Designation: F1083 – 16

Standard Specification for Pipe, Steel, Hot-Dipped Zinc-Coated (Galvanized) Welded, for Fence Structures[1]

This standard is issued under the fixed designation F1083; 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 hot-dipped galvanized welded steel pipe in sizes ranging from 1.315–8.625 in. (33.4–219.1 mm) outside diameter (OD) inclusive, with nominal (average) wall thickness as given in Table 1 and Table 2. Pipe having other dimensions (Note 2) may be furnished provided such pipe complies with all other requirements of this specification. Pipe ordered under this specification is intended for use as a structural support for fencing in accordance with Specification F1043, Group 1A.

NOTE 1—Outside diameter size is designated in that fence fittings are designed to securely fit on the outside of the pipe framework.

NOTE 2—A comprehensive listing of standardized pipe dimensions is contained in ANSI B 36.10.

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

2. Referenced Documents

2.1 *ASTM Standards:*[2]

A90/A90M Test Method for Weight [Mass] of Coating on Iron and Steel Articles with Zinc or Zinc-Alloy Coatings

A700 Guide for Packaging, Marking, and Loading Methods for Steel Products for Shipment

B6 Specification for Zinc

E8 Test Methods for Tension Testing of Metallic Materials

E29 Practice for Using Significant Digits in Test Data to Determine Conformance with Specifications

F1043 Specification for Strength and Protective Coatings on Steel Industrial Fence Framework

2.2 *ANSI Standard:*

B 36.10 Welded and Seamless Wrought Steel Pipe[3]

3. Ordering Information

3.1 Orders for material under this specification shall include the following as required, to describe the desired material adequately:

3.1.1 Specification designation,

3.1.2 Quantity (feet, metres, or number of lengths),

3.1.3 Name of material (schedule 40 steel pipe or schedule 80 steel pipe),

3.1.4 Method of manufacture (electric-resistance welded or furnace welded),

3.1.5 Grade (Regular or High Strength) *High Strength Grade available in sizes 1.660 in. (42.2 mm) OD and larger. Regular Grade is available for all sizes.*

3.1.6 Type (Table 1 or Table 2),

3.1.7 Size (outside diameter and weight per foot),

3.1.8 Length (see Section 14),

3.1.9 Certification (see 18.1), and

3.1.10 Selection of applicable level of preservation and packaging required, if other than in accordance with Practices A700 (see 20.1).

4. Process

4.1 The steel for welded pipe shall be made by one or more of the following processes: electric-furnace, open hearth, or basic-oxygen. The steel for welded pipe shall be of soft weldable quality.

4.2 Welded pipe 4.500 in. (114.3 mm) OD and under may be butt-welded, unless otherwise specified. Welded pipe over 4.500 in. (114.3 mm) OD shall be electric-welded.

5. Coating

5.1 Pipe shall be coated with zinc inside and outside by the hot-dip process.

[1] This specification is under the jurisdiction of Committee F14 on Fences and is the direct responsibility of Subcommittee F14.40 on Chain Link Fence and Wire Accessories.

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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 American National Standards Institute (ANSI), 25 W. 43rd St., 4th Floor, New York, NY 10036, http://www.ansi.org.

TABLE 1 Dimensions, Nominal Weights (Plain Ends) for Standard Weight Pipe (Schedule 40)

NOTE 1—Pipe furnished in accordance with this table will be standard pipe. Nominal size designations are names, not dimensions, thus they are a unit-less term. The dimensionless designator NPS (nominal pipe size) is referenced in this specification as it is the historical designation for schedule 40 pipe. The fence framework application requires the framework fittings to fit securely on the outside of the pipe and therefore the OD, outside diameter, is the applicable dimension for this specification.

NOTE 2—The wall thickness is expressed in three decimal places, the fourth decimal place being carried forward or dropped, in accordance with Practice E29.

