



# Standard Practice for Specimen Preparation and Mounting of Wood Products to Assess Surface Burning Characteristics<sup>1</sup>

This standard is issued under the fixed designation E2579; 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 ( $\epsilon$ ) indicates an editorial change since the last revision or reapproval.

## 1. Scope

1.1 This practice describes procedures for specimen preparation and mounting when testing wood products to assess flames spread and smoke development as surface burning characteristics using Test Method E84 or Test Method E2768.

1.1.1 Test Method E2768 uses the same test equipment as Test Method E84.

1.2 This practice applies also to laminated products factory-produced with a wood substrate (see 8.6). This practice does not apply to wood veneers or facings intended to be applied on site over a wood substrate, which are covered by Practice E2404.

1.3 Testing is conducted with Test Method E84 or with Test Method E2768.

1.4 Testing for the reporting of the moisture content of the test specimen is conducted with Test Methods D4442.

1.5 This practice does not provide pass/fail criteria that can be used as a regulatory tool.

1.6 *Units*—Use the values stated in inch-pound units as the standard, in referee decisions. The values in the SI system of units are given in parentheses, for information only; see IEEE/ASTM SI-10 for further details.

1.7 This fire standard cannot be used to provide quantitative measures.

1.8 The text of this standard references notes and footnotes which provide explanatory materials. These notes and footnotes shall not be considered requirements of the standard.

1.9 *Fire testing of products and materials is inherently hazardous, and adequate safeguards for personnel and property shall be employed in conducting these tests. Fire testing involves hazardous materials and equipment. This standard gives instructions on specimen preparation and mounting, but*

*the fire-test-response method is given in Test Method E84, or in Test Method E2768, as appropriate. See also Section 10.*

1.10 *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, health, and environmental practices and determine the applicability of regulatory limitations prior to use.*

1.11 *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:*<sup>2</sup>

C1396/C1396M Specification for Gypsum Board

D9 Terminology Relating to Wood and Wood-Based Products

D1038 Terminology Relating to Veneer, Plywood, and Wood Structural Panels

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

D4442 Test Methods for Direct Moisture Content Measurement of Wood and Wood-Based Materials

D4444 Test Method for Laboratory Standardization and Calibration of Hand-Held Moisture Meters

D7438 Practice for Field Calibration and Application of Hand-Held Moisture Meters

E84 Test Method for Surface Burning Characteristics of Building Materials

E176 Terminology of Fire Standards

E2404 Practice for Specimen Preparation and Mounting of Textile, Paper or Polymeric (Including Vinyl) and Wood Wall or Ceiling Coverings, Facings and Veneers, to Assess Surface Burning Characteristics

E2768 Test Method for Extended Duration Surface Burning Characteristics of Building Materials (30 min Tunnel Test)

<sup>1</sup> This practice is under the jurisdiction of ASTM Committee E05 on Fire Standards and is the direct responsibility of Subcommittee E05.22 on Surface Burning.

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<sup>2</sup> 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.

IEEE/ASTM SI-10 International System of Units (SI): The Modern Metric System

2.2 CSA Standard:<sup>3</sup>

CSA O121 Douglas Fir Plywood

2.3 HPVA Standard:<sup>4</sup>

ANSI/HPVA HP-1 American National Standard for Hardwood and Decorative Plywood

2.4 NIST Standard:<sup>5</sup>

Voluntary Product Standard PS 1 Structural Plywood

### 3. Terminology

3.1 *Definitions*—For definitions of terms used in this practice refer to the terminology contained in Terminologies E176, D9, D1038, D1554, and ANSI/HPVA HP-1.

### 4. Summary of Practice

4.1 This practice describes procedures for specimen preparation, mounting, and reporting, when testing wood products to assess flame spread and smoke development as surface burning characteristics using Test Method E84.

### 5. Significance and Use

5.1 The surface burning characteristics of wood products are often evaluated with Test Method E84 to comply with code requirements. This practice describes specimen preparation and mounting procedures for such materials and systems.

5.2 If it can be demonstrated that none of the methods described in this practice are applicable to a particular wood product, other mounting methods shall be permitted to be used. This information shall be included in the report.

5.3 The limitations for this procedure are those associated with Test Method E84.

### 6. Conditioning

6.1 The test specimens shall be conditioned as described in the section on specimen conditioning in Test Method E84.

### 7. Test Specimens

7.1 The test specimen sizes shall comply with those described in the test specimen section of Test Method E84. The test specimens shall be butted against the vent end of the fire test chamber and shall consist of a continuous, unbroken length, or of sections joined or butted end-to-end. The test specimens shall have a width of 20 to 24 in. (510 to 610 mm), a length of 24 ft + 12 in. – 6 in. (7.32 m + 305 mm – 152 mm) and a maximum thickness of 4 in. (101 mm).

