



Standard Specification for Non-Asbestos Fiber-Cement Underdrain Pipe¹

This standard is issued under the fixed designation C 1447; 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 non-asbestos fiber-cement perforated and plain pipe intended for use in the conveyance of drainage water for the subsurface drainage of highways, airports, farms, foundations, and other similar drainage work.

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

1.3 *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 limitations prior to use.*

2. Referenced Documents

2.1 ASTM Standards:

C 150 Specification for Portland Cement²

C 500 Test Methods for Asbestos-Cement Pipe³

C 595 Specification for Blended Hydraulic Cements²

C 1154 Terminology for Non-Asbestos Fiber-Reinforced Cement Products³

2.2 Federal Standard:

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

2.3 Military Standard:

MIL-STD-129 Marking for Shipment and Storage⁴

2.4 Other Standards:

Uniform Freight Classification Rules⁵

National Motor Freight Classification Rules⁶

3. Terminology

3.1 *Definitions*—Refer to Terminology C 1154.

3.1.1 *coupling, n*—component made from a larger diameter pipe of the same type or class, or of Type II and a higher class,

or produced otherwise to yield at least equal performance, for joining fiber-cement pipe that when properly installed, forms a silt-tight joint, allows alignment corrections and slight changes in direction and provides an assembled joint equivalent in serviceability and strength to the pipe sections.

3.1.2 *lot*—each 400 m (1300 ft) of pipe or less of a given type and size manufactured on each machine during a 24-h period.

4. Sizes and Types

4.1 Fiber-cement underdrain pipe furnished under this specification shall be known as “fiber-cement underdrain pipe.” It shall be furnished in nominal inside diameters of 100, 150, 200, 250, and 300 mm (4, 6, 8, 10, and 12 in.). The types of pipe shall be known as Type I and Type II corresponding to the chemical requirements given in Section 9.

NOTE 1—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 the appropriate sections of Test Methods C 500.

5. Materials and Manufacture

5.1 Fiber-cement underdrain pipe shall be composed of an intimate mixture of an inorganic hydraulic binder (see Specification C 150) or a calcium silicate binder (see Specification C 595) formed by the chemical reaction of a siliceous material and a calcareous material reinforced by organic fibers, inorganic non-asbestos fibers, or both. Process aids, fillers and pigments which are compatible with fiber-reinforced cement are not prohibited from being added. The material shall be of laminar construction, formed under pressure to a homogeneous structure, and cured to meet the physical and chemical requirements of this specification.

6. Crushing Strength

6.1 Crushing tests shall be conducted before shipment. Pipe of 300 mm (1 ft) lengths cut from unmachined portions of the pipe shall have the minimum crushing strength prescribed in Table 1 when tested in accordance with the Procedure section of Test Methods C 500, except that when the perforated underdrain pipe is tested, the sample shall contain four circumferential rows of holes with the first row 40 mm (1.5 in.) from the end. The specimen shall be tested with the line of symmetry of the rows facing downward, with the rows of holes being in

¹ This specification is under the jurisdiction of ASTM Committee C-17 on Fiber-Cement Products and is the direct responsibility of Subcommittee C17.02 on Non-Asbestos Fiber-Cement Products.

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² *Annual Book of ASTM Standards*, Vol 04.01.

³ *Annual Book of ASTM Standards*, Vol 04.05.

⁴ Available from Standardization Documents Order Desk, Bldg. 4 Section D, 700 Robbins Ave., Philadelphia, PA 19111-5094, Attn: NPODS.

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

⁶ Available from National Motor Freight Inc., 1616 P St., NW, Washington, DC 20036.