Designation: D8136 – 17

Standard Test Method for Determining Plastic Film Thickness and Thickness Variability Using a Non-Contact Capacitance Thickness Gauge[1]

This standard is issued under the fixed designation D8136; 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 the determination of the thickness of plastic film, ranging in thickness from 2.5 to 250 µm, with a non-contact thickness gauge that uses capacitance-based technology. It includes a method to generate a series of thickness data points that can be used to characterize the variability patterns of film for both transverse or machine direction (profiling).

NOTE 1—Thicker specimens, typically 250 µm to 2500 µm thick, can utilize this test method if the apparatus is designed to measure and handle materials of this thickness range, and the apparatus complies with the requirements as defined in this standard.

1.2 This test method provides a method for buyers and sellers of film to communicate the thickness and pattern of thickness variability of the product they are buying/selling.

1.3 This test method does not apply to textured or porous films or films that are conductive or coated with a conductive substance.

NOTE 2—Films that contain excessive levels of anti-static additive can be conductive and need to be tested to verify that they do not cause a negative reading on the instrument.

1.4 *Units*—The values stated in SI units are to be regarded as the standard. No other units of measurement are included in this standard.

NOTE 3—There is no known ISO equivalent to this standard.

1.5 *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, health, and environmental practices and determine the applicability of regulatory limitations prior to use.*

1.6 *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]

D618 Practice for Conditioning Plastics for Testing

D883 Terminology Relating to Plastics

D1505 Test Method for Density of Plastics by the Density-Gradient Technique

D4805 Terminology for Plastics Standards (Withdrawn 2002)[3]

D6988 Guide for Determination of Thickness of Plastic Film Test Specimens

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

E252 Test Method for Thickness of Foil, Thin Sheet, and Film by Mass Measurement

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

2.2 *ISO Standard:*

ISO 472 Plastics—Vocabulary[4]

3. Terminology

3.1 *Definitions*—See Terminologies D883, D4805, D6988, and ISO 472 for definitions pertinent to this test method.

3.2 *Definitions of Terms Specific to This Standard:*

3.2.1 *calibration, n*—set of operations that establishes, under specified conditions, the relationship between values measured or indicated by an instrument or system and the corresponding reference standard or known values derived from the appropriate reference standards.

[1] This is under the jurisdiction of ASTM Committee D20 on Plastics and is the direct responsibility of Subcommittee D20.19 on Film, Sheeting, 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.

[3] The last approved version of this historical standard is referenced on www.astm.org.

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