



Standard Test Method for Counting Partial Cleavages in Wool and Other Animal Fibers¹

This standard is issued under the fixed designation D4510; 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 a procedure, using the microprojector, for the counting of partial cleavages in wool and other animal fibers.

1.2 The values stated in SI units are to be regarded as standard. No other units of measurement are included in this standard.

1.3 *This standard does not purport to address all of the safety problems, 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:*²

D123 Terminology Relating to Textiles

D2258 Practice for Sampling Yarn for Testing

D2525 Practice for Sampling Wool for Moisture

D4845 Terminology Relating to Wool

2.2 *Other Document:*

Wool Products Labeling Act of 1983³

3. Terminology

3.1 For all terminology relating to D13.13, Wool and Wool Felt, refer to Terminology D4845.

3.1.1 The following terms are relevant to this standard: cashmere, coarse hair, cashmere coarse hair content, cashmere down, cashmere hair.

3.2 For all other terminology related to textiles, see Terminology D123.

4. Summary of Test Method

4.1 This test method describes a procedure:

4.1.1 The segmenting of various test specimens in preparation for testing,

4.1.2 The projection on a screen of magnified images of the randomly sampled short segments of fiber from the small test specimens, and

4.1.3 The measurement of the number of partially cleaved fibers.

5. Significance and Use

5.1 Test Method D4510 for the counting of partial cleavages, may be used for the acceptance testing of commercial shipments of wool and other animal fibers, but caution is advised, since information on between-laboratory precision is limited. Comparative tests as directed in 5.1.1 may be advisable.

5.1.1 In case of a dispute arising from differences in reported test results when using this test method for acceptance testing of commercial shipments, the purchaser and the supplier should conduct comparative tests to determine if there is a statistical bias between their laboratories. Competent statistical assistance is recommended for the investigation of bias. As a minimum, the two parties should take a group of test specimens that are as homogeneous as possible and that are from a lot of material of the type in question. The test specimens should then be randomly assigned in equal numbers to each laboratory for testing. The average results from the two laboratories should be compared using Students t-test for unpaired data and an acceptable probability level chosen by the two parties before the testing is begun. If a bias is found, either its cause must be found and corrected or the purchaser and the supplier must agree to interpret future test results in the light of the known bias.

5.2 Chemically damaged or tendered fibers are recognizable microscopically by qualified operators and should not be counted as partial cleavages. Such fibers exhibit total loss of cuticle, severe surface erosion, tenderizing cracks, longitudinal fibrillation, or a combination of these features (see Figs. 1 and 2). In a study of deliberately over-carbonized wool at one laboratory, it was found that when more than 24 tendered fibers

¹ This test method is under the jurisdiction of ASTM Committee D13 on Textiles and is the direct responsibility of Subcommittee D13.13 on Wool and Felt.

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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.

³ Act of Congress, "Wool Products Labeling Act of 1939," 76th Congress, Third Session, approved October 14, 1939.