



Designation: A762/A762M – 19

Standard Specification for Corrugated Steel Pipe, Polymer Precoated for Sewers and Drains¹

This standard is issued under the fixed designation A762/A762M; 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.

1. Scope

1.1 This specification covers polymer precoated corrugated steel pipe intended for use for storm water drainage, underdrains, the construction of culverts, and similar uses. Pipe covered by this specification is not normally used for the conveyance of sanitary or industrial wastes. The steel sheet used in fabrication of the pipe has a polymer protective coating over a metallic coating of zinc, 55 % aluminum-zinc alloy, or zinc-5 % aluminum-mischmetal alloy.

1.2 The polymer precoating provides extra protection of the base metal against corrosion or abrasion, or both, in addition to that provided by the metallic coating. Some severe environments may cause corrosion problems to accessory items such as rivets or coupling band hardware that does not have a polymer coating. Additional protection for polymer precoated corrugated steel pipe can be provided by use of coatings applied after fabrication of the pipe as described in Specification A849.

1.3 This specification does not include requirements for bedding, backfill, or the relationship between earth cover load and sheet thickness of the pipe. Experience has shown that the successful performance of this product depends upon the proper selection of sheet thickness, type of bedding and backfill, controlled manufacture in the plant, and care in the installation. The installation procedure is described in Practice A798/A798M.

1.4 This specification is applicable to orders in either inch-pound units as A762, or in SI units as A762M. Inch-pound units and SI units are not necessarily equivalent. SI units are shown in brackets in the text for clarity, but they are the applicable values when the material is ordered to A762M.

1.5 *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 appro-*

priate safety, health, and environmental practices and determine the applicability of regulatory limitations prior to use.

1.6 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

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
- A153/A153M Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware
- A307 Specification for Carbon Steel Bolts, Studs, and Threaded Rod 60 000 PSI Tensile Strength
- A449 Specification for Hex Cap Screws, Bolts and Studs, Steel, Heat Treated, 120/105/90 ksi Minimum Tensile Strength, General Use
- A493 Specification for Stainless Steel Wire and Wire Rods for Cold Heading and Cold Forging
- A563 Specification for Carbon and Alloy Steel Nuts
- A563M Specification for Carbon and Alloy Steel Nuts (Metric)
- A742/A742M Specification for Steel Sheet, Metallic Coated and Polymer Precoated for Corrugated Steel Pipe
- A780 Practice for Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings
- A796/A796M Practice for Structural Design of Corrugated Steel Pipe, Pipe-Arches, and Arches for Storm and Sanitary Sewers and Other Buried Applications
- A798/A798M Practice for Installing Factory-Made Corrugated Steel Pipe for Sewers and Other Applications
- A849 Specification for Post-Applied Coatings, Pavings, and Linings for Corrugated Steel Sewer and Drainage Pipe
- A929/A929M Specification for Steel Sheet, Metallic-Coated by the Hot-Dip Process for Corrugated Steel Pipe

¹ This specification is under the jurisdiction of ASTM Committee A05 on Metallic-Coated Iron and Steel Products and is the direct responsibility of Subcommittee A05.17 on Corrugated Steel Pipe Specifications.

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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.

- [B633 Specification for Electrodeposited Coatings of Zinc on Iron and Steel](#)
- [B695 Specification for Coatings of Zinc Mechanically Deposited on Iron and Steel](#)
- [C443 Specification for Joints for Concrete Pipe and Manholes, Using Rubber Gaskets](#)
- [D1005 Test Method for Measurement of Dry-Film Thickness of Organic Coatings Using Micrometers](#)
- [D1056 Specification for Flexible Cellular Materials—Sponge or Expanded Rubber](#)
- [F568M Specification for Carbon and Alloy Steel Externally Threaded Metric Fasteners \(Metric\) \(Withdrawn 2012\)³](#)
- 2.2 [AASHTO Standard](#):⁴
- [T 249 Test for Helical Lock Seam Corrugated Pipe](#)
- 2.3 [AISI Standard](#):⁵
- [AISI S100 North American Specification for the Design of Cold-Formed Steel Structural Members](#)

3. Terminology

3.1 Definitions of Terms Specific to This Standard:

- 3.1.1 *fabricator, n*—the producer of the pipe.
- 3.1.2 *manufacturer, n*—the producer of the sheet.

3.1.3 *minimized coating structure, n*—a coating characterized by a finer metallurgical coating structure obtained by a treatment designed to restrict the formation of the normal coarse grain structure formed during solidification of the Zn-5 Al-MM alloy coating.

