Designation: D5722 – 20

Standard Practice for Performing Accelerated Outdoor Weathering of Factory-Coated Embossed Hardboard Using Concentrated Natural Sunlight and a Soak-Freeze-Thaw Procedure[1]

This standard is issued under the fixed designation D5722; 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 practice covers techniques to accelerate weathering effects of factory-coated embossed hardboard using Cycle 1 of Practice G90 (concentrated natural sunlight with periodic surface water spray) plus a soak-freeze thaw cycle (see Section 5 of this practice).

1.2 Testing by use of the methods described in this practice may be employed in the qualitative assessment of weathering effects. The relative durability of coated hardboards may be best determined by comparison of their test results with those of control specimens derived from real time exposure test experience.

1.3 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.

1.4 *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.*

1.5 *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]

D660 Test Method for Evaluating Degree of Checking of Exterior Paints

D661 Test Method for Evaluating Degree of Cracking of Exterior Paints

D662 Test Method for Evaluating Degree of Erosion of Exterior Paints

D772 Test Method for Evaluating Degree of Flaking (Scaling) of Exterior Paints

D4214 Test Methods for Evaluating the Degree of Chalking of Exterior Paint Films

G90 Practice for Performing Accelerated Outdoor Weathering of Materials Using Concentrated Natural Sunlight

G113 Terminology Relating to Natural and Artificial Weathering Tests of Nonmetallic Materials

G169 Guide for Application of Basic Statistical Methods to Weathering Tests

3. Terminology

3.1 The terminology used in this practice is defined in Terminology G113.

3.2 *Definitions:*

3.2.1 *hardboard, n*—generic term for a panel manufactured primarily from inter-felted lignocellulosic fibers (usually wood), consolidated under heat and pressure in a hot press to a density of 500 kg/m^3 (31 lb/ft^3) or greater and to which other materials may have been added during manufacture to improve certain properties.

3.2.2 *embossed hardboard, n*—hardboard that is manufactured with a textured surface.

[1] This practice is under the jurisdiction of ASTM Committee D01 on Paint and Related Coatings, Materials, and Applications and is the direct responsibility of Subcommittee D01.27 on Accelerated Testing.

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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.

*A Summary of Changes section appears at the end of this standard

3.2.2.1 *Discussion*—Wood-like and stucco patterns are examples of typical embossed hardboard surfaces.

4. Summary of Practice

4.1 This practice is used to accelerate long-term weathering effects by subjecting the samples to concentrated natural sunlight (with periodic daytime surface water spray) plus a soak-freeze-thaw cycle.

4.2 This practice has been useful in accelerating finish failure involving loss of film integrity, such as cracking, peeling, and flaking of factory-coated embossed hardboard.

5. Significance and Use

5.1 The ability to quickly and accurately evaluate and predict long-term weathering performance of factory-applied coatings is of paramount importance in making sound business and technical decisions.

5.2 It is important to include control specimens of known field performance to determine the efficacy of this practice for specific substrate(s) and coating system(s). These control specimens may include materials known to possess acceptable and unacceptable field performance for the defect(s) under consideration.

5.3 Results derived from this practice are best used to compare the relative performance of materials tested at the same time in the same device.

5.4 The inclusion of control specimens and their resulting data will assist in dealing with test variability caused by seasonal or annual variations in important climatic factors.

5.5 Extensive research was performed during the development of this standard practice. This research showed that this practice is not useful for determination of quantitative acceleration factors. However, this practice is very useful for comparing the performance of different materials.

5.6 A minimum of two replicates for both control specimens and test specimens is recommended to allow statistical evaluation of results. Refer to Practice G169 for additional guidance on establishing the number of replicates.

6. Apparatus and Materials

6.1 *Test Machines,* as described in the apparatus section of Practice G90.

6.2 *Freezer,* capable of maintaining a temperature of −20 ± 5°C (–4 ± 9°F). The freezer shall be equipped with a thermocouple to monitor air temperature.

6.3 *Mounting Board,* paper-faced marine grade wood structural panel, surface routed to accept the test specimens during exposure (see Fig. 1).

6.4 *Soak Tank,* constructed of a corrosion-resistant material and large enough to accommodate mounting boards and test specimens.

7. Test Specimens

7.1 Recommended specimen size is 50 mm by 130 mm by maximum 13 mm thick (2 by 5 by maximum ½ in. thick).

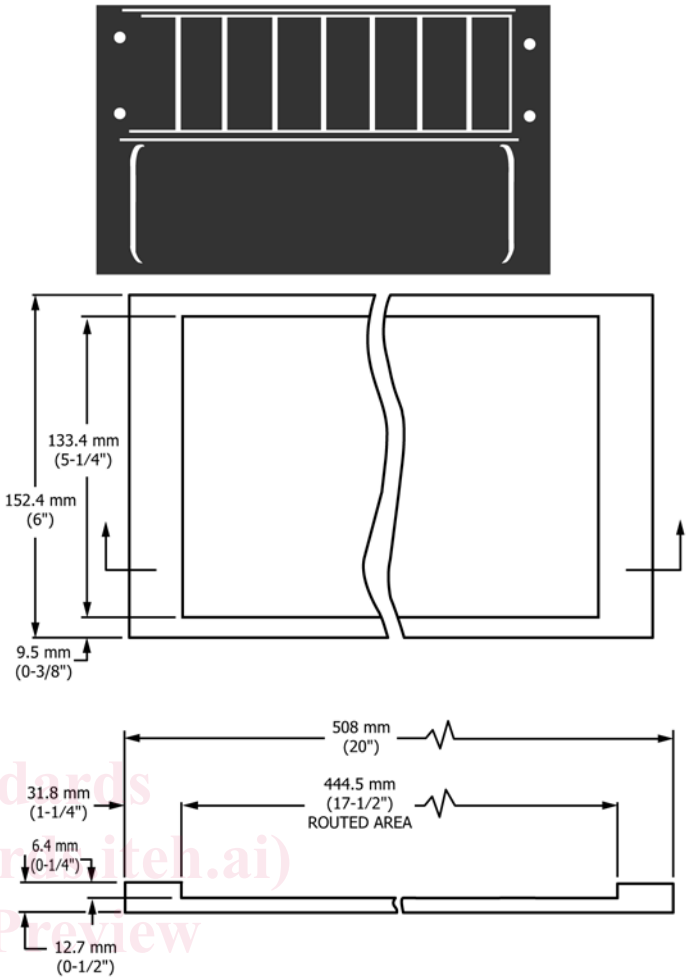

FIG. 1 Routed Specimen Mounting Board Showing Placement of Specimens

7.2 Attach the specimen to the mounting board. One method to accomplish this is to apply exterior grade silicone adhesive to the center of each specimen. Use cotton gloves to press the specimen into the mounting plate. Allow the assembly to cure in accordance with manufacturer's recommendations. Other mounting techniques agreed upon between the testing laboratory and the client are possible.

7.3 Useful results have been achieved when specimen edges and backs remain unsealed.

8. Procedures

8.1 *Accelerated Outdoor Weathering Procedure:*

8.1.1 Each day, mount the specimens onto the specimen mounting area of the Practice G90 device. Ensure that the spray cycle used on the device is Practice G90 Cycle 1. Operate the device as explained in Practice G90.

8.2 *Soak-Freeze-Thaw Procedure:*

8.2.1 Following daily exposure in the Fresnel reflecting concentrator accelerated weathering machine in Practice G90, Cycle 1, the mounting plate with specimens is removed and immersed in a deionized water soak tank maintained at 25 ± 5°C (77 ± 9°F) for at least 1 h but not more than 1 h 15 min.