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Standard Test Method for Rigidity of Polyolefin Film and Sheeting¹

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1. Scope*

1.1 This test method describes two procedures for measuring the rigidity of polyolefin film and sheeting.

1.2 Procedure A prescribes a procedure using high-voltage static eliminators and the use of TFE-fluorocarbon²-coated plates to overcome the spurious effects of static electricity and friction.

1.3 Procedure B prescribes the use of a fine powder on uncoated plates to achieve a similar effect.

NOTE 1—Although the two procedures are designed to achieve similar effect, they may not achieve the same results.

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

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

NOTE 2—There is no known ISO equivalent to this standard.

2. Referenced Documents

2.1 *ASTM Standards*:³

D618 Practice for Conditioning Plastics for Testing

3. Terminology

3.1 *Definitions*:

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, Sheeting, and Molded Products.

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² This test method is based on the use of Teflon, a registered trademark of E. I. duPont de Nemours & Co.

³ 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.

3.1.1 *rigidity*—that combination of thickness and inherent stiffness of a polyolefin film or sheet which resists flexure.

4. Summary of Test Method

4.1 The resistance to flexure of the sample is measured by a strain gauge affixed to the end of a beam, the opposite end of which flexes the sample by forcing it into a groove or slot in a horizontal platform upon which the sample rests. An indicating microammeter, wired to the strain gauge, is calibrated in grams of load sensed by the strain gauge. The rigidity is read directly from the meter and expressed as grams per centimetre of sample width.

5. Significance and Use

5.1 The rigidity of a polyolefin web can affect its machinability, particularly on those packaging machines where a cut portion of a web is required to remain flat momentarily without being supported on all sides.

5.2 Rigidity is not a simple property since it depends on other properties of the specimen: the thickness (gauge), orientation effects, and the stiffness which is an inherent property of the material of which the film or sheet is made. The combined effect of these factors is the rigidity that influences performance on converting machines.

6. Interferences

6.1 Static electricity has considerable influence on the measured rigidity and contributes to poor precision and accuracy, frequently giving results biased toward the high side.

6.2 To a lesser extent, precision and accuracy are adversely affected by the frictional properties of the sample, particularly when the coefficient of friction is close to 1.

6.3 The interference caused by the level of static electricity and friction of the specimen is overcome in Procedure A by electrically destaticizing the sample and using TFE-fluorocarbon-coated plates and in Procedure B by dusting the platform with a fine powder at the start of the test.

7. Apparatus

7.1 *Procedure A*:

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