



Designation: C428/C428M – 05 (Reapproved 2019)

Standard Specification for Asbestos-Cement Nonpressure Sewer Pipe¹

This standard is issued under the fixed designation C428/C428M; 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 requirements relating to asbestos-cement nonpressure sewer pipe, joints, and fittings suitable for use with gravity flow, intended for sewerage and drainage applications from point of use to point of treatment or disposal. It defines certain conditions of manufacture, classification, characteristics, and acceptance tests applicable to these products.

1.2 The values stated in either SI units or inch-pound units are to be regarded separately as standard. The values stated in each system may not be exact equivalents; therefore, each system shall be used independently of the other. Combining values from the two systems may result in non-conformance with the standard.

NOTE 1—Rubber rings suitable for use with this pipe are covered in Specification D1869.

NOTE 2—As general guidance to achieve safe and clean construction-site conditions when working with asbestos-cement pipe products, the procedures covered in AWWA No. M-16 shall be followed.

NOTE 3—This specification is issued for product standardization and purchasing purposes only, and does not include requirements for installation or the relationships between operating conditions and the strength characteristics of the various classifications of pipe. The purchaser is cautioned that he must correlate installation and operating conditions with the specified characteristics of the pipe.

1.3 **Warning**—Breathing of asbestos dust is hazardous. Asbestos and asbestos products present demonstrated health risks for users and for those with whom they come into contact. In addition to other precautions, when working with asbestos-

cement products minimize the dust that results. For information on the safe use of chrysotile asbestos, refer to “Safe Use of Chrysotile: A Manual on Preventive and Control Measures.”²

1.4 *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, health, and environmental practices and determine the applicability of regulatory limitations prior to use. For a specific safety hazard, see 1.3.*

1.5 *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:³

C150 Specification for Portland Cement
C458 Test Method for Organic Fiber Content of Asbestos-Cement Products
C500 Test Methods for Asbestos-Cement Pipe
C595 Specification for Blended Hydraulic Cements
C618 Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete
D1869 Specification for Rubber Rings for Fiber-Reinforced Cement Pipe

2.2 Federal Standard:

No. 123 Marking for Domestic Shipment (Civilian Agencies)⁴

¹ This specification is under the jurisdiction of ASTM Committee C17 on Fiber-Reinforced Cement Products and is the direct responsibility of Subcommittee C17.03 on Asbestos - Cement Sheet Products and Accessories. Specifications C428 and C644 have been combined into this one edition of Specification C428. In this edition are the results of the work done by the Common Wording Task Force and A/C Sewer Pipe Redesign Task Force. The 1981 edition included the Ordering Information section (Section 5), that is given as an appendix in some Asbestos Cement Specifications under Additional Information, and Requirements for non-Asbestos Cement Couplings and Fittings for use with Asbestos Cement Non-Pressure Sewer Pipe.

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² Available from The Asbestos Institute, www.chrysotile.com/en/sr_use/manual.htm.

³ 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.

⁴ Available from Standardization Documents Order Desk, Bldg. 4 Section D, 700 Robbins Ave., Philadelphia, PA 19111-5098, Attn: NPODS.

2.3 Military Standard:

No. 129 Marking for Shipment and Storage⁴

2.4 Other Standards:

Uniform Freight Classification Rules⁵

National Motor Freight Classification Rules⁶

M-16 Work Practices for Asbestos-Cement Pipe⁷

3. Terminology

3.1 Definitions of Terms Specific to This Standard:

3.1.1 *pipe*—asbestos-cement nonpressure sewer pipe as defined in Sections 1, 3, and 6 of this specification.

3.1.2 *coupling*—a section for joining asbestos-cement non-pressure sewer pipe, as defined in 6.3, that when properly installed with the proper accessories, develops an assembled joint, equivalent in serviceability and strength to the pipe sections when tested in accordance with 8.3 of this specification.

3.1.3 *fitting*—components such as wyes, tees, adaptors, for use in laying asbestos-cement pipe, such that, when properly installed, yields develops an assembly fitting equivalent in serviceability and strength to the pipe sections.

3.2 Lot:

3.2.1 A lot is used herein for designated pipe sizes 150 mm [6 in.] and smaller is defined as those lengths of pipe of that size, class, and type manufactured during the same shift.

