



Standard Specification for PB Exterior Insulation and Finish Systems¹

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^{ε1} NOTE—Editorial changes were made throughout to comply with ASTM's policy on Units in Standards (April 2009).

1. Scope

1.1 This specification covers PB Exterior Insulation and Finish Systems (EIFS) defined as an exterior, non-bearing wall covering providing a weather-resistant exterior wall envelope on walls required to be combustible or noncombustible, fire-resistance-rated or nonfire-resistance-rated. Further, PB EIFS is a system described as being applied over expanded polystyrene or polyisocyanurate insulation board, an adhesive or mechanical attachment of the insulation board to a substrate, or both, glass fiber reinforcing mesh, a base coat on the face of the insulation board, and a textured protective finish coat.

1.2 This specification does not cover Class PB EIFS with drainage.

1.3 This specification qualifies EIFS products for use in normal service conditions and is not for evaluating in service EIFS installations.

1.4 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.

1.5 *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 determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 ASTM Standards:²

- B 117 Practice for Operating Salt Spray (Fog) Apparatus
- C 297/C 297M Test Method for Flatwise Tensile Strength of Sandwich Constructions
- C 578 Specification for Rigid, Cellular Polystyrene Thermal Insulation

¹ This test method is under the jurisdiction of ASTM Committee E06 on Performance of Buildings and is the direct responsibility of Subcommittee E06.58 on Exterior Insulation and Finish Systems (EIFS).

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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.

- C 1289 Specification for Faced Rigid Cellular Polyisocyanurate Thermal Insulation Board
- D 2247 Practice for Testing Water Resistance of Coatings in 100 % Relative Humidity
- E 84 Test Method for Surface Burning Characteristics of Building Materials
- E 119 Test Methods for Fire Tests of Building Construction and Materials
- E 330 Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference
- E 331 Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference
- E 2098 Test Method for Determining Tensile Breaking Strength of Glass Fiber Reinforcing Mesh for Use in Class PB Exterior Insulation and Finish Systems (EIFS), after Exposure to a Sodium Hydroxide Solution
- E 2110 Terminology for Exterior Insulation and Finish Systems (EIFS)
- E 2134 Test Method for Evaluating the Tensile-Adhesion Performance of an Exterior Insulation and Finish System (EIFS)
- E 2485 Test Method for Freeze/Thaw Resistance of Exterior Insulation and Finish Systems (EIFS) and Water Resistive Barrier Coatings
- E 2486 Test Method for Impact Resistance of Class PB and PI Exterior Insulation and Finish Systems (EIFS)
- G 23 Practice for Operating Light-Exposure Apparatus (Carbon-Arc Type) With and Without Water for Exposure of Nonmetallic Materials (Discontinued 2001)³
- G 26 Practice for Operating Light-Exposure Apparatus (Xenon-Arc Type) With and Without Water for Exposure of Nonmetallic Materials (Discontinued 2001)³
- G 153 Practice for Operating Enclosed Carbon Arc Light Apparatus for Exposure of Nonmetallic Materials
- G 155 Practice for Operating Xenon Arc Light Apparatus for Exposure of Non-Metallic Materials

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

2.2 NFPA Standards:⁴

ANSI/NFPA 268 Standard Test Method for Determining Ignitability of Exterior Wall Assemblies Using a Radiant Heat Energy Source

ANSI/NFPA 285 Standard Fire Test Method for the Evaluation of Fire Propagation Characteristics of Exterior, Nonload-bearing Wall Assemblies Containing Combustible Components

3. Terminology

3.1 Definitions are in accordance with Terminology **E 2110** unless otherwise specified.

3.2 *Definitions of Terms Specific to This Standard:*

3.3 *class PB EIFS, n*—EIFS where the base coat varies in thickness depending upon the number of layers, or thickness of reinforcing mesh. The reinforcing mesh is glass fiber mesh that is encapsulated by the base coat in accordance with EIFS manufacturer recommendations. Protective finish coats, of various thicknesses in a variety of textures and colors, are applied over the base coat.

3.3.1 *Discussion*—Class PB EIFS includes foam plastic conforming to either Specifications **C 578** or **C 1289**.

3.4 *EIFS-related construction, n*—construction that works in conjunction with the EIFS, but is not part of the EIFS.

4. Materials and Manufacture

4.1 *Product Description*—The material and specifications shall be as specified by the selected EIFS manufacturer and shall be defined as in Terminology **E 2110** except as modified herein.

5. Performance Requirements

5.1 The system and its components shall meet or exceed the performance standards described in **5.2-5.7** of this specification.

