



Designation: D 5795 – 95 (Reapproved 2000)

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

This standard is issued under the fixed designation D 5795; 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 approval. 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 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 and health practices and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 *ASTM Standards:*

D 1193 Specification for Reagent Water²

E 177 Practice for the Use of the Terms Precision and Bias in ASTM Test Methods³

E 691 Practice for Conducting an Interlaboratory Study to Determine the Precision of a Test Method³

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:

$$\text{C.U. Factor} = \frac{100}{\text{Area (ring)}} = \frac{100}{\pi r^2} \quad (1)$$

where:

r = radius

For example, for 101.6-mm (4-in.) inside diameter ring.

or

$$\text{C.U. Factor} = \frac{100}{3.14(2)^2} = \frac{100}{12.56} = 7.96 \quad (2)$$

3.1.3 *composite wood products*—boards or other structured or decorative materials manufactured from wood fibers, flakes or strands and various resin binders.

3.1.3.1 *Discussion*—One example is hardboard.

3.1.4 *hardboard*—a generic term for a panel manufactured primarily from interfelted lignocellulose fibers consolidated under heat and pressures in a hot press to density of at least 31 lbs (13.95 kg) per cubic foot (cubic meter).⁴

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.

4.2 The assembly is equilibrated at a constant temperature and humidity and weighed.

4.3 The weighed assembly is placed on horizontal⁵ surface in a controlled temperature and humidity room or environmental chamber. Water is placed in the ring and left in contact with the board face for 24 h.

4.4 After 24 h the remaining water is removed from the ring, the assembly blotted dry and reweighed.

¹ This test method is under the jurisdiction of ASTM Committee D-1 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 *Annual Book of ASTM Standards*, Vol 11.01.

³ *Annual Book of ASTM Standards*, Vol 14.02.

⁴ “Today’s Hardboard”, American Hardboard Association, 1210 W. Northwest Highway, Palatine, IL 60067.

⁵ The specification of a solid, continuous horizontal surface or a discontinuous (wire rack, expanded metal, etc.) is required. Surface must be consistent from laboratory to laboratory since this can influence the rate of evaporation of moisture and, thus, retention of moisture and Cobb values.