3.1.4 *purchaser, n*—the purchaser of the finished product.

3.1.5 *regular coating structure, n*—the normal coating structure resulting from unrestricted grain growth during normal solidification of the Zn-5 Al-MM alloy coating.

3.2 Abbreviations:

- 3.2.1 55 Al-Zn—55 % aluminum-zinc.
- 3.2.2 Zn-5 Al-MM—zinc-5 % aluminum-mischmetal.
- 3.2.3 MM—mischmetal.

4. Classification

4.1 The corrugated steel pipe covered by this specification is classified as follows:

4.1.1 *Type I*—This pipe shall have a full circular cross-section, with a single thickness of corrugated sheet, fabricated with annular (circumferential) or helical corrugations.

4.1.2 *Type IA*—This pipe shall have a full circular cross-section, with an outer shell of corrugated sheet and an inner liner of smooth (uncorrugated) sheet, fabricated with helical corrugations and lock seams.

4.1.3 *Type IR*—This pipe shall have a full circular cross-section with a single thickness of smooth sheet, fabricated with helical ribs projecting outwardly.

4.1.4 *Type II*—This pipe shall be a Type I pipe which has been reformed into a pipe arch, having an approximately flat bottom.

4.1.5 *Type IIA*—This pipe shall be a Type IA pipe which has been reformed into a pipe arch, having an approximately flat bottom.

4.1.6 *Type HR*—This pipe shall be a Type IR pipe which has been reformed into a pipe-arch, having an approximately flat bottom.

4.1.7 *Type III*—This pipe, intended for use as underdrains or for underground disposal of water, shall be a Type I pipe which has been perforated to permit the in-flow or out-flow of water.

4.1.8 *Type IIIA*—This pipe, intended for use as underdrains, shall consist of a semicircular cross section, having a smooth (uncorrugated) bottom with a corrugated top shield.

4.2 Perforations in Type III pipe are included in two classes as described in 8.3.2.

4.3 Zn-5 Al-MM alloy coated material is available in two coating classes, or structures, as follows:

- 4.3.1 *Class A*—Minimized coating structure, and
- 4.3.2 *Class B*—Regular coating structure.

5. Ordering Information

5.1 Orders for material to this specification shall include the following information as necessary, to adequately describe the desired product.

5.1.1 Name of material (polymer-coated corrugated steel pipe),

5.1.2 Grade of polymer coating indicating thickness on inside and outside (6.1),

5.1.3 Type of metallic coating (zinc, aluminum, 55 Al-Zn alloy, or Zn-5 Al-MM alloy) (6.1),

5.1.4 ASTM designation and year of issue, as A762—__ for inch-pound units or as A762M—__ for SI units,

5.1.5 Type of pipe (4.1),

5.1.6 Diameter of circular pipe, Table 1, or span and rise of pipe-arch section, Table 2 [Table 3] or Table 4 [Table 5],

5.1.7 Length, either total length or length of each piece and number of pieces,

5.1.8 Description of corrugations (7.2),

5.1.9 Sheet thickness (8.1.2),

5.1.10 For Type I and Type II pipe, the pipe fabrication method, whether with annular corrugations or helical corrugations (7.1.1),

NOTE 1—Pipe with annular corrugations with spot welded or riveted seams is designed by different criteria compared to pipe with helical corrugations. Pipe with annular corrugations must consider seam strength. Therefore, consideration of the method of fabrication is important when pipe is installed under certain conditions of loading.

5.1.11 Coupling bands, number, and type (9.1) if special type is required,

5.1.12 Gaskets for coupling bands, if required (9.3),

5.1.13 For Type III pipe, class of perforations, if other than Class 1 (8.3.2),

5.1.14 Certification, if required (14.1), and

5.1.15 Special requirements.

³ The last approved version of this historical standard is referenced on www.astm.org.

⁴ Available from American Association of State Highway and Transportation Officials (AASHTO), 444 N. Capitol St., NW, Suite 249, Washington, DC 20001, <http://www.transportation.org>.

⁵ Available from American Iron and Steel Institute (AISI), 25 Massachusetts Ave., NW, Suite 800, Washington, DC 20001, <http://www.steel.org>.

