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Standard Test Method for Determining the Drainage Efficiency of Exterior Insulation and Finish Systems (EIFS) Clad Wall Assemblies[1]

This standard is issued under the fixed designation E2273; 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 test method determines the drainage efficiency of EIFS clad wall assemblies when subjected to a water spray rate in accordance with Test Method E331.

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

1.3 *This standard may involve hazardous materials, operations and equipment. 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]

E331 Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference

E2110 Terminology for Exterior Insulation and Finish Systems (EIFS)

3. Terminology

3.1 Definitions used in this standard shall be in accordance with Terminology E2110.

3.2 *Definitions of Terms Specific to This Standard:*

3.2.1 *drainage efficiency*—a percentage value based on the amount of water that passed through the test specimen and was collected divided by the amount of water sprayed into the slot fault.

3.2.2 *test specimen*—the entire assembled unit submitted for testing as described in Section 7.

3.2.3 *test specimen slot fault*—an opening in the test specimen where the insulation board, and other components have been removed exposing the weather-resistive barrier to which water spray is directed.

3.2.4 *water drainage*—the ability of the test specimen to drain water.

4. Summary of Test Method

4.1 This test method consists of sealing a spray box to the test specimen and then concentrating a water spray into the slot fault of the test specimen.

5. Significance and Use

5.1 This test method is a standard procedure for determining the drainage efficiency of an EIFS clad wall assembly.

6. Apparatus

6.1 *Spray Box,* a transparent plastic, or equivalent, box measuring 622 by 241 by 184 mm (24½ by 9½ by 7¼ in.) containing a water spray system that is sealed to the test specimen.

6.2 *Water Spray System,* two spray nozzles installed in the spray box, oriented to apply all the water into the slot fault and located 13 mm (½ in.) from the open side of the spray box and 150 mm (6 in.) to the right and left of vertical center of the slot fault. A pressure regulator, flow meter, and an inline water filter to the spray nozzles control the flow rate of water sprayed into the slot fault. The water spray system shall deliver water at a rate of 106 g (0.234 lb) per minute +10 % – 0 %.

6.3 *Drained Water Container(s),* a container, or containers, tared to the nearest 1.0 g (0.002 lb) of sufficient size to retain the water drained from the test specimen.

6.4 *Balance,* with a capacity of 20 kg (45 lb) and accuracy of 1.0 g (0.002 lb).

6.5 A means of collection such as a trough, to direct the drained water to the drained water container. The collection method may also be the tared container.

[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.

