Designation: C1080 – 98 (Reapproved 2014)

Standard Specification for Asbestos-Cement Products Other Than Fill For Cooling Towers[1]

This standard is issued under the fixed designation C1080; 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 drift eliminators or demisters, louvers, partitioning and casing panels.

NOTE 1—Asbestos-cement pipes are covered in Specifications C296 and C428; and asbestos-cement heat exchange fill products are covered in Specification C1082 for flat fill and Specification C1081 for corrugated fill.

1.2 The following classes of products are covered:

	Paragraph	Classifications
Drift eliminators or demisters	4.1	Classes 1, 2 and 3
Louvers	4.2	Classes 1 and 2
Casing panels	4.3	Classes 1 and 2
Asbestos-cement pressure pipes	4.4	Classes 100, 150, and 200
Asbestos-cement nonpressure or gravity drainage pipes	4.5	Classes 1500, 2400, 3300, 4000, and 5000

1.2.1 Products cured at atmospheric pressure or by autoclaving are covered.

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 **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 chrysoltile asbestos, refer to "Safe Use of Chrysotile Asbestos: A Manual on Preventive and Control Measures."[2]

1.5 The following safety hazards caveat pertains only to the test method portion of this specification (Section 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 to determine the applicability of regulatory limitations prior to use. For a specific safety hazard, see 1.4.*

2. Referenced Documents

2.1 *ASTM Standards:*[3]

C150 Specification for Portland Cement
C220 Specification for Flat Asbestos-Cement Sheets
C221 Specification for Corrugated Asbestos-Cement Sheets
C223 Specification for Asbestos-Cement Siding
C296 Specification for Asbestos-Cement Pressure Pipe
C428 Specification for Asbestos-Cement Nonpressure Sewer Pipe
C458 Test Method for Organic Fiber Content of Asbestos-Cement Products
C459 Test Methods for Asbestos-Cement Flat Products
C1081 Specification for Asbestos-Cement Corrugated Fill For Use in Cooling Towers
C1082 Specification for Asbestos-Cement Flat Sheet for Cooling Tower Fill
D2946 Terminology for Asbestos and Asbestos–Cement Products

2.2 *DIN Standard:*

DIN 274 Asbestzement-Weilplatten[4]

3. Terminology

3.1 *Definitions*—The definitions covered in Terminology D2946 are applicable to this specification.

3.2 *Definitions of Terms Specific to This Standard:*

3.2.1 *autoclaved products*—those that have been treated in a saturated steam atmosphere at between 689 and 1517 kPa (100 and 220 psi) for at least 8 h, and that contain portland cement Type I as defined in Specification C150 together with silica in the ratio of 3:2 that can react to form calcium silicate reaction products.

3.3 *pressed products*—include those that are pressed singly

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[2] Available from The Asbestos Institute, http://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 Deutsches Institut für Normunge, Beuth Verlag GmbH, Auslieferung, Post Fach 1107, D-1000 Berlin 30, Germany.

or in stacks interlayered with templates, at a minimum pressure of 12 MPa (1740 psi).

4. Classifications

4.1 *Drift Eliminators or Demisters:*

4.1.1 Class A drift eliminator materials consist of corrugated panels that conform to the following requirements:

Nominal thickness	6.5 mm (¼ in.)
Pitch	177 mm (7 in.)
Minimum deflection (in accordance with Test Methods C459)	2.2 mm (0.1 in.)
Minimum average bending	
Moment calculated as in DIN 274:	1650 Nm/m (370 ft-lbf/ft)
Minimum individual specimen bending	
Moment	1400 Nm/m (315 ft-lbf/ft)

4.1.2 Class B drift eliminator materials consist of corrugated panels that conform to the following requirements:

Nominal thickness	5 mm (3⁄16 in.)
Pitch	155 mm (7 in.)
Deflection, minimum (in accordance with Test Methods C459)	3.3 mm (0.13 in.)
Minimum average bending	
Moment calculated as in DIN 274	1400 Nm/m (315 ft-lbf/ft)
Minimum individual specimen bending	
Moment	1190 Nm/m (266 ft-lbf/ft)

4.1.3 Class C drift eliminator materials consist of flat sheets or clapboards that conform to Specifications C220 (Type F), or C223, in addition to requirements in 4.1.4.

4.1.4 *Additional Requirements:* Minimum thickness 7 mm (0.272 in.)

Minimum apparent density 1.5 g/cm^3 (94 lb/ft^3).