TABLE 1 Pipe Sizes

Nominal Inside Diameter		Corrugation Sizes ^A					Ribbed Pipe			Minimum Outside Circumference ^B	
in.	mm	1½ by ¼ in. [38 by 6.5 mm]	2¾ by ½ in. [68 by 13 mm]	3 by 1 in. [75 by 25 mm]	5 by 1 in. [125 by 25 mm]	¾ by ¾ by 7½ in. [19 by 19 by 190 mm]	¾ by 1 by 11½ in. [19 by 25 by 292 mm]	¾ by 1 by 8½ in. [19 by 25 by 216 mm]	in.	mm	
4	100	X							11.4	264	
6	150	X							17.7	441	
8	200	X							24.0	598	
10	250	X							30.2	755	
12	300	X	X						36.5	912	
15	375	X	X						46.0	1148	
18	450	X	X			X	X	X	55.4	1383	
21	500		X			X	X	X	64.8	1620	
24	600		X			X	X	X	74.2	1854	
27	675		X			X	X	X	83.6	2091	
30	750		X			X	X	X	93.1	2483	
33	825		X			X	X	X	102.5	2561	
36	900		X	X	X	X	X	X	111.9	2797	
42	1050		X	X	X	X	X	X	130.8	3269	
48	1200		X	X	X	X	X	X	149.6	3739	
54	1350		X	X	X	X	X	X	168.4	4209	
60	1500		X	X	X	X	X	X	187.0	4675	
66	1650		X	X	X	X	X	X	205.7	5142	
72	1800		X	X	X	X	X	X	224.3	5609	
78	1950		X	X	X	X	X	X	243.0	6075	
84	2100		X	X	X	X	X	X	261.7	6542	
90	2250			X	X	X	X	X	280.3	7008	
96	2400			X	X	X	X	X	299.0	7475	
102	2550			X	X		X	X	317.6	7941	
108	2700			X	X		X	X	336.3	8408	
114	2850			X	X			X	355.0	8874	
120	3000			X	X			X	373.6	9341	
126	3150			X	X			X	392.3	9807	
132	3300			X	X			X	410.9	10274	
138	3450			X	X			X	429.6	10740	
144	3600			X	X			X	448.3	11207	

^A An "X" indicates standard corrugation sizes for each nominal diameter of pipe.

^B Measured in valley of annular corrugations. Not applicable to helically corrugated pipe.

TABLE 2 Pipe Arch Requirements 2¾ by ½-in. Corrugations (A762)

Pipe Arch Size, in.	Equivalent Diameter, in.	Span, ^A in.	Rise, ^A in.	Minimum Corner Radius, in.	Maximum, B, ^B in.
17 by 13	15	17	13	3	5¼
21 by 15	18	21	15	3	6
24 by 18	21	24	18	3	7¼
28 by 20	24	28	20	3	8
35 by 24	30	35	24	3	9½
42 by 29	36	42	29	3½	10½
49 by 33	42	49	33	4	11½
57 by 38	48	57	38	5	13½
64 by 43	54	64	43	6	15
71 by 47	60	71	47	7	16½
77 by 52	66	77	52	8	18
83 by 57	72	83	57	9	20

^A A tolerance of ±1 in. or 2 % of equivalent diameter, whichever is greater, is permissible in span and rise.

^B B is defined as the vertical dimension from a horizontal line across the widest portion of the arch to the lowest portion of the base.

TABLE 3 Pipe Arch Requirements 68 by 13-mm Corrugations (A762M)

Pipe Arch Size, mm	Equivalent Diameter, mm	Span, ^A mm	Rise, ^A mm	Minimum Corner Radius, mm	Maximum B, ^B mm
430 by 330	375	430	330	75	135
530 by 380	450	530	380	75	155
610 by 460	525	610	460	75	185
710 by 510	600	710	510	75	205
780 by 560	675	780	560	75	225
885 by 610	750	870	630	75	240
970 by 690	825	970	690	75	255
1060 by 740	900	1060	740	90	265
1240 by 840	1050	1240	840	100	290
1440 by 970	1200	1440	970	130	345
1620 by 1100	1350	1620	1100	155	380
1800 by 1200	1500	1800	1200	180	420
1950 by 1320	1650	1950	1320	205	460
2100 by 1450	1800	2100	1450	230	510

^A A tolerance of 25 mm or 2 % of equivalent diameter, whichever is greater, will be permissible in span and rise.

^B B is defined as the vertical dimension from a horizontal line across the widest portion of the arch to the lowest portion of the base.

6. Materials and Manufacture

6.1 *Steel Sheet for Pipe*—All pipe fabricated under this specification shall be formed from polymer pre-coated sheet conforming to Specification **A742/A742M**.

6.1.1 The grade of coating shall be stated in the order, and the polymer thickness on both inside and outside of the pipe.

The polymer coating is classified by grade corresponding to the thickness in mils (thousandths inch) on each side in inch-pound units, and the thickness in micrometres on each side in SI units.