



Designation: D 2559 – 03

Standard Specification for Adhesives for Structural Laminated Wood Products for Use Under Exterior (Wet Use) Exposure Conditions¹

This standard is issued under the fixed designation D 2559; 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 reappraisal. A superscript epsilon (ε) indicates an editorial change since the last revision or reappraisal.

This standard has been approved for use by agencies of the Department of Defense.

1. Scope

1.1 This specification covers adhesives suitable for the bonding of wood, including treated wood, into structural laminated wood products for general construction, for marine use, or for other uses where a high-strength, waterproof adhesive bond is required.

1.2 The requirements of the adhesive are based on the performance of the adhesive in laminated wood as measured by:

1.2.1 Resistance to shear by compression loading,

1.2.2 Resistance to delamination during accelerated exposure to wetting and drying, and

1.2.3 Resistance to deformation under static load.

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

1.4 *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:

D 9 Terminology Relating to Wood²

D 143 Test Methods for Small Clear Specimens of Timber²

D 905 Test Method for Strength Properties of Adhesive Bonds in Shear by Compression Loading³

D 907 Terminology of Adhesives³

D 1165 Nomenclature of Domestic Hardwoods and Softwoods²

D 1583 Test Method for Hydrogen Ion Concentration of Dry Adhesive Films³

D 2555 Test Methods for Establishing Clear Wood Strength Values²

D 3535 Test Method for Resistance to Deformation Under Static Loading for Structural Wood Laminating Adhesives Used Under Exterior (Wet Use) Exposure Conditions³

D 4300 Test Methods for Ability of Adhesive Films to Support or Resist the Growth of Fungi³

D 5266 Practice for Estimating the Percentage of Wood Failure in Adhesive Bonded Joints³

E 6 Terminology Relating to Methods of Mechanical Testing⁴

E 41 Terminology Relating to Conditioning⁵

E 691 Practice for Conducting an Interlaboratory Study to Determine the Precision of a Test Method⁵

3. Terminology

3.1 *Definitions*—Many terms in this specification are defined in Terminology D 907.

3.2 *Definitions of Terms Specific to This Standard:*

3.2.1 *delamination, n*—the separation of layers in a laminate because of failure of the adhesive, either in the adhesive itself or at the interface between the adhesive and the adherend.

3.2.2 *glulam, n*—synonym for *structural-glued-laminated timber*.

NOTE 1—The following ASTM standards may be referred to for other terms used in this specification: Nomenclature D 1165, Terminologies D 9, E 6, and E 41.

3.2.3 *laminated wood product, n*—a fabricated wood assembly resulting from the bonding together of two or more laminations, all with the direction of grain essentially parallel, to form a larger piece such as a structural member.

3.2.3.1 *Discussion*—The individual laminations themselves may be made up of two or more pieces both in width and length.

3.2.4 *structural-glued-laminated timber, n*—an engineered stress-related product of a timber laminating plant comprising assemblies of specially selected and prepared wood laminations securely bonded together with adhesives, with the following characteristics: (1) the grain of all laminations is approximately parallel longitudinally; and (2) the laminations

¹ This specification 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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² *Annual Book of ASTM Standards*, Vol 04.10.

³ *Annual Book of ASTM Standards*, Vol 15.06.

⁴ *Annual Book of ASTM Standards*, Vol 03.01.

⁵ *Annual Book of ASTM Standards*, Vol 14.04.