



Designation: D8391 – 22

Standard Specification for Demonstrating Equivalent Fire Performance for Wood- Based Floor Framing Members to Unprotected 2 by 10 Dimension Lumber or Equal-Sized Structural Composite Lumber¹

This standard is issued under the fixed designation D8391; 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 specification provides the test methodology and procedures to demonstrate that the fire performance of wood-based floor framing members is equivalent to unprotected 2 by 10 dimension lumber or equal-sized structural composite lumber (SCL) floor joists used in interior floor assemblies. This specification is applicable to floor framing members with or without applied treatments or materials used to increase fire resistance, including fire-resistive paints, coatings, or chemical treatments, and including mechanically attached or adhered fire protection materials. It is applicable to any wood-based residential floor framing member product including, but not limited to, prefabricated wood I-joists, open-web wood joists, and trusses with wood flanges and wood or metal web members. In addition, specific requirements for the evaluation of fire-resistive paints, coatings, or chemical treatments used with these floor framing members are included.

NOTE 1—This specification provides a method of comparing the fire performance of floor framing members to benchmarked performance of unprotected 2 by 10 dimension lumber or equal-sized SCL floor joists. It has been successfully used to evaluate the performance of prefabricated wood I-joists and wood trusses with various forms of fire protection. While the principles of this specification are generally applicable to all floor framing members, the development of the specification did not consider additional requirements or modifications which may be necessary for the evaluation of floor framing members of other materials, such as steel joists or trusses.

1.2 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.

1.3 *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 This specification 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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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
- D610 Practice for Evaluating Degree of Rusting on Painted Steel Surfaces
- D1037 Test Methods for Evaluating Properties of Wood-Base Fiber and Particle Panel Materials
- D1761 Test Methods for Mechanical Fasteners in Wood and Wood-Based Materials
- D2898 Practice for Accelerated Weathering of Fire-Retardant-Treated Wood for Fire Testing
- D2915 Practice for Sampling and Data-Analysis for Structural Wood and Wood-Based Products
- D4761 Test Methods for Mechanical Properties of Lumber and Wood-Based Structural Materials
- D5055 Specification for Establishing and Monitoring Structural Capacities of Prefabricated Wood I-Joists
- D5664 Test Method for Evaluating the Effects of Fire-Retardant Treatments and Elevated Temperatures on Strength Properties of Fire-Retardant Treated Lumber
- D7032 Specification for Establishing Performance Ratings for Wood-Plastic Composite and Plastic Lumber Deck Boards, Stair Treads, Guards, and Handrails
- E119 Test Methods for Fire Tests of Building Construction and 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.