Designation: D 4688 – 99

Standard Test Method for Evaluating Structural Adhesives for Finger Jointing Lumber [1]

This standard is issued under the fixed designation D 4688; 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 is designed to evaluate adhesives for finger jointing lumber used in the manufacture of structural glued laminated timber. It tests the tensile strength of joints under the following treatments; dry with no treatment, wet after one vacuum-pressure soak treatment, and wet after cyclic boil-dry treatment.

1.2 The values stated in SI units are to be regarded as the standard. The inch-pound units in parentheses are for information only.

1.3 *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 907 Terminology of Adhesives[2]

D 2559 Specification for Adhesives for Structural Laminated Wood Products for Use Under Exterior (Wet Use) Exposure Conditions[2]

3. Terminology

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

3.2 *Definitions of Terms Specific to This Standard:*

3.2.1 *billet*, *n*—a piece cut from a vertical finger joint assembly as an intermediate step in making specimens.

3.2.2 *finger joint assembly*, *n*—a short portion of two boards joined at their ends by a finger joint obtained from a finger joint production line for testing, frequently referred to as an *assembly.*

3.2.3 *sample*, *n*—a group of finger joint assemblies obtained from a finger joint production line for statistical purposes.

3.2.3.1 *Discussion*—In the laminating industry the term *sample* is used for an individual finger joint assembly.

3.2.4 *specimen*, *n*—an individual strip, ¼ by 1⅜ (approximately) by 12 in. (6.4 by 35 by 305 mm), cut from a finger joint assembly for the tension test described in this test method.

4. Significance and Use

4.1 This test method is specifically designed to measure the performance of adhesives in finger joints manufactured under production line conditions.

4.2 The results of the test method may be used to certify an adhesive as suitable for finger jointing lumber under production-line conditions where the intended end use of the finger jointed lumber will be in a structural glued laminated timber. When the test results are to be used for certification of an adhesive for this purpose, use a standard wood species and a standard finger profile. Standard species may be found in Table 1 of Specification D 2559. Two standard finger profiles commonly used in the manufacture of structural glued laminated timber industry are shown in Fig. 1.[3]

4.3 This test method is not intended for quality control as the test assemblies are selected for their absence of defects usually found in run-of-the-mill lumber and finger joints.

5. Apparatus

5.1 *Test Machine*, capable of applying a calibrated tensile force up to 23 kN (5000 lbf), equipped with Templin (wedge-action) grips with grip area of 38 by 75 mm (1½ by 3 in.).

5.2 *Vacuum Pressure Vessel*, capable of drawing and holding a vacuum of at least 635 mm (25 in.) of mercury (sea level) for 30 min, holding a pressure of 620 ± 35 kPa (75 ± 2 psi) for 30 min, and capacity to ensure that all of the specimens are at least 51 mm (2 in.) below the water level during the complete vacuum-pressure cycle.

5.3 *Tank for Boiling*, capacity such that all specimens are at least 51 mm (2 in.) below the water level for the duration of the boil cycles.

[1] This test method is under the jurisdiction of ASTM Committee D-14 on Adhesives and is the direct responsibility of Subcommittee D14.30 on Wood Adhesives.

Current edition approved Oct. 10, 1999. Published December 1999. Originally published as D 4688 – 87. Last previous edition D 4688 – 95 (1999).

[2] *Annual Book of ASTM Standards*, Vol 15.06.

[3] American Institute of Timber Construction, 7012 S. Revere Parkway, Suite 140, Englewood, CO 80112.

This document is now PUBLIC

Copyright © ASTM International, 100 Barr Harbor Drive, PO Box C700, West Conshohocken, PA 19428-2959, United States.