



# Standard Specification for Structural Insulated Panel (SIP) Adhesives for Laminating Oriented Strand Board (OSB) to Rigid Cellular Polystyrene Thermal Insulation Core Materials<sup>1</sup>

This standard is issued under the fixed designation D7446; 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 is designed to evaluate adhesives suitable for the bonding of oriented strand board (OSB) to rigid cellular polystyrene insulation core materials for general structure use.

1.2 The requirements of the structural insulated panel (SIP) adhesive are based on the performance of the adhesive as measured by:

1.2.1 Resistance to shear by compression loading in ambient conditions and after accelerated aging.

1.2.2 Resistance to tensile loading in ambient conditions and after accelerated aging.

1.2.3 Resistance to creep (deformation) under static load in ambient conditions and after accelerated aging.

1.2.4 Tensile and shear strength to polystyrene core materials.

1.3 The classification of the adhesive formulation is based on, but not limited to the adhesive's industry accepted generic names, for example: phenol-resorcinol, emulsion polymer isocyanate, one and two-part urethane. The type of adhesive application and curing terminology are also usually included for classification purposes such as cold-setting phenol resorcinol, heat-cured phenol resorcinol, and hot melt one component urethane.

1.4 Evaluation of adhesive performance at high temperature conditions, such as during a fire exposure, is beyond the scope of this specification.

1.5 The values stated in SI units are to be regarded as the standard. The values given in parentheses are for information only.

1.6 *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 appro-*

*priate safety and health practices and determine the applicability of regulatory limitations prior to use.*

## 2. Referenced Documents

### 2.1 ASTM Standards:<sup>2</sup>

**C273/C273M** Test Method for Shear Properties of Sandwich Core Materials

**C297/C297M** Test Method for Flatwise Tensile Strength of Sandwich Constructions

**C578** Specification for Rigid, Cellular Polystyrene Thermal Insulation

**D572** Test Method for Rubber—Deterioration by Heat and Oxygen

**D905** Test Method for Strength Properties of Adhesive Bonds in Shear by Compression Loading

**D907** Terminology of Adhesives

**D1183** Practices for Resistance of Adhesives to Cyclic Laboratory Aging Conditions

**D1583** Test Method for Hydrogen Ion Concentration of Dry Adhesive Films

**D2294** Test Method for Creep Properties of Adhesives in Shear by Tension Loading (Metal-to-Metal)

**D4300** Test Methods for Ability of Adhesive Films to Support or Resist the Growth of Fungi

**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

**E4** Practices for Force Verification of Testing Machines

### 2.2 Other Standards:

**PS2** Performance Standard for Wood-Based Structural-Use Panels<sup>3</sup>

<sup>1</sup> This specification is under the jurisdiction of ASTM Committee D14 on Adhesives and is the direct responsibility of Subcommittee D14.70 on Construction Adhesives.

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<sup>2</sup> For referenced ASTM standards, visit the ASTM website, [www.astm.org](http://www.astm.org), or contact ASTM Customer Service at [service@astm.org](mailto:service@astm.org). For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

<sup>3</sup> Available from National Institute of Standards and Technology (NIST), 100 Bureau Dr., Stop 1070, Gaithersburg, MD 20899-1070, <http://www.nist.gov>.