Designation: D 2065 – 03

Standard Test Method for Determination of Edge Performance of Composite Wood Products Under Surfactant Accelerated Moisture Stress[1]

This standard is issued under the fixed designation D 2065; 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 swelling and cracking of the coated or uncoated edge of a composite wood substrate that has been subjected to wetting by a test solution containing surface active agent.

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 661 Test Method for Evaluating Degree of Cracking of Exterior Paints[2]

E 177 Practice for Use of the Terms Precision and Bias in ASTM Test Methods[3]

E 691 Practice for Conducting an Interlaboratory Study to Determine the Precision of a Test Method[3]

3. Terminology

3.1 *Definitions of Terms Specific to This Standard:* Description of Terms Specific to This Standard:

3.1.1 *crack rating*—a numerical value on a scale from 1 to 10, with 10 representing no evidence of cracking of the edge (see Test Method D 661).

3.1.2 *composite wood products*—boards or other structural or decorative materials manufactured from wood fibers, flakes or strands and various resin binders consolidated under heat, or pressure, or both.

4. Summary of Test Method

4.1 A surfactant solution is placed in a tray that contains a sponge. A preweighed and calipered panel with a coated edge is placed with the edge in contact with the surfactant saturated sponge for 2 h. The exposed panel is blotted dry, reweighed, recalipered, and inspected for edge cracking. Percentage weight and thickness changes are calculated and recorded. Edge cracking is rated in accordance with Test Method D 661 and recorded.

5. Significance and Use

5.1 This test method provides a measure of the dimensional stability and integrity of the coated edge of various composite wood products under accelerated moisture stress. It is widely used as an indicator or predictor of the anticipated performance of composite wood products during exterior exposure. It may be used for developmental evaluation of coatings, substrates, or both. It may also be useful for quality control or monitoring of the production of coated or uncoated composite wood products.

6. Apparatus

6.1 *Wide Flat Tray or Pan*, suitable to contain the required number of sponges and test boards. The sides must be high enough to safely contain at least 6 mm (¼ in.) of solution.

6.2 *Rack or Holder*, suitable to support the required number of test boards at the nominal 60° angle.

6.3 *Micrometer or Vernier Caliper*, of sufficient capacity for the board thickness to be measured and capable of 0.1 mm accuracy.

6.4 *Balance*, with sufficient capacity (typically 400 g) and 0.01 g accuracy.

6.5 *Suitable Saw*, for cutting of samples.

6.6 *Common Household Cellulose Sponges*, cut to suitable size.

7. Materials

7.1 A sufficient supply of test solution.

7.2 Appropriately identified test boards cut to proper size.

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[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.

Current edition approved Oct. 1, 2003. Published November 2003. Originally approved in 1991. Last previous edition approved in 1996 as D 2065 – 96.

[2] *Annual Book of ASTM Standards*, Vol 06.01.

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

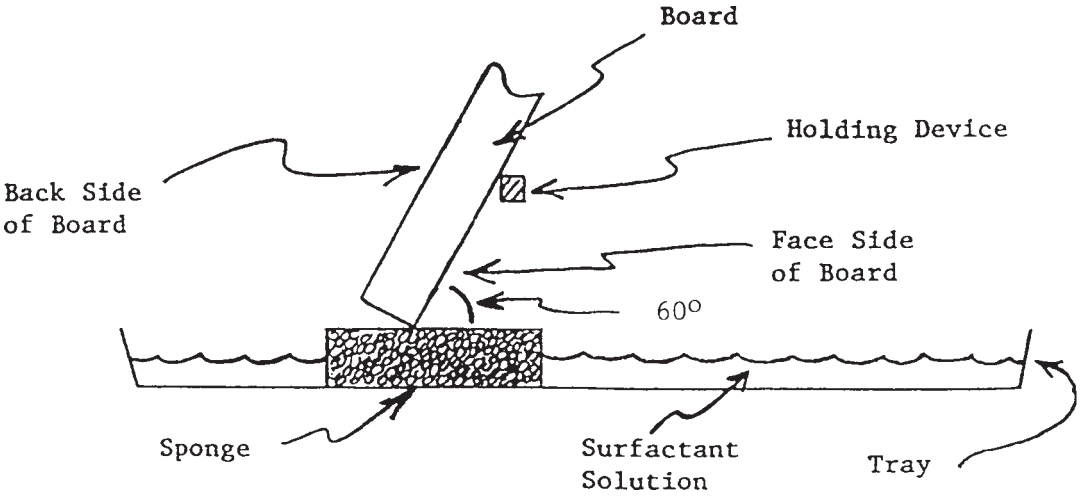

FIG. 1 Test Apparatus Side View

8. Hazards

8.1 When using saws, wear goggles, dust mask, and use proper machine safeguards to prevent injury.

9. Procedure

9.1 See Fig. 1.

9.2 Make the required test solution.[4] Pour solution into the tray to saturate all sponges, and allow to reach room temperature. A 6-mm (¼ -in.) depth of solution in the tray works well.