4.2 *Louvers:*

4.2.1 *Class A*—Louver materials consisting of corrugated sheets that conform to Specification C221.

4.2.2 *Class B*—Louver materials consisting of flat sheets that meet requirements in Specifications C220 or C223.

4.3 *Casing Panels:*

4.3.1 *Class A*—Casing panels intended for demanding applications. In addition to compliance with Specifications C220 for flat panels or C221 for corrugated panels, Type I casing panels must be made from Type V cement as defined in Specification C150 and must have a minimum apparent density of 1.6 g/cm^3 (100 lb/ft^3).

4.3.2 *Class B*—Casing panels intended for less demanding service need only comply with Specification C220 for flat panels or Specification C221 for corrugated panels.

4.4 *Asbestos-Cement Pressure Pipes:*

4.4.1 Classes 100, 150, and 200 shall conform with Specification C296.

4.5 *Asbestos-Cement Nonpressure or Gravity Drainage Pipes:*

4.5.1 Asbestos-cement nonpressure or gravity drainage pipes, Classes 1500, 2400, 3300, 4000, and 5000 must conform with Specification C428.

4.6 *Cooling Tower Fill:*

4.6.1 Flat sheet fill (heat transfer panels).

4.6.1.1 Classes A, B, and C shall conform with Specifications C1081 and C1082.

4.6.2 *Corrugated Sheet Fill (heat transfer panels)*—Class A must conform with Specifications C1081.

4.6.3 *Splash Bars*—Splash bar Types I and II must conform with Specifications C1082.

5. Test Methods

5.1 *Apparent Density*—This is determined by dividing the mass of a specimen after drying to constant weight at 100 ± 5°C (225 ± 10°F), by the volume of the specimen.

5.2 *Water Absorption*—In accordance with Test Methods C459.

5.3 *Flexural Strength and Modulus of Rupture*—In accordance with Test Methods C459.

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).

5.4.2 Each cycle shall consist of saturating the specimen by submerging in water at 30 ± 2°C (86 ± 3°F) during 2 ± 0.2 h followed by rapid drainage and freezing at –20 ± 2°C (–4 ± 3°F) during 10 ± 0.2 h. The twice-daily cycle then repeats starting with the 2 h period of thawing and saturation in water at 30°C.

5.5 *Harkort Test:*

5.5.1 The specimen is dried in an oven at 100 ± 2°C (212 ± 3°F) for 2 ± 0.2 h before rapidly immersing it in 10 ± 0.1 kg (20 ± 0.2 lb) of water at 20 ± 2°C (68 ± 3°F) for 10 ± 0.2 min. Then the specimen is examined for signs of deterioration. Check and inspect as in 5.4.1. If the specimen does not appear deteriorated, it is returned to the oven for drying during 24 ± 0.2 h at 110 ± 2°C (230 ± 3°F) before reimmersing in the same way.

5.5.2 Subsequent drying periods at successively higher temperatures are each of 23 h 45 min at oven temperatures specified as follows:

3rd drying	120 ± 2°C (258 ± 3°F)
4th drying	130 ± 2°C (266 ± 3°F)
5th drying	140 ± 2°C (284 ± 3°F)
6th drying	150 ± 2°C (302 ± 3°F)
7th drying	160 ± 2°C (320 ± 3°F)

5.5.3 The number of cycles sustained without deterioration is reported.

5.6 Additional details are presented in Specifications C220, C221, C296, C1081, and C1082, Test Method C458 and Test Methods C459.

6. Inspection

6.1 Inspection of the material shall be agreed upon between the purchaser and the supplier as part of the purchase contract.

7. Rejection and Rehearing

7.1 Material that fails to conform to the requirements of this specification may be rejected. Rejection shall be reported to the producer or supplier promptly and in writing. In case of dissatisfaction with the results of the tests, the producer or supplier may make claim for a rehearing.

8. Certification

8.1 When specified in the purchase order or contract, a producer's or supplier's certification shall be furnished to the purchaser that the material was manufactured, sampled, tested and inspected in accordance with this specification and has been found to meet the requirements. When specified in the purchase order or contract a report of the test results shall be furnished.

8.2 Upon request of the purchaser in the contract or order, the certification of an independent third party indicating conformance to the requirements of this specification may be accepted instead of the manufacturer's certification.

9. Product Marking

9.1 For all but the lowest classes of products it is necessary to print on each piece, in alkali resistant ink, the identification of the class or type which is to be furnished.

10. Keywords

10.1 asbestos; asbestos-cement; cement cooling tower; non-fill