



Standard Test Method for Static and Kinetic Coefficients of Friction of Plastic Film and Sheet¹

This standard is issued under the fixed designation D1894; 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.

This standard has been approved for use by agencies of the U.S. Department of Defense.

1. Scope*

1.1 This test method covers determination of the coefficients of starting and sliding friction of plastic film and sheeting when sliding over itself or other substances at specified test conditions. The procedure permits the use of a stationary sled with a moving plane, or a moving sled with a stationary plane. Both procedures yield the same coefficients of friction values for a given sample.

NOTE 1—For the frictional characteristics of plastic films partially wrapped around a cylinder, or capstan, see Test Method G143 under the jurisdiction of ASTM Subcommittee G02.50.

1.2 Test data obtained by this test method is relevant and appropriate for use in engineering design.

1.2.1 As an option to this test, coefficient of friction may be run at temperatures other than 23°C by heating only the plane while the sled is at ambient temperature.

1.3 The values stated in SI units are to be regarded as standard. The values given in parentheses are for information only.

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 and health practices and determine the applicability of regulatory limitations prior to use.* For a specific precautionary statement, see the end of 6.5.

NOTE 2—This test method is not equivalent to ISO 8295–1995, and results cannot be directly compared between the two methods.

2. Referenced Documents

2.1 ASTM Standards:²

D618 Practice for Conditioning Plastics for Testing

¹ This test method is under the jurisdiction of ASTM Committee D20 on Plastics and is the direct responsibility of Subcommittee D20.19 on Film, Sheet, and Molded Products.

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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.

D883 Terminology Relating to Plastics

D1894 Test Method for Static and Kinetic Coefficients of Friction of Plastic Film and Sheet

D3574 Test Methods for Flexible Cellular Materials—Slab, Bonded, and Molded Urethane Foams

D4000 Classification System for Specifying Plastic Materials

E177 Practice for Use of the Terms Precision and Bias in ASTM Test Methods

E691 Practice for Conducting an Interlaboratory Study to Determine the Precision of a Test Method

G143 Test Method for Measurement of Web/Roller Friction Characteristics

2.2 ISO Standard:

ISO 8295–1995³

3. Terminology

3.1 Definitions:

3.1.1 *friction, n*—resistance to relative motion between two bodies in contact.

3.1.1.1 *coefficient of friction*—the ratio of the force required to move one surface over another to the total force applied normal to those surfaces.

3.1.1.2 *kinetic coefficient of friction*—the ratio of the force required to move one surface over another to the total force applied normal to those surfaces, once that motion is in progress.

3.1.1.3 *static coefficient of friction*—the ratio of the force required to move one surface over another to the total force applied normal to those surfaces, at the instant motion starts.

3.2 Definitions of Terms Specific to This Standard:

3.2.1 *slip—in plastic films*, lubricity of two surfaces sliding in contact with each other.

4. Significance and Use

4.1 Measurements of frictional properties may be made on a film or sheet specimen when sliding over itself or over

³ Available from American National Standards Institute (ANSI), 25 W. 43rd St., 4th Floor, New York, NY 10036, <http://www.ansi.org>.

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