Designation: D 1761 – 88 (Reapproved 2000)$^{\epsilon 1}$

Standard Test Methods for Mechanical Fasteners in Wood[1]

This standard is issued under the fixed designation D 1761; 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 Department of Defense.

ϵ^1 NOTE—1 1/14 in. was corrected to 1 1/4 in. in 8.1.1 in October 2002.

INTRODUCTION

The use of wood and wood-base materials in many structural and other applications often involves the use of mechanical fasteners, such as nails, screws, bolts, lag screws, and connectors. Data on the strength and performance of such fasteners are frequently needed for design and for comparative purposes. Tests of mechanical fasteners (except nail withdrawal) have been generally regarded as special tests and have not been included in the standard methods already established for evaluating the properties of wood. Many such special tests have been extensively used over a considerable period but have not previously been established as standards. Presented herewith are methods of conducting tests for nail, staple, and screw (except machine screws) withdrawal resistance; lateral load transmission by nail, staple, screw, bolt, and timber connector; and load transmission by nail plates and joist hangers. 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	1 to 12
Lateral Nail, Staple, or Screw Resistance Test	13 to 20
Testing Bolted and Timber Connector Joints	21 to 30
Tension Tests of Plate-Type Connector Joints	31 to 40
Joist Hanger Tests	41 to 50
Precision and Bias	51

NAIL, STAPLE, OR SCREW WITHDRAWAL TEST

1. Scope

1.1 These test methods provide a basic procedure for evaluating the resistance of wood and wood-base materials to direct withdrawal of nails, staples, and screws. 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 nails, staples, and screws in direct withdrawal from wood and wood-base materials.

1.3 *This standard does not purport to address all of the safety problems, 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 143 Methods of Testing Small Clear Specimens of Timber[2]

D 2016 Test Methods for Moisture Content of Wood[3]

D 2395 Test Methods for Specific Gravity of Wood and Wood-Base Materials[2]

E 4 Practices for Force Verification of Testing Machines[4]

2.2 *Other Standards:*

Federal Specification FF-W-92 for Washers, Metal, Flat (Plain)[5]

[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] *Annual Book of ASTM Standards*, Vol 04.10.

[3] Discontinued, see *1988 Annual Book of ASTM Standards*, Vol 04.09.

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

[5] Available from Standardization Documents Order Desk, Bldg. 4 Section D, 700 Robbins Ave., Philadelphia, PA 19111-5094, Attn: NPODS.

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