)	12.750 (323.85)	±0.015 (0.38)	0.120 (3.05)
12 by 10	12.750 (323.85)	+ 0.025 - 0.015 (0.64 - 0.38)	12.750 (323.85)	±0.015 (0.38)	0.120 (3.05)

[A] The sketches and designs of fittings are illustrative only from symbols D2749.

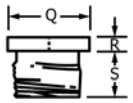
TABLE 4 Dimensions of 90° Ells, Tees, Crosses, 45° Elbows and Couplings (Straight Sizes), in. (mm)[A,B]



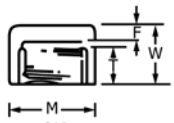
Nominal Pipe Size	Center to Thread End, 90° Elbows, Tees, Crosses, *H*, min	Length of Thread, *T*, min	Center to Thread End, 45° Elbow,[C] *K*, min	Inside Diameter of Fitting, *D*, min	Nominal Wall Thickness, *F*, min	Outside Diameter of Hub, *M*, min	Thread End to Thread End of Coupling, *L*, min
¼	0.812 (20.62)	0.50 (12.70)	0.688 (17.48)	0.258 (6.55)	0.135 (3.43)	0.840 (21.34)	1.063 (27.00)
⅜	0.938 (23.83)	0.50 (12.70)	0.750 (19.05)	0.379 (9.63)	0.144 (3.66)	1.000 (25.40)	1.063 (27.00)
½	1.125 (28.58)	0.64 (16.26)	0.750 (19.05)	0.502 (12.75)	0.198 (5.03)	1.280 (32.51)	1.344 (34.14)
¾	1.250 (31.75)	0.65 (16.51)	1.000 (25.40)	0.698 (17.73)	0.207 (5.25)	1.500 (38.10)	1.500 (38.10)
1	1.500 (28.10)	0.81 (20.51)	1.125 (28.58)	0.911 (23.14)	0.225 (5.72)	1.810 (45.97)	1.688 (42.88)
1¼	1.750 (44.45)	0.85 (21.59)	1.313 (23.35)	1.227 (31.17)	0.261 (6.63)	2.200 (55.88)	1.750 (44.45)
1½	1.938 (49.23)	0.85 (21.59)	1.438 (36.83)	1.446 (36.73)	0.270 (6.85)	2.500 (63.50)	2.000 (50.80)
2	2.250 (57.15)	0.90 (22.86)	1.625 (41.28)	1.881 (47.78)	0.297 (7.54)	3.000 (76.20)	2.063 (52.40)
2½	2.688 (68.28)	1.21 (30.73)	1.938 (49.23)	2.250 (57.15)	0.315 (8.00)	3.560 (90.42)	2.625 (66.68)
3	3.063 (77.80)	1.30 (33.02)	2.125 (53.98)	2.820 (71.63)	0.405 (10.29)	4.300 (109.22)	2.750 (69.85)
4	3.625 (92.08)	1.38 (35.05)	2.625 (66.68)	3.737 (94.92)	0.450 (11.43)	5.430 (137.92)	3.000 (76.20)
6	5.125 (130.18)	1.50 (38.10)	3.250 (82.55)	5.646 (143.41)	0.504 (12.80)	7.625 (193.68)	3.250 (82.55)

[A] The sketches and designs of fittings shown are illustrative only.
[B] Symbols for dimensions are in accordance with Symbols D2749.
[C] This dimension locates the end of the fitting.

TABLE 5 Dimensions of Threaded Plugs and Caps, in.[A,B]