3.2.2 A lot, used herein for designated pipe sizes 200 mm [8 in.] through 525 mm [21 in.], is defined as each 300 lengths of pipe or less, of identical size, class, and type manufactured on each machine during a 24-h period.

3.2.3 A lot, used herein for designated pipe sizes larger than 525 mm [21 in.], is defined as each 300 lengths of pipe or less, of identical size, class, and type manufactured on each machine during a period of consecutive working days not exceeding 7 days.

4. Classification

4.1 Asbestos-cement pipe furnished under this specification shall be designated as Classes 1500, 2400, 3300, 4000, 5000, 6000, and 7000 based on the respective crushing strengths, and shall be furnished in the designated sizes as shown in Table 1.

4.2 The type of pipe shall be designated as Type I or Type II in accordance with the chemical requirements of Section 7 of this specification.

NOTE 4—To assist the purchaser in choosing the type of pipe most suitable for his use, guidelines for the definitions of aggressiveness of water and of soil environments for selection of the proper type of asbestos-cement pipe are covered in the appropriate sections of Test Methods C500.

TABLE 1 Designated Sizes of Pipes According to Classes

Designated Size, mm [in.]	Classes ^A						
	1500	2400	3300	4000	5000	6000	7000
100 [4]	X	X	X	—	—	—	—
125 [5]	X	X	X	—	—	—	—
150 [6]	X	X	X	—	—	—	—
200 [8]	X	X	X	—	—	—	—
250 [10]	X	X	X	X	X	—	—
300 [12]	X	X	X	X	X	—	—
350 [14]	X	X	X	X	X	—	—
375 [15]	X	X	X	X	X	—	—
400 [16]	X	X	X	X	X	—	—
450 [18]	—	X	X	X	X	X	X
500 [20]	—	X	X	X	X	X	X
525 [21]	—	X	X	X	X	X	X
600 [24]	—	X	X	X	X	X	X
675 [27]	—	—	X	X	X	X	X
750 [30]	—	—	X	X	X	X	X
825 [33]	—	—	—	X	X	X	X
900 [36]	—	—	—	X	X	X	X
975 [39]	—	—	—	X	X	X	X
1050 [42]	—	—	—	X	X	X	X

^AOther classes may be available on special order.

5. Ordering Information

5.1 It is suggested, without being made a part of this specification, that information shall be included in the agreement for purchase of pipe, couplings, and fittings as follows:

5.1.1 Any tests, in addition to those prescribed by this specification, as the special circumstances shall require,

5.1.2 The place or places where any additional tests are to be made,

5.1.3 Description of the additional testing facilities,

5.1.4 Who shall bear the expense of such additional tests,

5.1.5 Whether such additional tests shall be made by any sound sampling process or other method approved by the parties, and

5.1.6 Whether non-asbestos-cement nonpressure sewer couplings and fittings shall be provided.

6. Materials and Manufacture

6.1 Asbestos-cement pipe shall be made from a homogeneous mixture of portland cement conforming to Specification C150 or other suitable inorganic hydraulic binder meeting Specifications C595 or C618, asbestos fiber and water, with or without silica or minerals containing silica that meet Specification C618, and that can react during autoclaving to form calcium silicate reaction products, in the ratio of cement: silica equal to 3:2. The mixture shall not contain more than 0.2 % of nondeleterious organic components as determined by Test Method C458.

6.2 The pipe shall be of laminar construction formed under pressure to a homogeneous structure and cured to meet the chemical and physical requirements of this specification.

6.3 Couplings:

6.3.1 Asbestos-cement nonpressure sewer couplings shall be made in conformance with 6.1 and 6.2 of this specification.

6.3.2 Non-asbestos-cement nonpressure sewer couplings shall be equivalent in serviceability to those couplings defined in 6.3.1 of this specification and shall be installed in accordance with the manufacturer's recommendations.

⁵ Available from the Uniform Classification Commission, Room 1106, 222 S. Riverside Plaza, Chicago, IL 60606.

⁶ Available from National Motor Freight Traffic Association, Inc. (NMFTA), 1001 N. Fairfax St., Suite 600, Alexandria, VA 22314, <http://www.nmfta.org>.

⁷ Available from American Water Works Association (AWWA), 6666 W. Quincy Ave., Denver, CO 80235, <http://www.awwa.org>.