9.3 Cut board specimens to a suitable size. A 10.2-cm (4-in.) by 12.7-cm (5-in.) size has been found to be convenient. The 10.2-cm (4-in.) dimension should be the coated edge. Preparation of triplicate specimens is recommended.

9.4 Measure thickness of the samples along the edge to be tested. Three measurements at 2.54-cm (1-in.) intervals (Fig. 2) are recommended for a 10.2-cm (4-in.) specimen. Record results.

9.5 Weigh the samples to the nearest 0.01 g and record.

9.6 Place boards in the tray on sponges as noted in Fig. 1. If coated edges are to be tested, note that the sponges must be narrower than the length (nominally 10.2 cm or 4 in.) of the contacting coated edges to prevent contact of the solution with the uncoated edges of the samples. Sponges 9.0-cm (3.5-in.) wide have been used successfully. For the same reason, the coated face of the board must rest against the sponge at a 60° angle to prevent contact of the solution with the uncoated back of the board.

9.7 The test duration is 2 h. After 2 h, remove the boards and blot the edges dry with paper towels.

9.8 Observe and record changes as follows:

9.8.1 Visually inspect the edges for cracks and record the crack rating in accordance with Test Method D 661. Repeat the observation 48 h later.

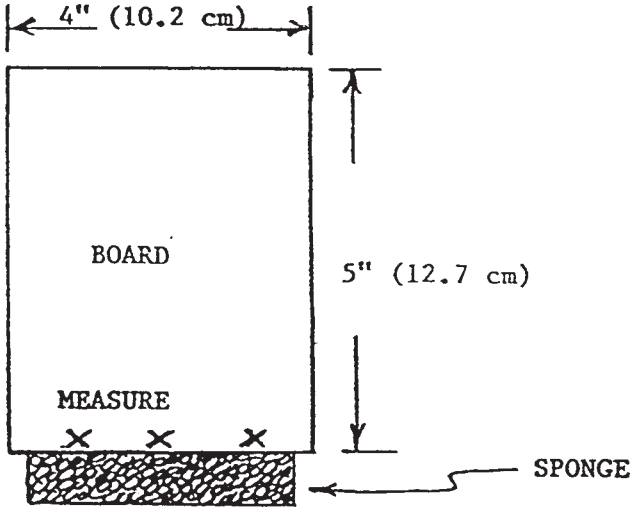

FIG. 2 Specimen Dimensions

9.8.2 Remeasure the thickness of the boards at the same spots measured in 4.4. Record the percent change at each spot,

9.8.3 Reweigh the boards and record the weight gain and percent weight gain, and

9.8.4 Calculate averages and standard deviations for the percent thickness change and percent weight gain.

10. Precision and Bias

10.1 *Precision*—An interlaboratory study of Composite Wood Product surfactant accelerated moisture stress was conducted in accordance with Practice E 691 in seven laboratories with five materials, with each laboratory obtaining six test results for each material (see Table 1).

10.1.1 The terms repeatability limit and reproducibility limit in Table 1 are used as specified in Practice E 177.

10.2 *Bias*—Since there is no accepted reference material, method, or laboratory suitable for determining the bias for the procedure in this test method, no statement on bias is being made.

[4] Common test solutions such as 1.0 % of an ethoxylated alkylphenol, nonionic with hydrophile lipophile balance (HLB) of 13.5 is made using warm, (over 120°F (49°C)), distilled, or deionized water. Historically, Triton X-100 has been used, but with this revision Turgitol 15-S-9 was used. Refer to *McCutcheon's Emulsifiers and Detergents*, 1996, McCutcheon Publishing Co., 175 Rock Rd., Glen Rock, NJ 07452.

TABLE 1 Interlaboratory Study

Material	Average	Repeatablility, Standard Deviation, Sr	Reproducibility, Standard Deviation, SR	Repeatability Limit, Y	Reproducibility Limit, R
A	12.8886	2.0878	5.8050	5.8458	16.2540
B	9.7200	0.6498	3.5835	1.8195	10.0338
C	16.8257	2.1491	7.4174	6.0175	20.7688
D	9.1943	2.0814	6.2392	5.8279	17.4696
E	14.3286	2.0616	5.4152	5.7724	15.1626
F	11.8229	3.7899	6.3353	10.6117	17.7389

11. Keywords

11.1 accelerated moisture stress; detergent test; wood or composite-wood