



Designation: D2259 – 21

Standard Test Method for Shrinkage of Yarns¹

This standard is issued under the fixed designation D2259; 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 [D4031](#).

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

1.4 *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

[D123 Terminology Relating to Textiles](#)

¹ This test method is under the jurisdiction of Committee [D13](#) on Textiles and is the direct responsibility of Subcommittee [D13.58](#) on Yarns and Fibers.

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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.

[D1059 Test Method for Yarn Number Based on Short-Length Specimens](#)

[D1776 Practice for Conditioning and Testing Textiles](#)

[D1907 Test Method for Linear Density of Yarn \(Yarn Number\) by the Skein Method](#)

[D2258 Practice for Sampling Yarn for Testing](#)

[D3888 Terminology for Yarn Spinning Systems](#)

[D3990 Terminology Relating to Fabric Defects](#)

[D4031 Test Method for Bulk Properties of Textured Yarns](#)

[D4848 Terminology Related to Force, Deformation and Related Properties of Textiles](#)

[D4849 Terminology Related to Yarns and Fibers](#)

[E145 Specification for Gravity-Convection and Forced-Ventilation Ovens](#)

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 [D4849](#).

3.1.2 For definition of the term extension used in this test method, refer to Terminology [D4848](#).

3.1.3 For other textile terms used in this test method, refer to Terminology Standards, [D123](#), [D3888](#), [D3990](#), [D4848](#) and [D4849](#).

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 D2259 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),