



Designation: D 6720 – 01

## Standard Test Method for Evaluation of Recoverable Stretch of Stretch Yarns (Skein Method)<sup>1</sup>

This standard is issued under the fixed designation D 6720; 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 ( $\epsilon$ ) indicates an editorial change since the last revision or reapproval.

### 1. Scope

1.1 This test method covers the determination of the recoverable stretch of commercial textured yarns, covered elastomeric yarns and other stretch yarns using skeins. This test method is particularly valuable for yarns that develop additional crimp upon exposure to hot, wet conditions. The recoverable stretch is a relative measure of the recovery power the yarn can be expected to provide in a finished fabric.

1.2 This test method is applicable to continuous filament yarns and is suitable for yarns that develop additional stretch potential upon exposure to heat.

1.3 This method is applicable to yarns 500 denier or finer.

1.4 The values stated in SI units are to be regarded as standard. The values given in parentheses are provided 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.*

### 2. Referenced Documents

2.1 *ASTM Standards:*

D 123 Terminology Relating to Textiles<sup>2</sup>

D 1776 Practice for Conditioning and Testing Textiles<sup>2</sup>

### 3. Terminology

3.1 *Definitions:*

3.1.1 *elastomeric yarn, n*—a nontextured yarn which can be stretched repeatedly at room temperature to at least twice its original length and which after removal of the tensile force will immediately and forcibly return to approximately its original length.

3.1.2 *recoverable stretch, n*—the difference between a length of yarn fully extended under a specified force and its recovery under a lesser specified force.

3.1.2.1 *Discussion*—The recoverable stretch of a yarn is expressed as a percentage of the recovery length.

3.1.3 *stretch yarn, n*—a generic term for filament or spun yarns having a high degree of potential elastic stretch and a rapid recovery.

3.1.3.1 *Discussion*—Stretch yarns are generally produced by an appropriate combination of deforming, heat setting, and developing treatments to attain elastic properties.

### 4. Summary of Test Method

4.1 A skein of yarn is prepared by winding a prescribed number of turns on a reel in order to obtain a 5000 g skein. The skein is immersed in boiling water for 15 min and air dried to allow the yarn skein to fully develop its stretch (crimp) potential. The skein is exercised under a specified tension and its extended length is recorded. A lesser tension is then applied to the skein and its recovery length is recorded. The recoverable stretch is calculated from the difference between the recorded length measurements and expressed as a percentage of the recovery length.

### 5. Significance and Use

5.1 This test method is considered satisfactory for acceptance testing of commercial shipments because current estimates of between-laboratory precision are acceptable and the method is used extensively in the trade for acceptance testing.

5.1.1 If there are differences of practical significance between reported test results for two laboratories (or more), comparative tests should be performed to determine if there is a statistical bias between them, using competent statistical assistance. As a minimum, use samples for such comparative tests that are as homogeneous as possible, drawn from the same lot of material as the samples that resulted in disparate results during initial testing, and randomly assigned in equal numbers to each laboratory. The test results from the laboratories involved should be compared using a statistical test for unpaired data, at a probability level chosen prior to the testing series. If bias is found, either its cause must be found and corrected, or future test results for that material must be adjusted in consideration of the known bias.

<sup>1</sup> This test method is under the jurisdiction of ASTM Committee D13 on Textiles and is the direct responsibility of Subcommittee D13.58 on Yarns.  
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<sup>2</sup> *Annual Book of ASTM Standards*, Vol 07.01.