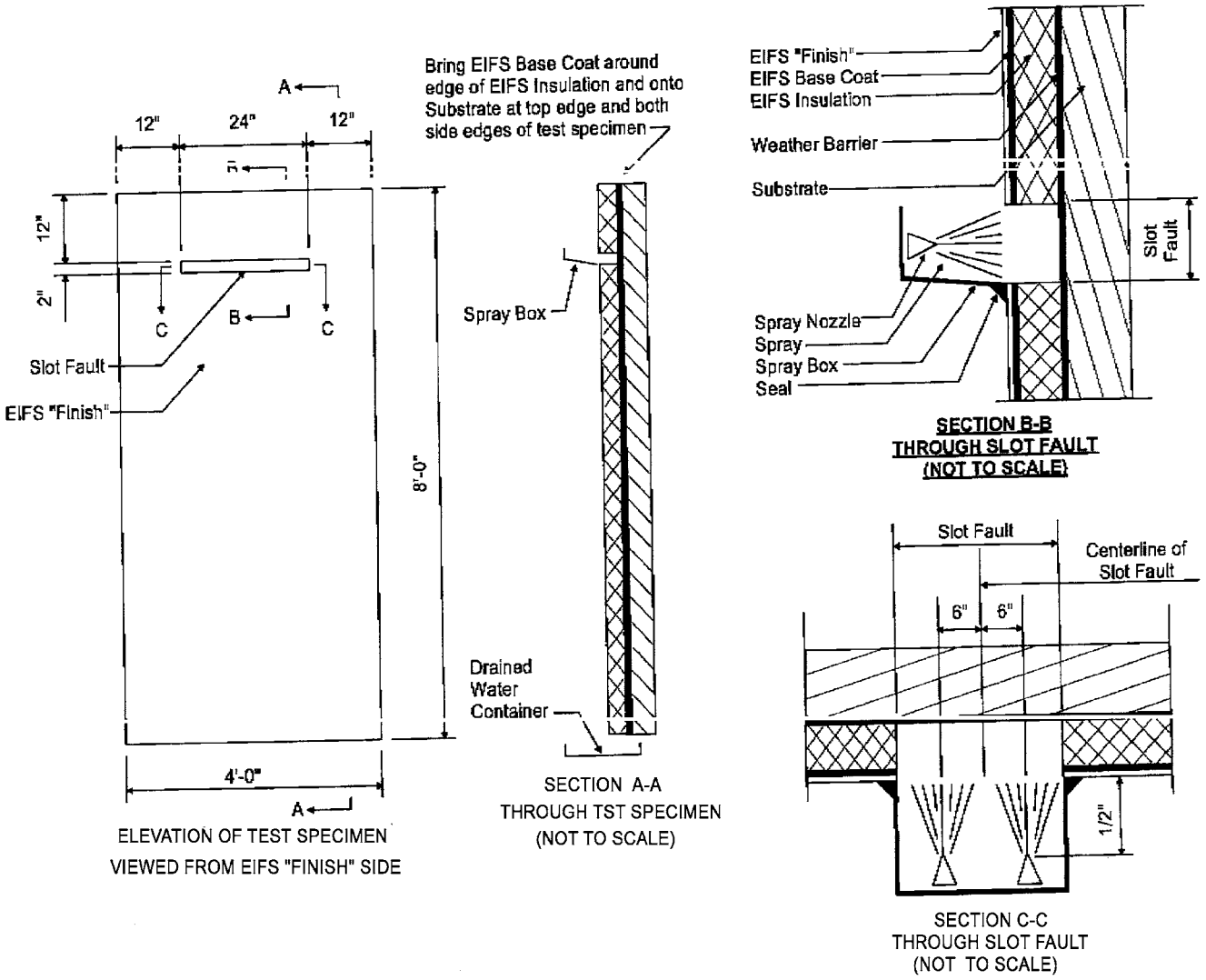

FIG. 1 EIFS Test Specimen

7. Calibration of Flow Rate

7.1 Collect the water from the water spray system in a tared container for a period of 15 min. Obtain the weight of the collected water and adjust the flow rate if necessary to obtain a weight of water of 1590 g (3.5 lb) to 1745 g (3.8 lb). Multiply this weight by 5 to obtain the amount of water that is delivered to the test specimen and report it in 10.1.7.

8. Test Specimen

8.1 The EIFS clad wall assembly test specimen shall be a minimum of 1220 mm (48 in.) by 2440 mm (96 in.).

8.2 The test specimen shall consist of the same materials and details, and be prepared by the same methods as used in actual construction.

8.3 A 51 mm (2 in.) by 610 mm (24 in.) slot fault shall be constructed in the insulation board, lamina, and other components at a distance of 304 mm (12 in.) from the top of the slot fault to the top of the test specimen so that the weather resistive barrier is exposed. The slot fault shall be centered on the vertical center line of the panel. The top and sides of the test specimen shall be sealed at the interface of the insulation board and substrate. This can be accomplished by edge wrapping the test specimen with base coat and reinforcing mesh. The insulation board edge around the perimeter of the slot fault shall be exposed. See Fig. 1.

8.4 The EIFS clad wall assembly shall be cured for a minimum of 28 days prior to testing.

9. Test Procedure

9.1 Photograph the test set-up.

9.2 Mount and seal the spray box to the test specimen in such a manner that all water enters the slot fault. Center the spray box with the bottom edge of the spray box even with the bottom edge of the slot fault. Position the test specimen vertical and plumb.

9.3 Place the means of water collection or the tared container on a scale balance at the base of the test specimen in order to collect and weigh the drained water.

9.4 Begin water spray and start time.

9.5 Observe if water build-up occurs in the spray box and report duration and depth.

9.6 Record the weight of drained water at 15 min intervals (5 times during the test period) to the nearest 1.0 g (0.002 lb).

9.7 After 75 min terminate the water spray.

9.8 Continue to collect water for 60 min after termination of water spray. Weigh the container(s) of drained water and calculate the total weight of drained water.

10. Report

10.1 At a minimum, include the following information in the report:

10.1.1 Date of test and report.

10.1.2 Identification of test specimen to include manufacturer, materials, construction details, dimensions, application instructions, literature and other pertinent information.

10.1.3 Detailed drawings of the test specimen providing a description of the EIFS clad wall assembly.

10.1.4 The rate of water spray.

10.1.5 The weight of water collected at each 15-min intervals.

10.1.6 Total weight of water collected after 60-min draining period.

10.1.7 Total weight of water sprayed into the slot fault.

10.1.8 The drainage efficiency of the test specimen.

10.1.8.1 EIFS clad wall assembly Drainage Efficiency (%) = (Total weight of collected water ÷ Total weight of water delivered to the test specimen) × 100.

10.1.9 Any water leakage through the back of the test specimen.

10.1.10 Photographs.

10.1.11 Duration and depth of water build-up in the spray box.

11. Keywords

11.1 drainage; drainage efficiency; drainage performance; EIFS; EIFS clad wall assembly; exterior insulation and finish system