Designation: C1325 – 22

Standard Specification for Fiber-Mat Reinforced Cementitious Backer Units[1]

This standard is issued under the fixed designation C1325; 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-mat reinforced cementitious backer units manufactured to be dimensionally stable and suitable as either an unfinished substrate (see Note 1) or as a substrate for decoration such as natural stone or tile on walls, floors, or decks in wet and dry areas. It is also suitable to be used as a substrate in the Application of Class PB Exterior Insulation Finish Systems (Practice C1397), the Application of Direct-Applied Finish Systems (Practice C1516), and the Application of Exterior Insulation Finish Systems Class PI (Practice C1535).

NOTE 1—When used as an unfinished substrate, consult the manufacturer's written installation literature for proper application details.

1.2 This specification is not applicable to asbestos-cement flat sheets (Specification C220); non-asbestos fiber cement flat sheets for exterior applications such as claddings, facades, curtain walls, and soffits (Specification C1186); gypsum backing board, coreboard, and shaftliner (Specification C1396/C1396M); water-resistant gypsum backing board (Specification C1396/C1396M); glass mat gypsum backing board (Specification C1178/C1178M); particle boards (Definitions D1554); and discrete non-asbestos fiber cement interior substrate sheets (Specification C1288).

1.3 *Units*—The values stated in inch-pound units are to be regarded as standard. The values given in parentheses are mathematical conversions to SI units that are provided for information only and are not considered standard.

1.4 *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:*[2]

C220 Specification for Flat Asbestos-Cement Sheets (Withdrawn 2021)[3]

C473 Test Methods for Physical Testing of Gypsum Panel Products

C666/C666M Test Method for Resistance of Concrete to Rapid Freezing and Thawing

C947 Test Method for Flexural Properties of Thin-Section Glass-Fiber-Reinforced Concrete (Using Simple Beam With Third-Point Loading)

C1154 Terminology for Non-Asbestos Fiber-Reinforced Cement Products

C1178/C1178M Specification for Coated Glass Mat Water-Resistant Gypsum Backing Panel

C1185 Test Methods for Sampling and Testing Non-Asbestos Fiber-Cement Flat Sheet, Roofing and Siding Shingles, and Clapboards

C1186 Specification for Flat Fiber-Cement Sheets

C1288 Specification for Fiber-Cement Interior Substrate Sheets

C1396/C1396M Specification for Gypsum Board

C1397 Practice for Application of Class PB Exterior Insulation and Finish Systems (EIFS) and EIFS with Drainage

C1516 Practice for Application of Direct-Applied Exterior Finish Systems

C1535 Practice for Application of Exterior Insulation and Finish Systems Class PI

D1037 Test Methods for Evaluating Properties of Wood-Base Fiber and Particle Panel Materials

D1554 Terminology Relating to Wood-Base Fiber and Particle Panel Materials

D2394 Test Methods for Simulated Service Testing of Wood and Wood-Based Finish Flooring

[1] This specification is under the jurisdiction of ASTM Committee C17 on Fiber-Reinforced Cement Products and is the direct responsibility of Subcommittee C17.01 on Non-Asbestos Fiber-Mat Reinforced Products.

Current edition approved June 15, 2022. Published July 2022. Originally approved in 1996. Last previous edition approved in 2021 as C1325 - 21. DOI: 10.1520/C1325-22.

[2] 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.

[3] The last approved version of this historical standard is referenced on www.astm.org.

***A Summary of Changes section appears at the end of this standard**

E84 Test Method for Surface Burning Characteristics of Building Materials
G21 Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi
G22 Practice for Determining Resistance of Plastics to Bacteria (Withdrawn 2002)[3]
2.2 *ANSI Standards:*[4]
A118.1 American National Standard Specification for Dry-Set Cement Mortar
A118.4 American National Standard Specification for Modified Dry-Set Cement Mortar
A136.1 Standard for Organic Adhesives for Installation of Ceramic Tile

3. Terminology

3.1 *Definitions*—Refer to Terminology C1154.

4. Classification

4.1 Flat sheets covered by this specification are divided into two types, according to their intended application.

4.1.1 *Type A*—Sheets are intended for exterior applications as a substrate for other cladding materials, or as an unfinished substrate for decoration such as natural stone, tile, or coatings. Type A products are also suitable for interior use.