PLUG



CAP

Nominal Pipe Size	Length of Male Thread, *S*, min	Length of Female Thread, *T*, min	Width of Flats,[B] *Q*, min	Nominal Wall Thickness, *F*, min	Height of Head,[C] *R*, min	Cap Height, *W*, min	Outside Diameter of Hub, *M*, min
¼	0.44 (11.18)	0.50 (12.70)	0.625 (15.88)	0.135 (3.43)	0.188 (4.78)	0.688 (17.48)	0.840 (21.34)
⅜	0.44 (11.18)	0.50 (12.70)	0.750 (19.05)	0.144 (3.66)	0.188 (4.78)	0.688 (17.48)	1.000 (25.40)
½	0.53 (13.46)	0.64 (16.26)	0.938 (23.83)	0.198 (5.03)	0.188 (4.73)	0.875 (22.23)	1.280 (32.51)
¾	0.55 (13.92)	0.65 (16.51)	1.125 (28.53)	0.207 (5.26)	0.219 (5.56)	1.000 (25.40)	1.500 (38.10)
1	0.68 (17.27)	0.81 (20.57)	1.375 (34.93)	0.225 (5.72)	0.219 (5.56)	1.188 (30.18)	1.810 (45.97)
1¼	0.71 (18.03)	0.85 (21.59)	1.750 (44.45)	0.261 (6.63)	0.281 (7.14)	1.250 (31.75)	2.200 (55.88)
1½	0.72 (18.29)	0.85 (21.59)	1.875 (47.63)	0.270 (6.85)	0.313 (7.95)	1.250 (31.75)	2.500 (63.50)
2	0.76 (19.30)	0.90 (22.86)	1.875 (47.63)	0.297 (7.54)	0.313 (7.95)	1.375 (34.93)	3.000 (76.20)
2½	1.14 (28.96)	1.21 (30.25)	1.875 (47.63)	0.369 (8.00)	0.375 (9.53)	1.625 (41.28)	3.560 (90.42)
3	1.20 (30.48)	1.30 (33.02)	2.000 (50.80)	0.405 (10.29)	0.375 (9.53)	1.750 (49.45)	4.300 (109.2)
4	1.30 (33.02)	1.38 (35.05)	2.000 (50.80)	0.450 (11.43)	0.375 (9.53)	2.000 (50.60)	5.430 (137.9)
6	1.44 (36.58)	1.50 (35.10)	2.000 (50.80)	0.504 (12.80)	0.500 (12.10)	2.125 (53.98)	7.625 (193.68)

[A] The sketches and designs of fittings shown are illustrative only.
[B] Symbols for dimensions are in accordance with Symbols D2749.
[C] At the manufacturer's option, the head of the plug shall be hexagonal, octagonal, square, or round.

TABLE 6 Burst Pressure Requirements for Water at 73°F (23°C) for CPVC Pipe Fittings, Schedule 80

Nominal Size, in.	Minimum Burst Strength Class 23447 and 23448	
	psi	MPa
¼	3620	24.96
⅜	2940	20.27
½	2720	18.75
¾	2200	15.17
1	2020	13.93
1¼	1660	11.44
1½	1510	10.41
2	1290	8.89
2½	1360	9.38
3	1200	8.27
3½	1110	7.65
4	1040	7.17
5	930	6.41
6	890	6.14
8	790	5.45
10	600	4.14
12	580	4.00

SUPPLEMENTARY REQUIREMENTS

GOVERNMENT/MILITARY PROCUREMENT

These requirements apply only to Federal/Military procurement, not domestic sales or transfers.

S1. *Responsibility for Inspection*—Unless otherwise specified in the contract or purchase order, the producer is responsible for the performance of all inspection and test requirements specified herein. The producer may use his own or any other suitable facilities for the performance of the inspection and test requirements specified herein, unless the purchaser disapproves. The purchaser shall have the right to perform any of the inspections and tests set forth in this specification where such inspections are deemed necessary to ensure that material conforms to prescribed requirements.

NOTE S1.1—In U.S. Federal contracts, the contractor is responsible for inspection.

S2. *Packaging and Marking for U.S. Government Procurement:*

S2.1 *Packaging*—Unless otherwise specified in the contract, the materials shall be packaged in accordance with the supplier's standard practice in a manner ensuring arrival at destination in satisfactory condition and which will be acceptable to the carrier at lowest rates. Containers and packing shall comply with Uniform Freight Classification rules or National Motor Freight Classification rules.

S2.2 *Marking*—Marking for shipment shall be in accordance with Fed. Std. No. 123 for civil agencies and MIL-STD-129 for military agencies.

NOTE S2.1—The inclusion of U.S. Government procurement requirements should not be construed as an indication that the U.S. Government uses or endorses the products described in this document.

POTABLE WATER REQUIREMENT

This requirement applies whenever a regulatory authority or user calls for the product to be used to convey or to be in contact with potable water.

S3. Products intended for contact with potable water shall be evaluated, tested, and certified for conformance with ANSI/NSF Standard No. 61 or the health effects portion of NSF Standard No. 14 by an acceptable certifying organization when required by the regulatory authority having jurisdiction.

SUMMARY OF CHANGES

Committee F17 has identified the location of selected changes to this standard since the last issue (F439–11) that may impact the use of this standard. (Approved Aug. 1, 2013)

(1) Added language to 6.1.2 to clarify the minimum outer dimension of the spigot portion of a bushing.

Committee F17 has identified the location of selected changes to this standard since the last issue (F439–11) that may impact the use of this standard. (Approved Aug. 1, 2012)

(1) Table 1 and Table 3— Changes were made to 3 in. and 4 in. socket entrance and bottom dimensions, tolerance, and out of roundness.