Designation: D2048 – 17

Standard Test Method for Powdering of Floor Polish Films[1]

This standard is issued under the fixed designation D2048; 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 a bench procedure for the determination of the degree of powdering of floor polishes under ambient conditions as well as conditions of low relative humidity.

1.2 The values stated in inch-pound units are to be regarded as standard. The values given in parentheses are mathematical conversions to SI units that are provided for information only and are not considered standard.

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.*

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]

D3153 Test Method for Recoatability of Water-Emulsion Floor Polishes

3. Terminology

3.1 *Definitions:*

3.1.1 *powdering*—partial or total disintegration of the polish film resulting in a fine, light colored material.

4. Significance and Use

4.1 This is a comparative test method. If this method does not indicate powdering, it is still possible that the product in actual use may powder.

5. Apparatus

5.1 *Textile Crockmeter,*[3] weighted with a 2.2-lb (1-kg) weight. The weight is placed directly over the abrasion dowel and attached with two-faced tape.

5.2 *Abrading Felt*—670 Kelly No. 720 billiard cloth cut into 2 by 2-in. (50 by 50-mm) squares.

5.3 *Substrate*—Official Vinyl Composition Tile (OVCT)[4] shall be used in this test.

5.4 *Volumetric Pipet,* 0.07-oz (2-mL).

5.5 *Cheesecloth Applicator,* washed to remove sizing; cut into 2-in. (50-mm) strips of four-ply cloth; folded twice.

5.6 *Relative Humidity and Temperature Indicator.*

5.7 *Glove Box*—An enclosure that houses the crockmeter keeping it in a constant humidity and temperature environment; features rubber glove inserts so that the tests may be run keeping the environment of the crockmeter constant.

5.8 *Desiccant*—Silica gel or calcium chloride.

5.9 *Salts for Constant Humidity Conditions*—$LiCl{\cdot}H_2O$, $CaCl_2{\cdot}6H_2O$, or $Mg(NO_3)_2{\cdot}6H_2O$.

NOTE 1—Saturated aqueous solutions of the following salts in contact with an excess of a definite solid phase of salt at the indicated temperatures and in an enclosed space will maintain the required constant humidities:
$LiCl{\cdot}H_2O$ at 77°F (25°C) yields 11.1 % relative humidity.
$CaCl_2{\cdot}6H_2O$ at 50°F (10°C) yields 38.0 % relative humidity.
$Mg(NO_3)_2{\cdot}6H_2O$ at 75°F (23.9°C) yields 42.9 % relative humidity.

5.10 *Fan,* small, electric.

5.11 *Metal Clip,* to hold the abrading felt on the crockmeter surface during testing.

[1] This test method is under the jurisdiction of ASTM Committee D21 on Polishes and is the responsibility of Subcommittee D21.04 on Performance Tests.

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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.

[3] The sole source of supply of the apparatus known to the committee at this time is Atlas Electric Devices Co., Chicago, IL. If you are aware of alternative suppliers, please provide this information to ASTM Headquarters. Your comments will receive careful consideration at a meeting of the responsible technical committee, which you may attend.

[4] OVCT tile may be obtained through Armstrong Flooring from various home improvement stores. The following Armstrong tile substrates have been found to perform adequately for this test method: Armstrong Excelon Feature Tile: Black (56790), http://www.armstrong.com/commflooringna/product_details_toolbox_magnify.jsp?item_id=47394.

6. Preparation of Test Sample

6.1 Clean the tile surface in accordance with Test Method D3153, paragraph 9.1.2, to ensure removal of any coating present.

6.2 Pipet 0.07 oz (2 mL) of polish onto the center of the test panel. Place the cheesecloth into the polish and allow it to absorb the emulsion. Distribute the emulsion evenly over the surface; then draw the cheesecloth downward in smooth separate strokes, with no more pressure than is exerted by the weight of the hand, until the entire panel has been coated. If 12 by 12-in. (304 by 304-mm) tiles are used, pipet 0.12 oz (3.6 mL) of polish out the center of each tile.

6.3 Apply a second coat of polish 1 h after the first. Apply this coat in the same manner as the first coat.

6.4 One hour after the second coat of polish has dried, place one of the test tiles in the glove box in which the relative humidity is 10 to 15 %. The low humidity is obtained and controlled using silica gel or calcium chloride as the desiccant or by using a saturated salt solution with a small fan to circulate the air inside the box. Also place inside the glove box the crockmeter weighted with a 2.2- lb (1-kg) weight and the green felt test pads. Age the tiles and equipment for 24 h at 10 to 15 % relative humidity at 75 ± 2°F (23.9 ± 1.1°C).

6.5 Prepare additional test tiles in the same manner and dry for 24 h at 77 ± 2°F (25 ± 1.1°C) and 55 ± 3 % relative humidity.

NOTE 2—Prepared samples may also be tested at 50 ± 2°F (10 ± 1.1°C) and 38 ± 3 % relative humidity.

7. Procedure

7.1 Test the prepared samples at 75 ± 2°F (23.9 ± 1.1°C) and 10 to 15 % relative humidity, and at 77 ± 2°F (25 ± 1.1°C) and 55 ± 3 % relative humidity.

7.2 Place the coated sample on the sandpaper pad. Cover the dowel with the abrading felt using the metal clip. Pass the covered dowel over each polish film for 50 complete cycles. Use a fresh surface for each test. Remove the green felt from the test machine and observe for degree of powder adhering to it. Observe the test panel carefully for damage which may have occurred during the stroking action.

8. Report

8.1 The report shall include the following:

8.1.1 Identification of sample,

8.1.2 Temperature and humidity conditions of test, and

8.1.3 Relative degree of white powder accumulation as seen on both the tile surface and the abrading felt. Report according to the following classifications: none, slight, or excessive.

9. Precision and Bias

9.1 Duplicate samples of polish, when tested by this method, show the same degree of powdering.

9.2 Since there is no accepted reference material suitable for determining the bias for the procedure for measuring the powdering resistance of floor polish films, bias has not been determined.

10. Keywords

10.1 abrading felt; billiard; crockmeter; desiccant; floor; glove box; OVCT; polish; powdering; textile crockmeter