4.1.2 *Type B*—Sheets are intended for covered exterior applications such as soffit areas, or for interior dry or wet area applications as a desired unfinished substrate or an unfinished substrate for decoration such as natural stone or tile, where substrate dimensional stability is required.

NOTE 2—Flat sheets may be supplied coated or uncoated.

5. Composition and Manufacture

5.1 *Composition*—This specification is applicable to non-asbestos fiber-mat reinforced cementitious backer units consisting essentially of an inorganic hydraulic binder or a calcium silicate binder formed by the chemical reaction of a siliceous material and a calcareous material, reinforced by fiber-mat made of organic fibers, inorganic non-asbestos fibers, or both.

NOTE 3—Process aids, fillers, pigments, and other fibers that are compatible with the fiber-mat cement may be added.

5.2 *Manufacture*—These products are formed either with or without pressure and cured, either under natural or accelerated conditions, to meet the property requirements of this specification.

6. Mechanical and Physical Properties

6.1 Mechanical and physical properties shall be determined on an uncoated product wherever practical. Where the products are supplied coated, this material shall also be tested with the results identified as applying to coated material.

6.2 *Sampling*—Obtain five samples of the particular cement substrate sheet to be tested from a commercial lot of not less than 50 000 ft^2 to conduct the tests described in this specification.

6.3 *Mechanical Properties:*

6.3.1 *Flexural Strength*—When tested in accordance with Test Method C947, flexural strength shall be not less than 750 psi (5170 kPa). Nominal specimen width shall be minimum 4 in. (100 mm) to maximum 12 in. (300 mm).

6.3.2 Sheets shall be tested and specified in both the wet and equilibrium conditions and shall meet the minimum wet and minimum equilibrium flexural strength requirements.

NOTE 4—When sampled from continuous production, these tests may be conducted on dry, equilibrium, or saturated specimens, provided a relationship can be established between this testing and the specified values.

6.4 *Physical Properties:*

6.4.1 *Density*—Nominal values and tolerances for density shall be stated by the manufacturer for each of the products. When tested in accordance with the test method specified in Test Methods C1185, the value for the density shall comply with the value stated by the manufacturer.

6.4.2 *Modulus of Elasticity*—Values for the modulus of elasticity shall be stated by the manufacturer for each of the products. When tested in accordance with Test Method C947, the value for modulus of elasticity shall comply with the value stated by the manufacturer. Nominal specimen width shall be minimum 4 in. (100 mm) to maximum 12 in. (300 mm). Calculate the modulus of elasticity for each sample specimen by the following equation:

$$E = 5\left(P_2 - P_1\right) \times L^3/27bd^3\left(y_2 - y_1\right) \quad (1)$$

where:

E = modulus of elasticity, psi (MPa),
P_2 and P_1 = loads, lb (N), taken from two points within the linear section of the plot,
y_2 and y_1 = deflections, in. (mm) corresponding to the loads selected,
b = width of specimen, in. (mm),
d = thickness of specimen, in. (mm), and
L = span, in. (mm).

7. Dimensions and Tolerances

7.1 *Method of Measurement*—The method of measurement for 7.1.1 – 7.1.5 shall be in accordance with Test Methods C473.

7.1.1 *Nominal Length and Width*—Fiber-mat reinforced cementitious backer units are typically supplied in nominal lengths of 48 in. (1219 mm) to 96 in. (2438 mm) and nominal widths of 32 in. (810 mm) to 48 in. (1219 mm). Lengths and widths other than stated above are not prohibited from being supplied.

7.1.2 *Nominal Thickness*—Fiber-mat reinforced cementitious backer units are typically supplied in nominal thicknesses of ¼ in. (6 mm) to ⅝ in. (16 mm). Thicknesses other than stated above are not prohibited from being supplied.

7.1.3 *Length and Width Tolerance*—The tolerance from the nominal value shall be ±⅛ in. (3 mm).

7.1.4 *Thickness Tolerance*—The maximum difference between extreme values of the thickness measurement within a sheet shall not exceed 0.03 in. (0.8 mm). Thickness variation from sheet to sheet shall not exceed 0.03 in. (0.8 mm).

[4] Available from American National Standards Institute (ANSI), 25 W. 43rd St., 4th Floor, New York, NY 10036, http://www.ansi.org.