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Standard Test Method for Tension and Elongation of Wide Elastic Fabrics (Constant- Rate-of-Load Type Tensile Testing Machine)¹

This standard is issued under the fixed designation D 1775; 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 measurement of tension and elongation characteristics of wide elastic fabrics made from natural or man-made elastomers, either alone or in combination with other textile yarns, when tested with a constant-rate-of-loading (CRL) type tensile testing machine.

NOTE 1—For determination of similar testing using the constant-rate-of-extension (CRL) type tensile testing machine, refer to Test Method D 4964.

1.1.1 This test method is not applicable to narrow elastic fabrics.

1.2 The use of this test method requires the selection of, or mutual agreement upon, tension(s) and elongation(s) at which the test results will be determined.

1.3 In testing laundered elastic fabrics, the laundering procedures require mutual agreement on the selection of temperature and number of washing cycles and drying cycles to be used.

1.4 The values stated in SI units or inch-pound units are to be regarded separately as standard. The values stated in each system may not be exact equivalents; therefore each system must be used independently of the other, without combining values in any way.

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.*

2. Referenced Documents

2.1 ASTM Standards:

D 76 Specification for Tensile Testing Machines for Textiles²

D 123 Terminology Relating to Textiles²

D 1776 Practice for Conditioning Textiles for Testing²

D 4964 Test Method for Tension and Elongation of Elastic Fabrics (Constant-Rate-of-Extension Type Tensile Testing Machine)³

2.2 AATCC Method:

124 Appearance of Durable Press Fabrics after Repeated Home Laundering⁴

3. Terminology

3.1 Definitions:

3.1.1 *constant-rate-of-extension tensile testing machine (CRE), n*—a testing machine in which the rate of increase of specimen length is uniform with time.

3.1.2 *constant-rate-of-load tensile testing machine (CRL), n*—a testing machine in which the rate of increase of the load being applied to the specimen is uniform with time after the first 3 s.

3.1.3 *effective carriage mass, n*—in CRL-type tensile testing machine, the force actually applied to a specimen by the mass of the carriage.

3.1.4 *elastic fabric, n*—a textile fabric made from an elastomer either alone or in combination with other textile materials.

3.1.5 *elongation, n*—the ratio of the extension of a material to the length of the material prior to stretching, expressed as a percent.

3.1.6 *extension, n*—the change in length of a material due to stretching.

3.1.7 *extension-recovery chart, n*—in elastic materials testing, a continuously plotted graph of tension versus extension resulting from an extension-recovery cycle.

3.1.8 *force, n*—a physical influence exerted by one body on another which produces acceleration of bodies that are free to move and deformation of bodies that are not free to move.

3.1.9 *loop tension, n*—in elastic material testing, the total tension at any specified extension that is exerted on a specimen in a loop formation.

3.1.10 *narrow elastic fabric, n*—an elastic fabric that is less than 150 mm or 6 in. wide.

3.1.11 *tension, n*—a uniaxial force tending to cause the stretching of a material.

3.1.12 *tension-recovery chart, n*—in tension testing, a continuously plotted graph of tension versus extension resulting from a tension-recovery cycle.

3.1.13 *tension test, n*—in textiles, a test designed to measure the tautness in a textile strand or fabric.

3.1.14 *wide elastic fabric, n*—an elastic fabric that is at least 150 mm or 6 in. wide.

3.1.15 For definitions of other textile terms used in this test method, refer to Terminology D 123.

¹ This test method is under the jurisdiction of ASTM Committee D-13 on Textiles and is the direct responsibility of Subcommittee D13.24 on Elastomeric Yarns and Fabrics.

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² Annual Book of ASTM Standards, Vol 07.01.

³ Annual Book of ASTM Standards, Vol 07.02.

⁴ Available from American Association of Textile Chemists and Colorists, P.O. Box 12215, Research Triangle Park, NC 27709.