Designation: A1042/A1042M – 04 (Reapproved 2009)

Standard Specification for Composite Corrugated Steel Pipe for Sewers and Drains[1]

This standard is issued under the fixed designation A1042/A1042M; 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 composite corrugated steel pipe, intended for uses such as storm water drainage, sanitary sewers, underdrains, construction of culverts, and similar uses. The composite material used in fabrication of the pipe consists of a three-layer polymer protective coating on both sides of a steel sheet core. The three layers consist of an inner layer of fusion-bonded epoxy on the steel surface, an intermediate layer of polyethylene adhesive, and an outer layer of high-density polyethylene.

1.2 The three-layer polymer coating protects the base metal against corrosion or abrasion, or both. Severe environments are likely to cause corrosion problems to accessory items such as coupling band hardware unless supplemental protection is provided. Additional protection for composite steel pipe is available 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 with drainage products has shown that successful performance depends upon the proper selection of corrugation profile, sheet thickness, type of bedding and backfill, controlled manufacture in the plant, and care in installation. The installation procedure is described in Practice A798/A798M.

1.4 This specification is applicable to orders in either inch-pound units as A1042, or in SI units as A1042M. 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 A1042M.

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 appropriate safety and health practices and determine the applicability of regulatory requirements prior to use.*

2. Referenced Documents

2.1 *ASTM Standards:*[2]

A153/A153M Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware

A307 Specification for Carbon Steel Bolts and Studs, 60 000 PSI Tensile Strength

A563 Specification for Carbon and Alloy Steel Nuts

A563M Specification for Carbon and Alloy Steel Nuts (Metric)

A568/A568M Specification for Steel, Sheet, Carbon, Structural, and High-Strength, Low-Alloy, Hot-Rolled and Cold-Rolled, General Requirements for

A742/A742M Specification for Steel Sheet, Metallic Coated and Polymer Precoated for Corrugated Steel Pipe

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

A902 Terminology Relating to Metallic Coated Steel Products

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

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

F568M Specification for Carbon and Alloy Steel Externally Threaded Metric Fasteners (Metric)

[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.

TABLE 1 Pipe Sizes

Nominal Inside Diameter		Corrugation Sizes			
in.	mm	2-⅔ by ½ in. [68 by 13 mm]	3 by 1 in. [75 by 25 mm] 5 by 1 in. [125 by 25 mm]	½ by ¼ in. [13 by 6.5mm]	9⁄16 by ⅜ in. [15 by 10 mm]
6	150			x	
8	200			x	
10	250			x	
12	300	x		x	x
15	375	x		x	x
18	450	x		x	x
21	500	x		x	x
24	600	x			x
27	675	x			x
30	750	x			x
33	825	x			x
36	900	x	x		x
42	1050	x	x		
48	1200	x	x		
54	1350	x	x		
60	1500	x	x		
66	—	x	x		
72	1800	x	x		
78	1950	x	x		
84	2100	x	x		
90	2250		x		
96	2400		x		
102	2550		x		
108	2700		x		
114	2850		x		
120	3000		x		
126	3150		x		
132	3300		x		
138	3450		x		
144	3600		x		

NOTE—An "x" indicates standard composite corrugated profiles for each nominal diameter of pipe.

2.2 *AASHTO Standard:*

T249M Test for Helical Lock Seam Corrugated Pipe[3]

2.3 *ANSI/AWWA Standard:*

C213 Standard for Fusion-Bonded Epoxy Coating for the Interior and Exterior of Steel Water Pipelines[4]

3. Terminology

3.1 *General Definitions*—For definitions of general terms used in this standard, refer to Terminology A902.

3.2 *Definitions of Terms Specific to This Standard:*

3.2.1 *fabricator*—the producer of the pipe.

3.2.2 *manufacturer*—the producer of the sheet.

3.2.3 *purchaser*—the person or agency that purchases the finished product.

4. Classification

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

4.1.1 *Type IC*—This pipe shall have a full circular cross section, with a single thickness of corrugated sheet, fabricated with helical corrugations.

4.1.2 *Type ICS*—This pipe shall have a full circular cross section, with an outer shell of corrugated sheet, fabricated with helical corrugations and lock seams, and an inner liner of high-density polyethylene.

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 (composite corrugated steel pipe),

5.1.2 ASTM designation and year of issue, as A 1042-XX for inch-pound units or as A 1042M-XX for SI units,

5.1.3 Type of pipe (4.1),

5.1.4 Diameter of circular pipe (Table 1),

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

5.1.6 Description of corrugations (7.2),

5.1.7 Sheet thickness (8.1.2),

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

[3] Available from American Association of State Highway and Transportation Officials (AASHTO), 444 N. Capitol St., NW, Suite 249, Washington, DC 20001.

[4] Available from American Water Works Association, 6666 West Quincy Ave., Denver, CO 80235.