



Designation: D4761 – 19

Standard Test Methods for Mechanical Properties of Lumber and Wood-Based Structural Materials¹

This standard is issued under the fixed designation D4761; 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.

INTRODUCTION

Numerous evaluations of the mechanical properties of wood-based structural materials have been satisfactorily conducted since the late 1920s, using Test Methods D198. Those methods are best suited to a laboratory environment and are adaptable to a variety of products such as stress-graded lumber, sawn timber, laminated timbers, wood-plywood composite members, reinforced and pre-stressed timbers.

The procedures presented in these test methods have been derived from those set forth in Test Methods D198. They are intended primarily for application to stress-graded lumber, but can be used for other wood-based structural materials as well. The procedures are more flexible than those in Test Methods D198, making testing in a non-laboratory environment more feasible. Thus the test methods can be used on production sites for field testing and quality control, as well as in laboratories for research applications. Key differences from Test Methods D198 are the testing speed, the deflection-measuring procedures for specimens under load, and the detail of data reporting. Furthermore, the test methods do not require that specimens be loaded to failure.

Since these test methods allow latitude in testing procedures, the procedures used shall be fully documented in the test report. It may also be desirable to correlate the results from tests carried out according to these test methods with test results obtained using a traditional procedure, such as that set forth in Test Methods D198.

1. Scope

1.1 These test methods cover the determination of the mechanical properties of stress-graded lumber and other wood-based structural materials.

1.2 These test methods appear in the following order:

	Section
Bending edge-wise	6
Bending flat-wise:	
Center-point loading	7
Third-point loading	8
Axial strength in tension	9
Axial strength in compression	10

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

¹ These test methods are under the jurisdiction of ASTM Committee D07 on Wood and are the direct responsibility of Subcommittee D07.01 on Fundamental Test Methods and Properties.

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1.4 *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:*²

D9 Terminology Relating to Wood and Wood-Based Products

D198 Test Methods of Static Tests of Lumber in Structural Sizes

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

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.