



Designation: D5235 – 18 (Reapproved 2024)

Standard Test Method for Microscopic Measurement of Dry Film Thickness of Coatings on Wood Products¹

This standard is issued under the fixed designation D5235; 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 test method covers the measurement of dry film thickness of coatings applied to a smooth, textured or curved rigid substrate of wood or a wood-based product.

1.2 This test method covers the preparation of wood or wood-based specimens for the purpose of microscopic measurement of dry film thickness.

1.3 This test method suggests an analysis of dry film thickness of coatings on wood or wood-based products using a microscopic measurement.

1.4 The values stated in either SI units or inch-pound units are to be regarded separately as standard. The values stated in each system are not necessarily exact equivalents; therefore, to ensure conformance with the standard, each system shall be used independently of the other, and values from the two systems shall not be combined.

1.5 *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.*

1.6 *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

E177 Practice for Use of the Terms Precision and Bias in ASTM Test Methods

¹ This test method is under the jurisdiction of ASTM Committee D01 on Paint and Related Coatings, Materials, and Applications and is the direct responsibility of Subcommittee D01.52 on Factory Coated Wood Products.

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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.

E691 Practice for Conducting an Interlaboratory Study to Determine the Precision of a Test Method

3. Terminology

3.1 *Definitions of Terms Specific to This Standard:*

3.1.1 *dry film thickness or DFT, n*—the thickness of dried, cured coating film on the substrate surface which may include attached fibers but excludes free fibers that are encapsulated in the layer itself.

3.1.2 *edge face, n*—that part of the specimen that is a plane perpendicular to the surface showing a cross section of the coating and substrate.

3.1.3 *soak in, n*—refers to a coating on a porous (wood) where the coating does not lie essentially on the surface of the wood or wood-based product, but has penetrated into the fiber structure of the wood or wood-based material.

3.1.3.1 *Discussion*—Wood or wood-based products are generally of a porous nature; sometimes exhibiting uniform absorption of coatings. Frequently absorption of coatings is of a non-uniform nature and influenced by localized surface density differences or wood pore size. These conditions of coating absorption are commonly referred to as soak in.

4. Summary of Test Method

4.1 A specimen of coated wood or wood-based product is cut to convenient size and edge face with the coating film cross-section is prepared by polishing or cutting with a sharp blade.

4.2 The prepared edge of the specimen is imaged by a calibrated imaging system with known magnification in order to measure the dry film thickness using an image analysis computer program.

4.3 Suggestions regarding interpretation of dry film thickness on porous wood or wood-based material are offered.

5. Significance and Use

5.1 As a base for calibration adjustment or accuracy verification of dry film coating thickness measuring instruments.

5.2 The dry film thickness of coatings on wood or wood-based products is specified in written product warranties for