



Designation: D7247 – 17

## Standard Test Method for Evaluating the Shear Strength of Adhesive Bonds in Laminated Wood Products at Elevated Temperatures<sup>1</sup>

This standard is issued under the fixed designation D7247; 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 standard describes a test method for evaluating the comparative shear strength of a planar adhesive bond at both ambient and elevated temperatures relative to the performance of solid wood under the same conditions. The test method is based on the breaking load after the specimen is exposed to either ambient or a constant elevated temperature for a specified duration as described in Section 7. This standard does not preclude the development and implementation of other methods that provide equivalent performance meeting the intent of this method.

1.2 This test method is intended for the evaluation of adhesives that can be used to assemble test specimens in accordance with Test Method D905. The evaluation of other types of adhesives, such as the binder systems used for strand-based products, is beyond the scope of this test method, except as noted in 1.4.

1.3 This test method is intended for the evaluation of adhesives as a component of laminated wood products at elevated temperatures. The evaluation of fire performance on fire-rated laminated wood products or assemblies is beyond the scope of this test method.

1.4 This test method may be used for the evaluation of heat durability for binder adhesives used in strand-based structural wood composites, such as oriented strand lumber (OSL) and laminated strand lumber (LSL), by substituting strand-based composite specimens for the bonded specimens.

1.5 The formulation of adhesive supplied to the manufacturer of laminated wood products shall be evaluated. Modifications to the adhesive formulation require a separate evaluation unless approved by the manufacturer of the laminated wood product, qualified agency, and code evaluation agency.

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

<sup>1</sup> This test method is under the jurisdiction of ASTM Committee D14 on Adhesives and is the direct responsibility of Subcommittee D14.30 on Wood Adhesives.

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1.7 *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.*

1.8 *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>

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

D907 Terminology of Adhesives

D2395 Test Methods for Density and Specific Gravity (Relative Density) of Wood and Wood-Based Materials

D2915 Practice for Sampling and Data-Analysis for Structural Wood and Wood-Based Products

D4933 Guide for Moisture Conditioning of Wood and Wood-Based Materials

D5266 Practice for Estimating the Percentage of Wood Failure in Adhesive Bonded Joints

D5456 Specification for Evaluation of Structural Composite Lumber Products

#### 2.2 Other Documents:

ANSI A190.1 American National Standard for Wood Products — Structural Glued Laminated Timber<sup>3</sup>

ANSI/AWC NDS-2015 National Design — Specification for Wood Construction (NDS)<sup>3</sup>

Wood Handbook Wood as an Engineering Material<sup>4</sup>

<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> APA — The Engineered Wood Association, 7011 S. 19th St., Tacoma, WA 98466, [www.apaword.org](http://www.apaword.org).

<sup>4</sup> Available from U.S. Department of Agriculture, Forest Service, Forest Products Laboratory, One Gifford Pinchot Drive Madison, WI 53726, [www.fpl.fs.fed.us](http://www.fpl.fs.fed.us).