



Standard Test Methods for Evaluating Side-Bonding Potential of Wood Coatings¹

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1. Scope

1.1 These test methods describe an evaluation procedure for the determination of undesirable side-bonding of coatings for wood flooring. They provide two mechanical properties tests for the quantitative determination of the cohesive strength of wood coatings (tensile and lap shear); they also provide a wood floor simulation test for the qualitative determination of side-bonding potential of wood coatings.

1.2 *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:

D 9 Terminology Relating to Wood

D 2370 Test Method for Tensile Properties of Organic Coatings

D 4444 Test Methods for Use and Calibration of Hand-Held Moisture Meters

2.2 British Standards:

BS1204 British Standard Test for Synthetic Resin Adhesives²

2.3 *Maple Flooring Manufacturers Association (MFMA):*³
Guide Specification for Double Plywood Floor System
Guide Specification for Sleeper and Sleeper with Plywood Floor Systems

2.4 *National Oak Flooring Association (NOFMA):*⁴
Cracks in Hardwood Floors

2.5 *National Wood Flooring Association (NWFA):*⁵
Hardwood Floors Trouble Shooting Manual

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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³ MFMA, 60 Revere Dr., Suite 500, Northbrook, IL 60062.

⁴ NOFMA, P.O. Box 3009, Memphis, TN 38173-0009.

⁵ NWFA, 111 Chesterfield Industrial Boulevard, Chesterfield, MO 63005.

3. Terminology

3.1 Definitions used in these test methods are in accordance with terminology used in Terminology D 9. A few related terms not covered in these test methods are as follows:

3.1.1 *panelization*—adjacent boards acting as a composite panel instead of individual strips when subjected to changes in temperature and humidity as well as other site conditions.

3.1.2 *panelization failure*—the condition where localized excessive gaps beyond specified limits develop between some strip flooring boards due to panelization.

3.1.3 *percent wood failure*—the rupturing of wood fibers in strength tests on bonded specimens usually expressed as the percentage of total area involved, which shows such failure. The inverse of adhesive failure.

3.1.4 *side-bonding*—the bonding of adjacent strips of wood flooring caused by the floor coating resulting in panelization. This is one possible cause of panelization failure.

3.1.5 *side-bonding wood failure*—the failure of the wood within a strip, as in classic wood failure, when the movement of the strip within the floor is restrained from moisture-related movement by excessive side-bonding. In this situation, the toughness or “work-to-break” of the side-bonding is sufficient to overcome the tensile strength perpendicular to the grain of the wood strip.

3.1.6 *tensile stress (nominal)*—as used in Test Method D 2370, the load per original unit area at which a specimen fails or yields in a tension (pull) test.

SECTION I—MECHANICAL PROPERTIES TESTS

TEST METHOD A—MAPLE BLOCK TENSILE STRENGTH TEST

4. Significance and Use

4.1 This test method was originally designed as a means of quantitatively measuring the level of adhesion of the wood-wood interface caused by a wood coatings system applied to the substrate. The tensile test is useful in measuring bonding strength of coatings, such as gymnasium coatings, in which the wood strip flooring primarily expands or contracts in response to changes across the cross-sectional width of the strip floor.