7.2 Wood product test specimens shall be prepared as described in Section 8.

### 8. Test Specimen Preparation

8.1 *General:*

<sup>3</sup> Available from Canadian Standards Association (CSA), 178 Rexdale Blvd., Toronto, ON Canada M9W 1R3.

<sup>4</sup> Available from the Decorative Hardwoods Association, 42777 Trade West Dr, Sterling, VA 20166, www.decorativehardwoods.org.

<sup>5</sup> Available from National Institute of Standards and Technology (NIST), 100 Bureau Dr., Stop 3460, Gaithersburg, MD 20899-3460.

8.1.1 Wood products shall be representative of the materials which the test is intended to examine.

8.1.2 The preparation of test specimens of wood products treated by pressure impregnation or by other means shall be identical to that specified for untreated wood products.

8.1.3 Test specimens for wood products shall be prepared as required by 8.1.3.1 – 8.1.3.7.

8.1.3.1 Test specimens for Panel Products with Sufficient Structural Integrity to Support Themselves shall comply with 8.3.

8.1.3.2 Test specimens for Wood Veneers and Panel Products with Insufficient Structural Integrity to Support Themselves shall comply with 8.4.

8.1.3.3 Test specimens for Wood Veneers and Panel Products Intended to be Applied over Gypsum Board shall comply with 8.5.

8.1.3.4 Test specimens for Laminated Products Factory-Produced with a Wood Substrate shall comply with 8.6.

8.1.3.5 Test specimens for Wood Veneers or Facings Intended to be Applied on Site over a Wood Substrate shall comply with 8.7.

8.1.3.6 Test specimens for Wood Shingles and Shakes shall comply with 8.8.

8.1.3.7 Test specimens for all other wood products shall comply with 8.2.

8.2 *Wood Products Not Required to Comply With 8.1.3.1 – 8.1.3.6:*

8.2.1 General construction outline for decks made of wood products not covered in 8.3 through 8.8 is shown in Fig. 1.

8.2.2 The thickness of the test material pieces shall be representative of the material which the test is intended to examine.

8.2.3 Batten strips shall be nominal 1 by 3/16 in. (25 by 5 mm) and shall be constructed of metal.

8.2.4 Use either cement coated nails or No. 8, 10 or 12 wood screws, two per wood piece per batten, and of sufficient length to penetrate through the battens and not less than 75 % of the test material.

8.2.5 For outside edges, use the longest available wood product strips. If shorter than 96 in. (2.44 m), use 6 in. (152 mm) long batten strips. Do not use wood product strips less than 24 in. (610 mm) long on outside edges.

8.2.6 Allow 6 in. (152 mm) minimum distance between other joints on adjacent wood product strips.

8.2.7 While fastening with nails or screws, use cabinet clamps or other suitable means to ensure there are no cracks, or gaps between the wood product strips in the deck surface.

8.2.8 Mount the specimens on the ledges of the Test Method E84 furnace without using additional means of support.

8.3 *Panel Products with Sufficient Structural Integrity to Support Themselves:*

8.3.1 Panel products with sufficient structural integrity to support themselves shall be cut to the width of the fire test chamber, butted end-to-end, and mounted on the ledges of the Test Method E84 furnace without using additional means of support.

8.3.2 Panel products 1/4 in. (6.3 mm) or less in thickness not intended to be applied over gypsum board or a wood substrate

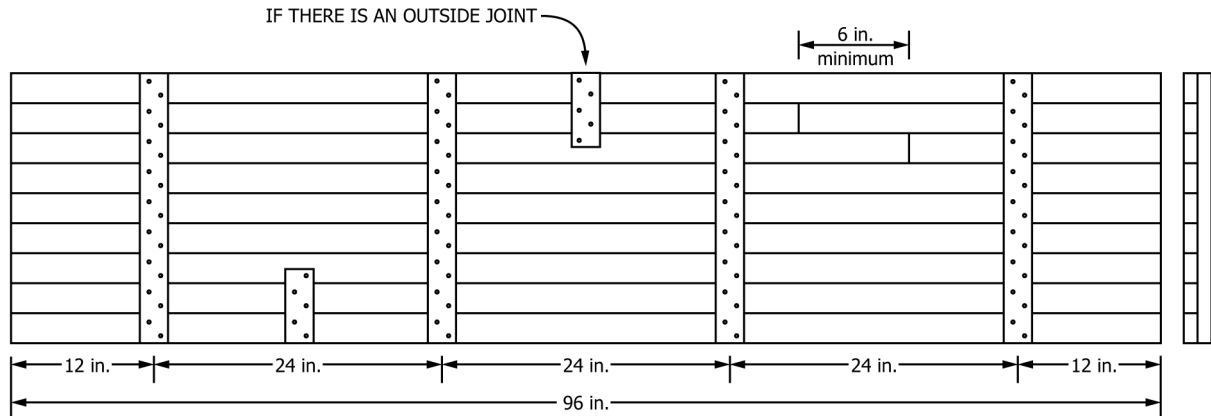


FIG. 1 General Construction Outline for Decks Made of Wood Products Covered in 8.2

