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Standard Test Method for Tensile Testing of Aramid Paper¹

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1. Scope

1.1 This test method covers the tensile testing of aramid paper with thickness less than 1 mm. This test method includes testing procedures only and includes no specifications or tolerances.

1.2 The procedures given in this test method are for use with computer-controlled constant-rate-of-elongation tensile testing equipment.

1.3 The values stated in SI units are to be regarded as standard. No other units of measurement are included in this standard.

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

1.5 *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

D76 Specification for Tensile Testing Machines for Textiles

D123 Terminology Relating to Textiles

D202 Test Methods for Sampling and Testing Untreated Paper Used for Electrical Insulation

D374M Test Methods for Thickness of Solid Electrical Insulation (Metric) (Withdrawn 2016)³

D1776 Practice for Conditioning and Testing Textiles

D4848 Terminology Related to Force, Deformation and Related Properties of Textiles

D6477 Terminology Relating to Tire Cord, Bead Wire, Hose Reinforcing Wire, and Fabrics

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

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

3. Terminology

3.1 *Definitions*—The following terms are relevant to this standard: aramid paper, breaking force, elongation, initial modulus, tensile strength, and Tensile Energy Absorption.

3.1.1 For definitions of terms related to industrial fibers and metallic reinforcements, refer to Terminology D6477.

3.1.2 For definitions of terms related to force and deformation in textiles, refer to Terminology D4848.

3.1.3 For definitions of other terms related to textiles, refer to Terminology D123.

4. Summary of Test Method

4.1 A conditioned sample of aramid paper is clamped in a tensile testing machine and then stretched or loaded until broken.

4.2 The output of a constant-rate-of-extension (CRE) tensile testing machine can be connected with electronic recording and computing equipment, which may be programmed to calculate and print the test results of tensile properties of interest.

4.3 Breaking force and elongation are determined directly. Modulus and Tensile Energy Absorption are calculated from the force-elongation curve.

5. Significance and Use

5.1 The levels of tensile properties obtained when testing aramid paper are dependent on the age and history of the specimen and on the specific conditions used during the test. Among these conditions are rate of stretching, type of clamps, gauge length of specimen, temperature and humidity of the atmosphere, rate of airflow across the specimen, and temperature and moisture content of the specimen. Testing conditions accordingly are specified precisely to obtain reproducible test results on a specific sample.

¹ This test method is under the jurisdiction of ASTM Committee D13 on Textiles and is the direct responsibility of Subcommittee D13.19 on Industrial Fibers and Metallic Reinforcements.

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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.