NPS	Trade Size O.D.	Outside Diameter		Wall Thickness		Weight	
Designator	in.	in.	(mm)	in.	(mm)	lb/ft	(kg/m)
1	1⅜	1.315	(33.4)	0.133	(3.38)	1.68	(2.5)
1¼	1⅝	1.660	(42.2)	0.140	(3.56)	2.27	(3.4)
1½	1⅞	1.900	(48.3)	0.145	(3.68)	2.72	(4.0)
2	2⅜	2.375	(60.3)	0.154	(3.91)	3.65	(5.4)
2½	2⅞	2.875	(73.0)	0.203	(5.16)	5.80	(8.6)
3 [A]	3½	3.500	(88.9)	0.216	(5.49)	7.58	(11.3)
3½	4[A]	4.000[A]	(101.6)	0.226	(5.74)	9.12	(13.6)
4	4½	4.500	(114.3)	0.237	(6.02)	10.80	(16.1)
5	5⁹⁄₁₆	5.563	(141.3)	0.258	(6.55)	14.63	(21.77)
6	6⅝	6.625	(168.3)	0.280	(7.11)	18.99	(28.3)
8	8⅝	8.625	(219.1)	0.322	(8.18)	28.58	(42.5)

[A] F1083 4.000" OD High Strength Schedule 40 Pipe is not available.

TABLE 2 Dimensions, Nominal Weights (Plain Ends) for Extra Strong Pipe (Schedule 80)

NOTE 1—Pipe furnished in accordance with this table will be extra-strong pipe. Nominal size designations are names, not dimensions, thus they are a unit-less term. The dimensionless designator NPS (nominal pipe size) is referenced in this specification as it is the historical designation for schedule 80 pipe. The fence framework application requires the framework fittings to fit securely on the outside of the pipe and therefore the OD, outside diameter, is applicable dimension for this specification.

NOTE 2—The wall thickness is expressed in three decimal places, the fourth decimal place being carried forward or dropped, in accordance with Practice E29.

NPS	Trade Size O.D.	Outside Diameter		Wall Thickness		Weight	
Designator	in.	in.	(mm)	in.	(mm)	lb/ft	(kg/m)
1	1⅜	1.315	(33.4)	0.179	(4.55)	2.17	(3.23)
1¼	1⅝	1.660	(42.2)	0.191	(4.85)	3.00	(4.47)
1½	1⅞	1.900	(48.3)	0.200	(5.08)	3.63	(5.41)
2	2⅜	2.375	(60.3)	0.218	(5.54)	5.03	(7.48)
2½	2⅞	2.875	(73.0)	0.276	(7.01)	7.67	(11.41)
3	3½	3.500	(88.9)	0.300	(7.62)	10.26	(15.27)
3½	4	4.000	(101.6)	0.318	(8.08)	12.52	(18.63)
4	4½	4.500	(114.3)	0.337	(8.56)	15.00	(22.32)
5	5⁹⁄₁₆	5.563	(141.3)	0.375	(9.52)	20.80	(30.94)
6	6⅝	6.625	(168.3)	0.432	(10.97)	28.60	(42.56)
8	8⅝	8.625	(219.1)	0.500	(12.70)	43.43	(64.64)

5.2 The zinc used for the coating shall be any grade of zinc conforming to Specification B6.

6. Tensile Requirements

6.1 Pipe furnished to this specification shall meet the following minimum tensile requirements when tested in accordance with Test Methods E8.

6.1.1 *Tensile Strength:*

6.1.1.1 *Regular Grade*—Minimum tensile strength shall be 48 000 psi (330 MPa).

6.1.1.2 *High Strength Grade Sch 40*—Minimum tensile strength shall be 60 000 psi (414 MPa). Available in sizes 1.660 in. (42.2 mm) OD and larger. 4 in. (101.6 mm) OD is not available.

6.1.2 *Yield Strength:*

6.1.2.1 *Regular Grade*—Minimum yield strength shall be 30 000 psi (205 MPa).

6.1.2.2 *High Strength Grade Sch 40*—Minimum yield strength shall be 50 000 psi (344 MPa). Available in sizes 1.660 in. (42.2 mm) OD and larger. 4 in. (101.6 mm) OD is not available.

7. Weight of Coating

7.1 The weight of zinc coating shall be not less than 1.8 oz/ft^2 (550 g/m^2), as determined from the average results of the two specimens taken for test in accordance with 10.1 and not less than 1.6 oz/ft^2 (490 g/m^2) for either of these specimens. The weight of coating expressed in ounces per square foot shall be calculated by dividing the total weight of zinc, inside plus outside, by the total area, inside plus outside, of the surface coated. Each specimen shall have not less than 1.3 oz/ft^2 (400 g/m^2) of zinc coating on each surface, calculated by dividing the total weight of zinc on the given surface (outside or inside) by the area of the surface coated (outside or inside).