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Designation: D 2464 – 99

An American National Standard

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

This standard is issued under the fixed designation D 2464; 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 poly(vinyl chloride) (PVC) threaded Schedule 80 pipe fittings. Included are requirements for materials, workmanship, dimensions, and burst pressure.

NOTE 1—Threaded CPVC plastic pipe fittings, Schedule 80, which were formerly included in this standard, are now covered by Specification F 437.

1.2 The products covered by this specification are intended for use with the distribution of pressurized liquids only, which are chemically compatible with the piping materials. Due to inherent hazards associated with testing components and systems with compressed air or other compressed gases some manufacturers do not allow pneumatic testing of their products. Consult with specific product/component manufacturers for their specific testing procedures prior to pneumatic testing.

NOTE 2—Pressurized (compressed) air or other compressed gases contain large amounts of stored energy which present serious saftey hazards should a system fail for any reason.

1.3 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 the specification.

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

1.5 The following safety hazards caveat pertains only to the test method portion, Section 7, 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:*

D 618 Practice for Conditioning Plastics for Testing[2]

D 1599 Test Method for Short-Time Hydraulic Failure Pressure of Plastic Pipe, Tubing, and Fittings[3]

D 1600 Terminology for Abbreviated Terms Relating to Plastics[2]

D 1784 Specification for Rigid Poly(Vinyl Chloride) (PVC) Compounds and Chlorinated Poly(Vinyl Chloride) (CPVC) Compounds[2]

D 2122 Test Method for Determining Dimensions of Thermoplastic Pipe and Fittings[3]

D 2749 Symbols for Dimensions of Plastic Pipe Fittings[3]

F 412 Terminology Relating to Plastic Piping Systems[3]

F 437 Specification for Threaded Chlorinated Poly(Vinyl Chloride) (CPVC) Plastic Pipe Fittings, Schedule 80[3]

F 1498 Specification for Taper Pipe Threads 60° for Thermoplastic Pipe and Fittings[3]

2.2 *Federal Standard:*

Fed. Std. No. 123 Marking for Shipment (Civil Agencies)[4]

2.3 *Military Standard:*

MIL-STD-129 Marking for Shipment and Storage[4]

2.4 *NSF Standard:*

Standard No. 14 for Plastic Piping Components and Related Materials[5]

Standard No. 61 for Drinking Water Systems Components—Health Effects[5]

[1] This specification is under the jurisdiction of ASTM Committee F-17 on Plastic Piping Systems and is the direct responsibility of Subcommittee F17.10 on Fittings.

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

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

[4] Available from Standardization Documents Order Desk, Bldg. 4 Section D, 700 Robbins Ave., Philadelphia, PA 19111-5094, Attn: NPODS.

[5] Available from the National Sanitation Foundation, P.O. Box 1468, Ann Arbor, MI 48106.

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3. Terminology

3.1 General—Definitions are in accordance with Terminology F 412, and abbreviations are in accordance with Terminology D 1600, unless otherwise indicated. The abbreviation for poly(vinyl chloride) plastic is PVC.

4. Classification

4.1 *General*—This specification covers threaded Schedule 80 PVC pipe fittings, made from four PVC plastic compounds and intended for use with threaded 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, etc., 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.

5. Materials and Manufacture

5.1 This specification covers PVC pipe fittings made from five PVC plastics as classified in Specification D 1784. These are PVC 12454-B, 12454-C, 13354-C, 11443-B, and 14333-D.

NOTE 3—Mechanical strength, heat resistance, flammability, and chemical resistance requirements are covered in Specification D 1784.

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 The dimensions and tolerances of the fittings shall be as shown in Table 1 and Table 2 when measured in accordance with Test Method D 2122. Minimum dimensions have zero negative tolerances. Bushings shall have thread lengths applicable to the corresponding sizes. Counterbore is optional, is not shown in Table 1, and is not included in the center-to-end or end-to-end dimensions.

6.1.2 The maximum angular variation of any opening shall be not more than ½° off the true centerline axis.

6.1.3 *Fittings Not Illustrated*—All fittings, whether illustrated in Table 1 and Table 2 or not, shall have wall thicknesses and thread dimensions conforming to 6.1 and 6.2.

6.2 *Threads*—For all fittings having taper pipe threads, threads shall conform to Specification F 1498 and be gaged in accordance with 8.4.

6.3 *Burst Pressure*:

6.3.1 The 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:

$$S = P(D_O\ t)/2t \qquad (1)$$

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

Fittings tested in accordance with 8.4 shall withstand the minimum burst pressure shown in Table 3.

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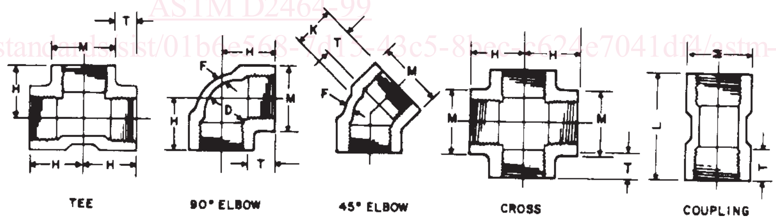
TABLE 1 Dimensions of 90° Ells, Tees, Crosses, 45° Elbows and Couplings (Straight Sizes), in. (mm)[A]



Nominal Pipe Size	Center to Thread End, 90° Elbows, Tees, Crosses,[B] *H*, min	Length of Thread, *T*, min	Center to Thread End, 45° Elbow,[B] *K*, min	Inside Diameter of Fitting, *D*, min	Nominal Wall Thickness, *F*, min	Outside Diameter of Band, *M*, min	Thread End to Thread End of Coupling, *L*, min
⅛	0.688 (17.48)	0.38 (9.65)	0.625 (15.88)	0.171 (4.34)	0.108 (2.74)	0.645 (16.40)	0.813 (20.65)
¼	0.812 (20.63)	0.50 (12.70)	0.688 (17.48)	0.258 (6.55)	0.135 (3.43)	0.840 (21.30)	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 (32.50)	1.344 (34.14)
[n|]P	1.250 (31.75)	0.65 (16.51)	1.000 (25.40)	0.698 (17.73)	0.207 (5.26)	1.500 (38.10)	1.500 (38.10)
1	1.500 (38.10)	0.81 (20.57)	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 (33.35)	1.227 (31.17)	0.261 (6.63)	2.200 (55.88)	1.750 (44.45)
1½	1.938 (49.23)	0.85 (21.54)	1.438 (36.53)	1.446 (36.73)	0.270 (6.86)	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)	3.580 (90.42)	2.625 (66.68)
3	3.063 (77.80)	1.30 (33.02)	2.125 (53.48)	2.820 (71.65)	0.405 (10.29)	4.300 (104.22)	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] This dimension locates the end of the fitting.