



Standard Specification for Asbestos-Cement Flat Sheet for Cooling Tower Fill¹

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1. Scope

1.1 This specification covers three classes of flat asbestos-cement sheets for use as cooling tower fill.

1.2 Specifically excluded from this specification are asbestos-cement products intended for use as tower partitioning and casing materials, splash bars, water distribution conduits, and demisters. Also excluded are corrugated sheets and splash bars used as cooling tower fill (heat exchange surfaces) that are covered in Specification C 1081.

1.3 The values stated in the SI system are to be regarded as the standard. The inch-pound units in parentheses are provided for information only.

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 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 458 Test Method for Organic Fiber Content of Asbestos-Cement Products³

C 459 Test Methods of Sampling and Testing Asbestos-Cement Flat Sheets, Roofing and Siding Shingles, and Clapboards³

C 500 Test Methods for Asbestos-Cement Pipe³

C 1081 Specification for Asbestos-Cement Corrugated Fill for Use in Cooling Towers³

D 2946 Terminology for Asbestos and Asbestos-Cement Products³

3. Terminology

3.1 Definitions:

3.1.1 *autoclaved product, n*— in asbestos cement, product treated in a saturated steam atmosphere at between 689 to 1517

kPa (110 to 220 psi) for at least 8 h, and that contain portland cement as defined in Specification C 150 together with silica in the ratio of 3:2 that can react to form calcium silicate reaction products.

3.1.2 *pressed product, n*— product pressed singly or in stacks interlayered with templates, at a minimum pressure of 12 MPa (1740 psi).

3.1.3 *textured product, n*— product with bas-relief motifs that extend the external surface of a sheet sufficiently to increase its heat transfer capacity by at least 10 % under conditions of turbulent gravity flow.

3.1.4 For additional definitions, refer to Terminology D 2946.

4. Classification

4.1 *Type I*—Fill consisting of autoclaved pressed sheets without textured surfaces that meet the requirements set forth in Table 1.

4.2 *Type II*—Fill consisting of non-autoclaved pressed sheets without textured surfaces that meet requirements presented in Table 1.

4.3 *Type III*—Fill consisting of non-autoclaved, non-pressed sheets with textured surfaces, conforming to requirements stated in Table 1.

5. Test Methods

5.1 Apparent Density:

5.1.1 This is determined by dividing the mass of a specimen after drying to constant weight at 110°C $\pm$ 10°F, by the volume of the specimen.

5.2 *Water Absorption*—In accordance with Test Methods C 459.

5.3 *Flexural Strength*—In accordance with Test Methods C 459.

5.4 Freeze-Thaw Resistance:

5.4.1 The number of freeze-thaw cycles specified must not cause any apparent deterioration. Check for signs of delamination by means of a magnifying glass. Inspect the specimens for the presence of invisible cracks by spraying isopropyl alcohol from a hand spray bottle onto the specimen (hairline cracks are revealed when the alcohol evaporates from the surface).

¹ This specification is under the jurisdiction of ASTM Committee C-17 on Fiber-Cement Products and is the direct responsibility of Subcommittee C17.03 on Asbestos-Cement Sheet Products and Accessories.

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² Annual Book of ASTM Standards, Vol 04.01.

³ Annual Book of ASTM Standards, Vol 04.05.