



Standard Test Method for Static Coefficient of Friction of Polish-Coated Flooring Surfaces as Measured by the James Machine¹

This standard is issued under the fixed designation D2047; 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 laboratory test method covers the use of the James Machine for the measurement of the static coefficient of friction of polish-coated flooring surfaces with respect to human locomotion safety. Further, this test method also establishes a compliance criterion to meet the requirement for a nonhazardous polished walkway surface. The test method is not intended for use on “wet” surfaces or on surfaces wherein the texture, projections, profile or clearance between the sculptured pattern of the surface does not permit adequate contact between the machine foot and the test surface.

1.2 This test method is the only method appropriate for testing polishes for specification compliance with the floor polish static coefficient of friction criterion.

1.3 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.

1.4 *This standard does not purport to address all of the safety problems, 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:²

C1028 Test Method for Determining the Static Coefficient of Friction of Ceramic Tile and Other Like Surfaces by the Horizontal Dynamometer Pull-Meter Method (Withdrawn 2014)³

D1436 Test Methods for Application of Emulsion Floor

Polishes to Substrates for Testing Purposes

D1630 Test Method for Rubber Property—Abrasion Resistance (Footwear Abrader)

D2825 Terminology Relating to Polishes and Related Materials

D4103 Practice for Preparation of Substrate Surfaces for Coefficient of Friction Testing

D6205 Practice for Calibration of the James Static Coefficient of Friction Machine

E29 Practice for Using Significant Digits in Test Data to Determine Conformance with Specifications

E456 Terminology Relating to Quality and Statistics

2.2 Federal Specification:

KK-L-165C Leather, Cattlehide, Vegetable Tanned and Chrome Retanned, Impregnated, and Soles.⁴ Type 1—Factory (for Shoe Making), Class 6—Strips

3. Terminology

3.1 *Definitions*—See also Terminologies **D1436** and **D2825**.

3.1.1 *friction, n* —the resistance to relative motion developed between two solid contacting bodies at, and parallel to, the sliding plane.

3.1.2 *coefficient of friction, n* —the ratio of the horizontal (shear) component of force required to overcome friction, to the vertical (normal) component of force applied.

3.1.3 *static coefficient of friction, n* —the ratio of the horizontal component of force applied to a body that just overcomes the friction or resistance to sliding, to the vertical component of force applied.

3.1.4 *dynamic coefficient of friction, n* —the ratio of the horizontal component of force required to cause a body to continue to slide at a constant velocity, to the vertical component of force applied.

3.1.5 *slip resistance, n* —the frictional force opposing movement of an object across its surface, usually with reference to the sole or heel of a shoe on a floor. A surface having a static coefficient of friction of 0.5 or greater as measured by this test method is considered to have adequate slip resistance. That is,

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

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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 last approved version of this historical standard is referenced on www.astm.org.

⁴ Available from Standardization Documents Order Desk, Bldg. 4 Section D, 700 Robbins Ave., Philadelphia, PA 19111-5094, Attn: NPODS.