



Designation: D1761 – 20

Standard Test Methods for Mechanical Fasteners in Wood and Wood-Based Materials¹

This standard is issued under the fixed designation D1761; 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.

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

INTRODUCTION

The use of wood and wood-based materials in many structural and other applications often involves the use of mechanical fasteners, such as nails, screws, bolts, lag screws, and timber connectors. Data on the resistance and performance of such fasteners are frequently needed for design and for comparative purposes. Presented are methods of conducting tests for nail, staple, and screw (except machine screws) withdrawal resistance and lateral load transmission by nail, staple, screw, bolt, and timber connector. The use of standard methods for these tests is recommended as a means of obtaining comparable data and of eliminating variables in test results because of variations in testing methods.

The tests appear in the following order:

	Sections
Nail, staple, or screw withdrawal test	4 to 13
Nail, staple, or screw lateral resistance test	14 to 21
Bolted or timber connector joint test	22 to 30
Keywords	31

1. Scope

1.1 These test methods provide a basic procedure for evaluating the withdrawal and lateral resistance of fasteners installed in wood and wood-based materials. Spikes are included as nails in this standard.

1.2 The tests also provide a basis for determining comparable performance of different types and sizes of fasteners installed in wood and wood-based materials.

1.3 The values stated in inch-pound units are to be regarded as standard. The values given in parentheses are mathematical conversions to SI units that are provided for information only and are not considered standard.

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

1.5 *This international standard was developed in accordance with internationally recognized principles on standard-*

ization 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:*²

[D9 Terminology Relating to Wood and Wood-Based Products](#)

[D143 Test Methods for Small Clear Specimens of Timber](#)

[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](#)

[D4442 Test Methods for Direct Moisture Content Measurement of Wood and Wood-Based Materials](#)

[E4 Practices for Force Verification of Testing Machines](#)

[F547 Terminology of Nails for Use with Wood and Wood-Based Materials](#)

[F1667 Specification for Driven Fasteners: Nails, Spikes, and Staples](#)

¹ These test methods are under the jurisdiction of ASTM Committee [D07](#) on Wood and are the direct responsibility of Subcommittee [D07.05](#) on Wood Assemblies.

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² 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.