



Designation: D1792 – 17

# Standard Test Method for Long-Term Removability Properties of Emulsion Floor Polishes<sup>1</sup>

This standard is issued under the fixed designation D1792; 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 ( $\epsilon$ ) indicates an editorial change since the last revision or reapproval.

## 1. Scope

1.1 This test method covers the determination of the relative ease of removal of dried films of water-emulsion floor polishes from common flooring substrates under accelerated conditions, which correspond to extended service aging.

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.*

1.3 *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:*<sup>2</sup>

**D1436 Test Methods for Application of Emulsion Floor Polishes to Substrates for Testing Purposes**

## 3. Summary of Test Method

3.1 The dried films are conditioned at 37.8°C (100°F) in order to simulate service aging. This method utilizes the Gardner straight-line washability apparatus as a means for controlled removal of the dried films. A heavily weighted pad is employed as a means of arriving at a scrubbing force similar to that of hand scrubbing. In order to distinguish between the

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<sup>2</sup> For referenced ASTM standards, visit the ASTM website, [www.astm.org](http://www.astm.org), or contact ASTM Customer Service at [service@astm.org](mailto:service@astm.org). For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

relative removal properties of different polishes, the number of oscillations required for complete removal is taken as a measure of removability.

## 4. Significance and Use

4.1 This test method is used to predict removability of floor polish after a treatment period that simulates aging in the field. It allows for uniform mechanical and detergent action leaving the only variable the actual removability of the polish.

## 5. Apparatus

5.1 *Volumetric Pipet*, 1-mL, graduated in 0.2-mL units.

5.2 *Applicator*—Doctor blade 51 mm (2 in.) wide by 25 mm (1 in.) deep and having 0.203-mm (0.008-in.) clearance along the 51-mm (2-in.) length.

5.3 *Test Flooring Substrate*—Official Vinyl Composition Tile (OVCT),<sup>3</sup> shall be used in the test.

5.4 *Oven*, capable of maintaining a temperature of 37.8 ± 1.1 °C (100 ± 2 °F).

5.5 *Washability Apparatus*—The Gardner straight-line washability machine.

5.6 *Abrading Surface Nylon Polishing Floor Pad*,<sup>4</sup> attached to a wood block of dimensions 89 by 38 mm (3½ by 1½ in.). Presoaked in stripper solution.

5.7 *Weight*—The boat containing the pad is fitted to achieve a total weight of 1-kg (2½ ± ¼-lb). The weight should be properly mounted for uniform load distribution.

<sup>3</sup> 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](http://www.armstrong.com/commflooringna/product_details_toolbox_magnify.jsp?item_id=47394).

<sup>4</sup> The sole source of supply of the apparatus known to the committee at this time is 3M Co., 3M Center, St. Paul, MN 55101. 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.

## 6. Reagent

### 6.1 Stripper Solution at Use Concentration:

Alkaline cleaner <sup>5</sup>	3 %
Monoethanol amine (MEA)	1 %
Water	96 %

## 7. Sample

7.1 The sample shall be thoroughly representative of the material in question and the portion used for the test shall be thoroughly representative of the sample itself.

## 8. Procedure

8.1 *Preparation of Test Surfaces*—Clean the test tiles with the stripper solution and steel wool. Rinse thoroughly with water and dry at room temperature.

8.2 *Polish Application*—Proceed in accordance with Method D of Methods D1436. Apply in duplicate as shown in Fig. 1 0.8 mL of test polish, A to 51 by 203-mm (2 by 8-in.) section of OTVAT. Tile should be on a level bench top to ensure uniform film thickness. Apply in similar fashion duplicate samples of a control test polish B. Repeat process for other polishes. Allow the coated panels to dry for 2 h at ambient conditions; then apply a second coat of polish in the same manner as the first coat. Let coated panels dry 1 h at ambient conditions.

8.3 *Accelerated Aging Conditions*—Store the coated panels in an oven maintained at a temperature of  $37 \pm 1.1$  °C and condition there for 48 h.

8.4 *Removability*—Place the coated and conditioned panel on the plate of the washability apparatus in such a manner that the oscillating pad will travel at right angles to the longer side of the dried polish film. Place a clean dummy panel on either side of the test panel to hold the latter panel in place and to provide a uniform surface for the oscillating pad to travel upon. Soak the pad for at least 1 min in the stripper solution, insert pad assembly into the weighted (1-kg) boat, invert, and turn on the motor for one cycle. Stop for 1 min. Restart motor. Keep the pad wet by adding additional stripper solution dropwise onto the pad or into the coated panel. After 50 oscillations stop

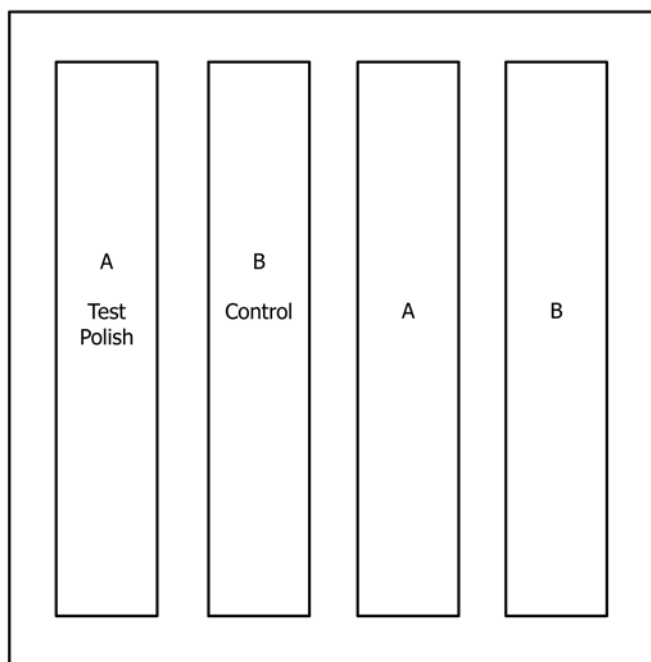


FIG. 1 Polish Application

the machine and remove and rinse the panel with water. Blot dry. If polish film remains, repeat the scrubbing for an additional 50 oscillations and again examine the film after rinsing and drying. Thereafter, if any film remains, repeat the process of scrubbing, rinsing, and drying after each additional 50 oscillations until complete removal is obtained or to a maximum of 200 total oscillations.

## 9. Report

9.1 The report shall include a qualitative rating according to the following terminology:

Removal Ease	Number of Oscillations Required for Complete Removal
Excellent	<50
Good	>50 but <100
Fair	>100 but <200
Poor	>200

## 10. Precision and Bias

10.1 Duplicate determinations should not differ by more than one rating group.

## 11. Keywords

11.1 emulsion; floor polishes; removability

<sup>5</sup> Recipe for alkaline cleaner:

	Parts by Weight
Sodium sesquicarbonate	52
Trisodium phosphate (anhydrous)	22
Disodium phosphate (anhydrous)	25
Alkyl aryl sulfonate (40 % active)	1

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