5.2 Performance:

5.2.1 System performance shall be in conformance with the minimum properties listed in **Table 1**.

5.3 Component performance shall be in conformance with **Table 2**.

5.4 Fire Performance:

5.4.1 System fire performance shall be in conformance with **Table 3** as required.

5.5 Component fire performance shall be in accordance with **Table 4**.

5.6 Structural performance shall be in conformance with **Table 5**.

5.7 Impact shall be in conformance with **Table 6**.

6. Inspection

6.1 Materials supplied by the manufacturer shall be supplied to the site location in original unopened containers with labels intact. Upon arrival, the materials shall be inspected for damage, and the manufacturer notified of any discrepancies. Unsatisfactory materials shall not be used.

7. Packaging and Package Marking

7.1 A description of the method of packaging and field identification of the material shall include the following:

7.1.1 Name and address of the manufacturer.

7.1.2 Identification of components,

7.1.3 Lot or batch number,

7.1.4 Quantity of material in the packaged mix,

7.1.5 Storage instructions,

7.1.6 Pot life,

7.1.7 Expiration date (when applicable), and

7.1.8 The name of the accredited inspection agency (when applicable).

8. Keywords

8.1 adhesive; basecoat; Class PB; EIFS; Exterior Insulation and Finish System; system; textured finish; thermal insulation board

⁴ Available from National Fire Protection Association (NFPA), 1 Batterymarch Park, Quincy, MA 02169-7471, <http://www.nfpa.org>.

TABLE 1 System Performance Tests

Characteristic	Standard	Minimum Properties
Accelerated weathering	Practices G 153^A or G 155^{B,C}	No deleterious effects ^D after 2000 h when viewed under 5× magnification.
Freeze/thaw	Test Method E 2485 (Formerly EIMA Std. 101.01)	No deleterious effects ^D when viewed under 5× magnification.
Salt spray resistance	Practice B 117	No deleterious effects ^D at 300-h exposure period.
Tensile bond adhesion	Test Methods E 2134 or C 297/C 297M	No failure in the adhesive coat, base coat, or finish coat. The insulation board shall fail cohesively except that 25 % adhesive failure is acceptable. For tested values of 15 psi (103 kPa) or greater, adhesive failure up to 100 % is acceptable.
Water penetration	Test Method E 331	The exterior wall envelope design shall be considered to resist wind-driven rain where the results of testing indicate that water did not penetrate control joints in the exterior wall envelope, joints at the perimeter of openings or intersections of terminations with dissimilar materials after 2 h of water application at a pressure differential of 6.24 psf (299 Pa).
Water resistance	Practice D 2247	No deleterious effects ^D at 14-day exposure.

^A Formerly specified in Test Method **G 23**.

^B Formerly specified in Test Method **G 26**.

^C Due to differences in spectral power distribution, results from Practice **G 155**, Cycle 1, and Practice **G 153**, Cycle 1, cannot be directly compared.

^D No deleterious effects; no cracking, checking, crazing, erosion, rusting, blistering, peeling, or delamination.

TABLE 2 Component Performance Tests

Characteristic	Standard	Minimum Properties
Physical properties and requirements for EPS	Specification C 578	Meets Type I
Physical properties and requirements for polyisocyanurate	Specification C 1289	Meets Type II, Class 2 or 3
Alkali resistance of reinforcing mesh	Test Method E 2098	120 pli (21 dN/cm) retained tensile strength

TABLE 3 System Fire Performance Tests

Characteristic	Test Method	Minimum Properties
Fire endurance	Test Methods E 119	Maintain fire resistance of known, rated wall assembly
Full-scale multi-story fire test	ANSI/NFPA 285	1. Resistance to vertical spread of flame within the core of the panel from one story to the next. 2. Resistance to flame propagation over the exterior face of the system. 3. Resistance to vertical spread of flame over the interior (room side) surface from one story to the next. 4. Resistance to lateral spread of flame from the compartment of fire origin to adjacent spaces
Ignition resistance	ANSI/NFPA 268	No surface ignition when exposed to 3950 BTU-h/ft ² (12.5 kW/m ²).

TABLE 4 Fire Performance Test

Characteristic	Test Method	Minimum Properties
Surface burning	Test Method E 84	Insulation board and reinforced coating system shall each separately have a flame spread of 25 or less, and smoke developed of 450 or less

TABLE 5 Structural Performance Tests

Characteristic	Test Method	Minimum Properties
Wind load	Test Method E 330	Report negative and positive wind load values

TABLE 6 Impact Performance Tests

NOTE 1—The lowest value stated for each level is the minimum value required.

Characteristic	Test Method	Minimum Properties
Impact resistance	Test Method E 2486	Standard: 25-49 in-lb (2.83-5.54J) Medium: 50-89 in-lb (5.65-10.1J) High: 90-150 in-lb (10.2-17J) Ultra High: >150 in-lb (>17J)

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