



Designation: D5536 – 17 (Reapproved 2023)

Standard Practice for Sampling Forest Trees for Determination of Clear Wood Properties¹

This standard is issued under the fixed designation D5536; 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

The everyday use of wood for many different purposes creates a continual need for data on its mechanical properties. Small clear specimen testing to characterize a species has historically been employed for such property determination, and related methods of test are outlined in Test Methods [D143](#).

Because wood is a biological material, its mechanical properties are subject to considerable natural variation. Thus, the results of tests to evaluate the mechanical properties of a species depend to a great extent upon how the forest trees are sampled for test material. Ideally, if the results of mechanical property evaluations are to be representative of the forest sampled, probability sampling of materials such as outlined in Practice [E105](#) must be used. However, true probability sampling of the forest trees for determination of mechanical properties can be extremely complex and expensive because of the broad geographic range and topographic conditions under which a tree species grows. In some instances, direct probability sampling may be impractical, necessitating the need for alternative sampling procedures.^{2,3}

1. Scope

1.1 This practice offers two alternative physical sampling procedures: cruciform sampling and random sampling. The choice of procedure will depend upon the intended use for the test results, the resources available for sampling and testing, and the availability of existing data on the mechanical properties and specific gravity of the species of interest.

1.2 A third procedure, double sampling, is included primarily by reference. This procedure applies the results of cruciform or random samples through correlation to improve or update property values.

1.3 *Units*—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 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*:⁴

- [D9 Terminology Relating to Wood and Wood-Based Products](#)
- [D143 Test Methods for Small Clear Specimens of Timber](#)
- [D1038 Terminology Relating to Veneer, Plywood, and Wood Structural Panels](#)
- [D2555 Practice for Establishing Clear Wood Strength Values](#)
- [E105 Guide for Probability Sampling of Materials](#)

3. Terminology

3.1 *Definitions*:

¹ This practice is under the jurisdiction of ASTM Committee [D07](#) on Wood and is the direct responsibility of Subcommittee [D07.08](#) on Forests.

Current edition approved Feb. 1, 2023. Published February 2023. Originally approved in 1994. Last previous edition approved in 2017 as D5536 – 17. DOI: 10.1520/D5536-17R23.

² Bendtsen, B. A., Freese, F., and Ethington, R. L., “A Forest Sampling Method for Wood Strength,” *Forest Products Journal*, Vol 20, No. 11, 1970, pp. 38–47.

³ Pearson, R. G., and Williams, E. J., “A Review of Methods for Sampling of Timber,” *Forest Products Journal*, Vol 8, No. 9, 1958, pp. 263–268.

⁴ 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.