



Standard Practice for Preparation of Substrate Surfaces for Coefficient of Friction Testing¹

This standard is issued under the fixed designation D 4103; 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 procedures for the preparation of OVCT (Official Vinyl Composition Tile) and wood panels for subsequent use in tests to measure the coefficient of friction.

1.2 *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 1436 Test Method for Application of Emulsion Floor Polishes to Substrates for Testing Purposes²

3. Significance and Use

3.1 The reliability of any of the practices using panels prepared by these procedures may be dependent upon the manner and care in which the test panels are prepared. Having these practices in a single procedure eliminates the necessity for covering these details in all of the practices wherein the panels are used.

4. Test Panels (OVCT)

4.1 *Preparation of OVCT for Testing Emulsion Floor Polishes*—For interlaboratory and specification testing, tiles of OVCT shall be used.³ The tiles are prepared for use as follows:

4.1.1 Thoroughly scrub all tiles using No. 00 steel wool and any suitable aqueous type wax remover or stripper. Scrub hard to help smooth out high and low spots on the tile. Rinse well with clear water, towel dry, and air dry for 15 to 30 min in a rack that allows air to reach both sides of the tile.

4.1.2 Apply two coats of any suitable floor polish using any method as prescribed in Section 5. Allow to dry 2 h between

coats and a minimum of an overnight dry (15 to 16 h) after the second coat.

4.1.3 The next day, strip off all the polish from the tiles following the procedure used in 4.1.1.

4.1.4 Repeat the coating (4.1.2) and stripping (4.1.1) operations four more times. A total of ten coats of polish will then have been applied and removed.

NOTE 1—These tiles may be used and reused for testing many times after having been prepared once in accordance with 4.1.1-4.1.4. Tiles should be discarded when they show excessive wear or when erratic results are obtained when used with testing devices. At least 25 tests can be run before this will be noticed.

4.1.5 When scrubbing the tiles it is often found that they become distorted and are no longer flat. Any of the devices used for measuring coefficient of friction will give poor reproducibility if the tiles are not flat. Therefore, it is recommended that the tiles be flattened prior to coating for a test. The following procedure is suggested:

4.1.5.1 Strip the tiles of any previous polish using the procedure given in 4.1.1. (If the procedures 4.1.1-4.1.4 have been followed exactly, this should not be necessary.) Rinse well with clear water, towel dry, and air dry for 15 to 30 min in a rack that allows air to reach both sides of the tile.

4.1.5.2 Pile the tiles face to face and back to back on a piece of glass slightly larger than the tiles.

4.1.5.3 Place the tiles on the glass in an oven at 105 to 115°F (40.6 to 46.1°C) for 2 to 2½ h.

4.1.5.4 Remove the entire pile from the oven and let cool, still on the glass, at least overnight (15 to 16 h) at room temperature (approximately 73°F (22.8°C)).

4.1.5.5 The tiles are now ready for coating with the test polishes.

5. Application of Test Polish

5.1 Apply one coat of the emulsion polish to be tested, using any of the five methods described in Method D 1436. After coating, place the tile in a vertical position. If at the end of 10 min there is a bead of polish at the bottom of the tile, wipe it off and allow the tile to dry in this vertical position for 2 h at standard conditions. (See Section 3 of Test Method D 1436.)

5.1.1 Reverse the tile, top to bottom (rotate tile 180°) and apply a second coat in accordance with Test Method D 1436 as

¹ This practice is under the jurisdiction of ASTM Committee D21 on Polishes and is the direct responsibility of Subcommittee D21.06 on Slip Resistance.

Current edition approved June 29, 1990. Published August 1990. Originally published as D 4103 – 82. Last previous edition D 4103 – 82 (1987).

² *Annual Book of ASTM Standards*, Vol 15.04.

³ OVCT is Official Vinyl Composition Tile obtained from Chemical Specialties Manufacturers Assn., 1001 Connecticut Ave., N.W., Washington, D.C. 20036.

the first. This rotation will equalize the film thickness. Allow the second coat to dry 18 to 24 h at standard conditions (see Section 3 of Test Method D 1436) before testing.

5.2 Regardless of the method used for coating test tile, only one method shall be used if a series of tests are being run on a single polish or a group of polishes.

5.3 If there is insufficient polish available to apply two coats as recommended in 5.1, only one coat may be applied. If a series of tests is being run, the same number of coats shall be used for all tests in the series.

6. Test Panels (Wood)

6.1 *Preparation of Wood Panels for Testing Solvent-Based (liquid or paste) Polishes*—For interlaboratory and specification testing, 9 by 9 by $\frac{3}{8}$ in. (229 by 229 by 9.5 mm) blocks of laminated oak shall be used.⁴

6.1.1 Thoroughly clean blocks with mineral spirits to remove wax (new blocks usually have a factory coating of wax).

⁴ Laminated oak blocks (9 by 9 by $\frac{3}{8}$ in.) are available from Bruce Hardwood Floors, 16803 Dallas Parkway, P.O. Box 220100, Dallas, Tex. 75222, or a local Bruce dealer.

ASTM International takes no position respecting the validity of any patent rights asserted in connection with any item mentioned in this standard. Users of this standard are expressly advised that determination of the validity of any such patent rights, and the risk of infringement of such rights, are entirely their own responsibility.

This standard is subject to revision at any time by the responsible technical committee and must be reviewed every five years and if not revised, either reapproved or withdrawn. Your comments are invited either for revision of this standard or for additional standards and should be addressed to ASTM International Headquarters. Your comments will receive careful consideration at a meeting of the responsible technical committee, which you may attend. If you feel that your comments have not received a fair hearing you should make your views known to the ASTM Committee on Standards, at the address shown below.

This standard is copyrighted by ASTM International, 100 Barr Harbor Drive, PO Box C700, West Conshohocken, PA 19428-2959, United States. Individual reprints (single or multiple copies) of this standard may be obtained by contacting ASTM at the above address or at 610-832-9585 (phone), 610-832-9555 (fax), or service@astm.org (e-mail); or through the ASTM website (www.astm.org).

Follow with a mineral spirits rinse to insure removal of all residual wax. Allow at least 30 min prior to coating for all traces of the mineral spirits to evaporate. Panels may be used over and over again providing they are stored properly. Blocks not stored properly may warp. Warped panels will not give reproducible results if used for subsequent coefficient of friction testing. Care should be taken to store blocks in a flat position and use only flat blocks for testing.

7. Application of Test Polish

7.1 Using a small amount of the test polish on a clean cotton cloth (about 3 g on 4 ply 3 by 3 in. (76 by 76 mm)), apply an even coat of the test polish to a clean panel and allow to dry prior to buffing (one hour should be sufficient). Buff the dried polish with a clean, dry cloth using moderate pressure, to maximum shine.

7.1.1 After buffing, apply a second coat of polish, allow to dry, and again buff to maximum shine.

7.2 When polished to maximum shine, the blocks are now ready for subsequent testing.

8. Keywords

8.1 coefficient of testing; polishes