



Designation: D5795 – 16 (Reapproved 2024)

Standard Test Method for Determination of Liquid Water Absorption of Coated Wood and Wood Based Products Via “Cobb Ring” Apparatus¹

This standard is issued under the fixed designation D5795; 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 is intended to serve as a means for measurement of liquid water that passes through a wetted paint film, and which is subsequently absorbed and retained by the underlying wood or wood-based substrate. Alternative techniques for the use of the “Cobb Ring” apparatus are described.

1.2 The values stated in SI units are to be regarded as the standard. The values given in parentheses are for information only.

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.*

1.4 *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

D16 Terminology for Paint, Related Coatings, Materials, and Applications

D1193 Specification for Reagent Water

D5235 Test Method for Microscopic Measurement of Dry Film Thickness of Coatings on Wood Products

D6132 Test Method for Nondestructive Measurement of Dry Film Thickness of Applied Organic Coatings Using an

Ultrasonic Coating Thickness Gage

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

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 *Cobb unit (C.U.), n* —the weight of distilled water absorbed by the underlying wood substrate in grams per 645 cm² (100 in.²) of surface area (discounting additional areas contributed by texturing or grooves) per 24-h time period.

3.1.2 *Cobb unit (C.U.) factor, n* —a dimensionless mathematical term which, for a given ring size, may be multiplied times the weight change after 24 h to calculate the Cobb unit value.

3.1.2.1 *Discussion*—The C.U. factor is calculated as follows:

SI Units

$$C.U. Factor = \frac{64516}{RingArea(mm^2)} = \frac{64516}{\pi r^2} \quad (1)$$

Imperial Units

$$C.U. Factor = \frac{100}{RingArea(in.^2)} = \frac{100}{\pi r^2} \quad (2)$$

where:

r = radius, mm (in.)

For example, for 100 mm (4 in.) inside diameter or 50 mm (2 in.) internal radius ring:

$$C.U. Factor = \frac{64516}{3.14(50)^2} = \frac{64516}{7850} = 8.22 \quad (3)$$

3.1.3 *wood based products, n* —boards or other form of structured or decorative materials manufactured from wood fibers, flakes or strands or veneers and various resin binders otherwise known as engineered wood products or wood composite.

4. Summary of Test Method

4.1 Suitable size rings of metal or plastic are adhered or clamped to the flat, coated surface of composite wood panels to be tested.

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.