



Designation: C 663 - 78

An American National Standard

Standard Specification for ASBESTOS-CEMENT STORM DRAIN PIPE¹

This Standard is issued under the fixed designation C 663; the number immediately following the designation indicates 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.

This specification has been approved for use by agencies of the Department of Defense and for listing in the DoD Index Specifications and Standards.

1. Scope

1.1 This specification covers asbestos-cement pipe intended for use in storm-water drainage of highways, airports, farms, foundations, and other similar drainage systems.

NOTE 1—The values stated in inch-pound units are to be regarded as the standard. The metric equivalents of inch-pound units may be approximate.

2. Applicable Documents

- 2.1 *ASTM Standards:*
C 500 Testing Asbestos-Cement Pipe²

3. Classification

3.1 The types of pipe shall be known as Type I and Type II corresponding to the chemical requirements given in 10.1.

3.2 Asbestos-cement storm drain pipe furnished under this specification shall be designated as Class II, III, 2500D, IV, and V. The corresponding strength requirements are prescribed in Table 1. The D load is the crushing test load expressed in pounds-force per linear foot per foot of diameter. (The D₁ load is the crushing test load expressed in newtons per linear metre per metre of diameter.) The pipe shall be furnished in 4, 6, 8, 10, 12, 14, 15, 16, 18, 20, 21, 24, 27, 30, 33, 36, 39, and 42-in. sizes.

4. Definitions

4.1 *pipe*—asbestos-cement storm drain

NOTE 2—To assist the purchaser in choosing the type of pipe most suitable for his use, guidelines for the definition of aggressiveness of water and of soil environments for selection of the proper type of asbestos-cement pipe are covered in Sections 19 to 25 of Methods C 500.

pipe as defined in Sections 1, 3, and 5.

4.2 *coupling*—a section for joining asbestos-cement storm drain that when properly installed develops sufficient tightness to prevent the surrounding soil from entering drain.

4.3 *purchaser*—the actual purchaser of pipe or his authorized agents, acting within the scope of the duties entrusted to them.

4.4 *lot*—A lot as used herein for pipe in. in diameter and smaller is defined as 300 lengths of pipe or less, of identical class and size manufactured on each manufacturing shift during a 24-h period. A lot as used herein for pipe larger than 21 in. in diameter is defined as each 300 lengths of pipe or less, of identical class and size manufactured on each manufacturing shift during a period of consecutive working shifts not exceeding 7 days.

5. Manufacture

5.1 Asbestos-cement storm drain pipe shall be composed of an intimate mixture of portland cement or portland blast-furnace cement and asbestos fiber with or without mica; or it shall be composed of portland cement and asbestos fiber. The material shall be free of organic additives. The material shall be of laminar construction and shall be cured under pressure to a homogeneous structure to meet the physical and chemical requirements of this specification.

¹ This specification is under the jurisdiction of Committee C-17 on Asbestos-Cement Products.

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² Annual Book of ASTM Standards, Part 16.



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shall be as follows: The material
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shall be chemically res-
istant.

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Part 10

6. Dimensions and Permissible Variations

6.1 The nominal length for asbestos-cement storm drain pipe shall be either 10 or 13 ft (3.05 or 3.96 m). A maximum of 15 percent of the total footage of any one size and type for any order may be furnished, at the manufacturer's option, in pipe lengths shorter than specified nominal, but not shorter than 7 ft (2.13 m); these shall be termed random lengths.

6.2 A tolerance of ± 1 in. (25 mm) shall apply to nominal standard lengths. Random lengths shall be classified to 6-in. (152-mm) increments, allowing a tolerance of $+4\frac{1}{8}$ in. (124 mm) and -1 in.

6.3 The average inside diameter of the pipe may be less than the nominal size by not more than $\frac{1}{4}$ in. (6 mm) or $1\frac{1}{2}$ percent, whichever is greater.

7. Sampling

7.1 All material tested under this specification shall be in air-dried condition.

7.2 For crushing tests, select one full length of pipe from each lot of each size, class, and type of pipe covered by the order. Cut one test specimen 12 in. (305 mm) long from the unmachined portion of the selected length of pipe.

7.3 When uncombined calcium hydroxide tests are requested (10.1), take one sample from each lot of pipe and test in accordance with Sections 17 and 18 of Methods C 500. The sample to be tested may be taken from any one of the specimens selected for the crushing test.

8. Couplings

8.1 Each standard, short, or random length of pipe shall be provided with a coupling means for the purpose of maintaining alignment and to ensure close joints.

9. Fittings

9.1 Asbestos-cement storm drain pipe fittings shall be suitable in size, crushing strength, and design for the pipe with which they will be furnished.

10. Test Methods

10.1 *Chemical Requirements*—When tested in accordance with Sections 17 and 18 of

Methods C 500, the amount of uncombined calcium hydroxide shall not exceed 1.0 percent for Type II pipe.

