



Standard Practice for Calculating the Superimposed Load on Wood-frame Walls for Standard Fire-Resistance Tests¹

This standard is issued under the fixed designation D6513; 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 practice covers procedures for calculating the superimposed axial load required to be applied to load-bearing wood-frame walls throughout standard fire-resistance and fire and hose-stream tests.

1.2 The calculations determine the maximum load allowed by design for wood-frame wall assemblies under nationally recognized structural design criteria.

1.3 This practice is only applicable to those wood-frame assemblies for which the nationally recognized structural design criteria is the *National Design Specification for Wood Construction (NDS)*.²

1.4 The system of units to be used is that of the nationally recognized structural design criteria. For the NDS, the units are inch-pound.

1.5 The text of this standard references notes and footnotes which provide explanatory material. These notes and footnotes (excluding those in tables and figures) shall not be considered as requirements of the standard.

1.6 *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*:³

D9 Terminology Relating to Wood and Wood-Based Products

E119 Test Methods for Fire Tests of Building Construction and Materials

¹ This practice is under the jurisdiction of ASTM Committee D07 on Wood and is the direct responsibility of Subcommittee D07.05 on Wood Assemblies.

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² Available from American Forest & Paper Association, American Wood Council, 1111 19th Street, NW, Suite 800, Washington, DC 20036

³ 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.

E176 Terminology of Fire Standards

E1529 Test Methods for Determining Effects of Large Hydrocarbon Pool Fires on Structural Members and Assemblies

2.2 *Other Standards:*

NDS—National Design Specification for Wood Construction²

NDS Supplement—Design Values for Wood Construction²

3. Terminology

3.1 *Definitions*—Definitions used in this practice are in accordance with Terminology D9 and Terminology E176, unless otherwise indicated.

3.2 *Definitions of Terms Specific to This Standard:*

3.2.1 *gross area, n*—section area calculated from overall actual dimensions of member.

3.2.2 *net section area, n*—section area calculated by deducting from the gross section area the projected area of all materials removed by boring, grooving, dapping, notching, or other means.

3.2.3 *superimposed load, n*—The additional external load needed to be applied to the assembly to result in the calculated stresses within the assembly when any dead load of the assembly itself is accounted for in the calculations.

4. Significance and Use

4.1 Test Methods E119 and E1529, and other standard fire resistance test methods specify that throughout exposures to fire and the hose stream, a constant superimposed axial load be applied to a load-bearing test specimen to simulate a maximum load condition. They specify that this superimposed load shall be as nearly as practicable the maximum load allowed by design under nationally recognized structural design criteria. For this practice, the nationally recognized structural design criteria is the *National Design Specification for Wood Construction (NDS)*.

4.1.1 Alternatively, the standard fire resistance test methods shall be conducted by applying an axial load that is less than the maximum allowable axial load as addressed by the NDS and this practice, but these tests shall be identified in the test report as being conducted under restricted load conditions. The