



Designation: D7746 – 21

Standard Practice for Calculating the Superimposed Load on Wood-frame Floor-Ceiling Assemblies for Standard Fire-Resistance Tests¹

This standard is issued under the fixed designation D7746; 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 load required to be applied to load-bearing wood-frame floor-ceiling assemblies throughout standard fire-resistance tests.

1.2 These calculations determine the maximum superimposed load to be applied to the floor-ceiling assembly during the fire resistance test. The maximum superimposed load, calculated in accordance with nationally-recognized structural design criteria, shall be designed to induce the maximum allowable stress in the wood floor-ceiling fire test configuration being tested.

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

1.4 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.

1.5 The values stated in inch-pound units are to be regarded as standard. No other units of measurement are included in this 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, health, and environmental practices and determine the applicability of regulatory limitations prior to use.*

1.7 *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.*

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. Referenced Documents

2.1 *ASTM Standards:*²

D9 Terminology Relating to Wood and Wood-Based Products

D6513 Practice for Calculating the Superimposed Load on Wood-frame Walls for Standard Fire-Resistance Tests

E119 Test Methods for Fire Tests of Building Construction and Materials

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:*³

ANSI/AWC National Design Specification (NDS) for Wood Construction

NDS Supplement Design Values for Wood Construction

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 cross-sectional area, n*—section area calculated from overall actual dimensions of member.

3.2.1.1 *Discussion*—For sawn lumber and glue laminated timber, gross cross-sectional area is based on the standard dressed size of the member as given in the NDS Supplement. For I-joists and structural composite lumber, the gross cross-sectional areas or product dimensions are given in the product literature or code evaluation report.

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

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.

³ Available from American Wood Council (AWC), 222 Catoctin Circle SE, Suite 201, Leesburg, VA 20175, <http://www.awc.org>.