NOTE 3—There are no chemical requirements for Type I pipe.

10.2 *Crushing Strength*—Conduct crushing tests before shipment. One-foot (305-mm) lengths of pipe cut from unmachined portions of the pipe shall have the minimum crushing strength prescribed in Table 1 when tested in accordance with Section 11.1.1 of Methods C 500.

11. Inspection

11.1 All material furnished under this specification shall conform to the requirements stated herein and shall be subjected to the factory inspection and tests prescribed in this specification. When requested by the purchaser in his order (see Appendix X1), the manufacturer shall notify the purchaser of the time that the inspection and testing will take place so that the purchaser may arrange for witnessing such tests and inspections at his own expense. Instead of such inspection, when requested, the manufacturer shall be prepared to certify that his product conforms to the requirements of this specification.

11.2 Each pipe shall be inspected by the manufacturer before shipment for compliance with the standards for dimensions, tolerances, workmanship, and finish (see also Section 7).

12. Rejection

12.1 Failure of any specimen tested for crushing strength to withstand 75 percent of the load specified in 10.2 shall be cause for rejection of the lot from which the test specimen was taken. When any specimen tested for crushing strength withstands over 75 percent but under 100 percent of the load specified in 10.2, one specimen shall be cut from each of two additional pipes of the same lot. Failure of either of these additional specimens to meet the strength requirements of 10.2 shall be cause for rejection of the entire lot from which the original sample was taken.

12.2 If the results of the uncombined cal-

cium hydroxide test show that the sample failed to meet the specification requirements, two additional specimens shall be selected and sampled for each test. The failure of one of these two additional samples to meet the specification requirements of 10.1 shall be cause for rejection of the lot.

13. Marking and Shipping

13.1 Each standard and random length of

pipe shall be marked by the manufacturer with the trade name, nominal size, class, and the date of manufacture.

13.2 Couplings and fittings shall be marked with the size and class.

13.3 Pipe, couplings, and fittings shall be prepared for commercial shipment so as to ensure acceptance by common or other carriers.

SUPPLEMENTARY REQUIREMENTS

The following supplementary requirements shall apply when material is supplied under this specification for U.S. Government procurement.

S1. Packaging

S1.1 Unless otherwise specified in the contract, the material shall be packaged in accordance with the producer's standard practice which will be acceptable to the carrier at lowest rates. Containers and packing shall comply with Uniform Freight Classification Rules³ or National Motor Freight Classification Rules.⁴ Marking for shipment of such material shall be in accordance with Fed. Std. No. 123 for civil agencies and MIL-STD-129 for military agencies.

S2. Responsibility for Inspection

S2.1 Unless otherwise specified in the contract or purchase order, the producer is responsible for the testing of all material to

assure compliance with the requirements specified herein. Except as otherwise specified in the contract or order, the producer may use his own or any other suitable facilities for the performance of the inspection and test requirements specified herein, unless disapproved by the purchaser. The purchaser shall have the right to perform any of the inspections and tests set forth in this specification where such inspections are deemed necessary to assure that material conforms to prescribed requirements.

³ Available from the Uniform Classification Commission, Room 1106, 222 S. Riverside Plaza, Chicago, Ill. 60606.

⁴ Available from National Motor Freight Inc., 1616 P. St., N.W., Washington, D.C. 20036.

TABLE 1 Minimum Crushing Load

Pipe Class	Crushing Strength	
	D Load, lbf/ft	D _i Load, kN/m
II	1500	21.9
III	2000	29.2
2500D	2500	36.5
IV	3000	43.8
V	3750	54.7

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APPENDIX

XI. ADDITIONAL ORDERING INFORMATION

X1.1 It is suggested to the purchaser, without being made a part of this specification, that the purchaser may request inclusion of the following information in his order or agreement for purchase of the pipe:

X1.1.1 Any tests, in addition to those prescribed by this specification, as the special circumstances may require.

X1.1.2 The place or places where any additional tests are to be made.

X1.1.3 Description of the additional testing facilities.

X1.1.4 Who shall bear the expense of such additional tests.

X1.1.5 Whether such additional tests may be made by any sound sampling process or other method approved by the parties, and

X1.1.6 Such other matters as the parties may find desirable to include in their written agreement.

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This standard is subject to revision at any time by the responsible technical committee and must be reviewed every five years and if not revised, either reapproved or withdrawn. Your comments are invited either for revision of this standard or for additional standards and should be addressed to ASTM Headquarters. Your comments will receive careful consideration at a meeting of the responsible technical committee, which you may attend. If you feel that your comments have not received a fair hearing you should make your views known to the ASTM Committee on Standards, 1916 Race St., Philadelphia, Pa. 19103, which will schedule a further hearing regarding your comments. Failing satisfaction there, you may appeal to the ASTM Board of Directors.

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