shall be cut to the width of the fire test chamber, butted end-to-end, and mounted on the ledges of the Test Method E84 furnace without additional means of support if they have sufficient integrity to support themselves within the test chamber without sagging  $\frac{1}{16}$  in. (1.5 mm) or more when measured at the centre-line of the test chamber.

8.4 Wood Veneers and Panel Products with Insufficient Structural Integrity to Support Themselves:

8.4.1 Wood veneers and panel products with insufficient structural integrity to support themselves shall be cut to the width of the fire test chamber, butted end-to-end and supported within the fire test chamber by steel rods not more than  $\frac{1}{8}$  in. (3 mm) in diameter spanning the width of the tunnel. The rods shall be placed approximately 2 in. (51-mm) from each end of each panel and at approximately 24 in. (610 mm) intervals starting with the fire end of each panel.

8.4.2 Wood veneers and panel products  $\frac{1}{8}$  in. (3 mm) or less in thickness not intended to be applied over gypsum board or a wood substrate, and with insufficient integrity to support themselves within the test chamber without sagging  $\frac{1}{16}$  in. (1.5 mm) or more when measured at the centre-line of the test chamber, shall be cut to the width of the fire test chamber, butted end-to-end, and supported within the test chamber by steel rods not more than  $\frac{1}{4}$  in. (6.3 mm) in diameter spanning the width of the tunnel. The rods shall be placed approximately 2 in. (51 mm) from each end of each panel and at approximately 24 in. (610 mm) intervals starting at the fire end of each panel.

8.5 Wood Veneers and Panel Products Intended to be Applied over Gypsum Board:

8.5.1 If the wood veneer or panel product is intended to be applied over gypsum board, the specimens shall consist of the veneer or panel product mounted on  $\frac{5}{8}$  in. (15.9 mm) Type X thick gypsum board complying with Specification C1396/C1396M. The gypsum board shall not be required to be mounted on studs or battens. Mount the specimens on the ledges of the Test Method E84 furnace without using additional means of support.

8.5.2 The adhesive used to attach the veneer or panel product to the gypsum board shall be that specified by the manufacturer and applied in accordance with manufacturer application instructions.

8.6 Laminated Products Factory-Produced with a Wood Substrate:

8.6.1 If the factory-produced laminated product includes a facing or wood veneer applied over a wood substrate, the specimens shall comply with 8.6.1.1 as well as with 8.6.1.2.

8.6.1.1 The specimens shall consist of the finished product, namely the combination of the facing, panel product or wood veneer, the adhesive used and the specific wood substrate that will be used. Mount the specimens on the ledges of the Test Method E84 furnace without using additional means of support.

8.6.1.2 The adhesive used to attach the facing, panel product, or wood veneer to the wood substrate shall be that specified by the manufacturer and applied in accordance with manufacturer’s application instructions.

8.7 Wood Veneers or Facings Intended to be Applied on Site over a Wood Substrate—If the laminated product is not factory-produced but the wood veneer or facing is to be applied on-site over a wood substrate, the specimens shall comply with the requirements of Practice E2404.

8.8 Wood Shingles and Shakes:

8.8.1 Wood shingles and shakes shall be mounted according to manufacturer’s instructions on the “A” face of nominal  $\frac{15}{16}$  in. panels of untreated plywood with a face veneer of Douglas fir and with the thicker butt ends of each shingle or shake oriented towards one end of the plywood panel. The plywood shall comply with NIST Voluntary Product Standard PS 1. The plywood shall carry the grade stamp of either APA-The Engineered Wood Association<sup>6</sup> or TECO<sup>7</sup>, indicating that the plywood has been graded PS 1 A-C and is for exterior exposure. Alternatively, the plywood shall be permitted to be stamped as conforming to CSA O121 (Standard for Douglas fir plywood).

8.8.2 The specimens shall be butted end-to-end, with the thicker butt-ends of the shingles oriented towards the fire end of the furnace, and mounted on the ledges of the Test Method E84 furnace without using additional means of support.

<sup>6</sup> Information available from APA, The Engineered Wood Association, 7011 South 19th, Tacoma, WA, 98466.

<sup>7</sup> Information available from TECO, 5650 Terra Court, Sun Prairie, WI, 53590.