



Designation: D 2102 – 9602

Standard Test Method for Shrinkage of Textile Fibers (Bundle Test)¹

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¹ This test method is under the jurisdiction of the ASTM Committee D-13 on Textiles and is the direct responsibility of Subcommittee D13.578 on Fiber Yarn Test Methods, General.

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1. Scope

1.1 This test method covers the measurement of the unrestrained shrinkage of a bundle of crimped or uncrimped fibers from exposure to some environment, for instance, boiling water for 15 min.

1.1.1 This test method may be used on fibers from tow and fibers removed from spun or continuous filament yarn.

NOTE 1—For measurement of shrinkage of single fibers, refer to Test Method D 5104.

1.2 The values stated in either inch-pound or SI units are to be regarded separately as the standard. The values stated in each system are not exact equivalents, therefore, each system must be used independently of the other.

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 1577 Test Methods for Linear Density of Textile Fibers²

D 1776 Practice for Conditioning Textiles for and Testing Textiles²

D 2258 Practice for Sampling Yarn for Testing²

D 3333 Practice for Sampling Man-Made Manufactured Staple Fibers, Sliver, or Tow for Testing³

D 4849 Terminology Relating to Fibers and Yarns³

D 5104 Test Method for Shrinkage for Textile Fibers (Single-Fiber Test)³

3. Terminology

3.1 Definitions:

3.1.1 *shrinkage, n*—a decrease in one or more dimensions

3.1.1 For the definition of an object or material.

3.1.1.1 *Discussion*—In this method, shrinkage means a decrease used in length. The shrinkage is calculated as a percentage of the original specimen length. In some cases, there is an increase in length rather than a decrease. This is referred to as a negative shrinkage or stretch.

3.1.2 For definitions of Terminology D 4849. For other textile terms used in this test method, refer to Terminology D 123 and Terminology D 4849.

4. Summary of Test Method

4.1 A uniform bundle of conditioned parallel fibers is lightly loaded between clamps and the nip to nip length measured. Without being removed from the clamps, the bundle specimen is then exposed to the test environment, typically, boiling water for 15 min. After reconditioning, the bundle length is remeasured under the same light loading.

NOTE 2—Due to the very high variability of the shrinkage of individual fibers of high shrinkage types, to obtain a reliable average value would require

² Annual Book of ASTM Standards, Vol 07.01.

³ Annual Book of ASTM Standards, Vol 07.02.