



Standard Test Method for Shrinkage of Yarns¹

This standard is issued under the fixed designation D 2259; 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 is used to determine the shrinkage of yarns in skein form when treated in boiling water, dry heat, saturated steam, or solvents. This test method is applicable to yarns made from any fiber or combination of fibers where the tex of the yarn is known or can be determined. This test method is not recommended for elastomeric yarns and those yarns that stretch more than 5 % under the tension loadings prescribed, although it has been used for the latter.

NOTE 1—Procedures for determining yarn shrinkage and bulk properties of textured yarns are covered in Test Method D 4031.

1.2 This test method shows the values in both SI and inch-pound units. “SI” units is the technically correct name for the system of metric units known as the International System of Units. “Inch-pound” units is the technically correct name for the customary units used in the United States. The values stated in either SI units or in other units shall be regarded as standard. The values expressed in each system may not be exact equivalents; therefore each system must be used independently of the other without combining in any way.

1.3 *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 Textiles²
- D 1059 Test Method for Yarn Number Based on Short-Length Specimens²
- D 1776 Practice for Conditioning and Testing Textiles²
- D 1907 Test Method for Linear Density of Yarn (Yarn Number) by the Skein Method²
- D 2258 Practice for Sampling Yarn for Testing²
- D 3888 Terminology Related to Open-End Spinning³
- D 3990 Terminology Relating to Fabric Defects³

¹ This test method is under the jurisdiction of Committee D13 on Textiles and is the direct responsibility of Subcommittee D13.58 on Yarn Test Methods, General. Current edition approved Sept. 10, 2002. Published November 2002. Originally published as D 2259 – 64 T. Last previous edition D 2259 – 97.

² Annual Book of ASTM Standards, Vol 07.01.

³ Annual Book of ASTM Standards, Vol 07.02.

- D 4031 Test Method for Bulk Properties of Textured Yarns³
- D 4848 Terminology of Force, Deformation and Related Properties of Textiles³
- D 4849 Terminology Relating to Fibers and Yarns³
- E 145 Specification for Gravity-Convection and Forced-Ventilation Ovens⁴

3. Terminology

3.1 Definitions:

3.1.1 For definitions of textile terms used in this test method: skein and skein loop-length, refer to Terminology D 4849.

3.1.2 For definition of the term extension used in this test method, refer to Terminology D 4848.

3.1.3 For other textile terms used in this test method, refer to Terminology Standards, D 123, D 3888, D 3990, D 4848 and D 4849.

4. Summary of Test Method

4.1 The loop length of a conditioned skein of yarn is measured under a specific tension, which is sufficient to straighten but not stretch the skein. The tension-free skein is then immersed in boiling water or exposed to dry heat or saturated steam or in the solvent reconditioned, and remeasured. The shrinkage (or in some cases, growth) is calculated as the change in length expressed as a percentage of the length before immersion or exposure.

5. Significance and Use

5.1 Test Method D 2259 for testing yarn for shrinkage in boiling water, saturated steam, dry heat, or solvents is considered satisfactory for acceptance testing of commercial shipments of yarn because the test method has been used extensively in the trade for that purpose.

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 the 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

⁴ Annual Book of ASTM Standards, Vol 14.02.