Designation: D 6500 – 00

Standard Test Method for Diameter of Wool and Other Animal Fibers Using an Optical Fiber Diameter Analyser[1]

This standard is issued under the fixed designation D 6500; 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.

INTRODUCTION

Instruments based on image analysis have been designed to reduce the level of operator skill required and to speed up the measurement process while concurrently maintaining acceptable levels of precision and accuracy. An additional advantage of image analysis instruments is the ability of the operator to see the measurement points and to audit the process, if required, though this is not carried out during routine measurement. As with projection microscope measurements, and the Sirolan-Laserscan, the Optical Fiber Diameter Analyser (OFDA) system covered by this test method provides a count of readings grouped into diameter classes. Because the fiber snippets are measured automatically by an optical and image processing system, controls are provided in the image processing software to minimize the inclusion of multiple measurements on the same fiber and false diameter readings that arise from non-fiber material.

1. Scope

1.1 This test method covers a procedure that uses an Optical Fiber Diameter Analyser (OFDA) for the determination of the average fiber diameter and the fiber diameter variation in wool and other animal fibers in their various forms.

NOTE 1—This test method may also be applied to other fibers having a round cross section such as some polyamides, polyesters, and glass; it may also be applied to a limited number of polyacrylics and regenerated cellulose-type fibers.

NOTE 2—In subsequent sections of this test method, the term "wool" also signifies other animal fibers where applicable.

NOTE 3—For fineness specifications of wool, wool top, mohair, mohair top, alpaca, and cashmere, refer to Specifications D 3991, D 3992, D 2252, and Test Method D 2816, respectively.

1.2 The OFDA reports average fiber diameter and standard deviation of fiber diameter in micrometer units (µm). The coefficient of variation of fiber diameter is reported as a percentage.

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 Textiles[2]

D 584 Test Method for Wool Content of Raw Wool—Laboratory Scale[2]

D 1060 Practice for Core Sampling of Raw Wool in Packages for Determination of Percentage of Clean Wool Fiber Present[2]

D 1776 Practice for Conditioning Textiles for Testing[2]

D 2130 Test Method for Diameter of Wool and Other Animal Fibers by Microprojection[2]

D 2252 Specification for Fineness of Types of Alpaca[2]

D 2816 Test Method for Cashmere Coarse–Hair Content in Cashmere[2]

D 3510 Test Method for Diameter of Wool and Other Animal Fibers by Image Analyzer[3]

D 3991 Specifications for Fineness of Wool or Mohair and Assignment of Grade[4]

D 3992 Specifications for Fineness of Wool Top or Mohair Top and Assignment of Grade[4]

D 4845 Terminology Relating to Wool[4]

2.2 *Federal Standards:*

Official Standards of the United States for Grades of Wool, Section 31.0[5]

Measurement Method for Determining Grade of Wool, Section 31.204[5]

Official Standards of the United States for Grades of Wool Top, Section 31.1[6]

Measurement Method for Determining Grade of Wool Top, Section 31.301[6]

[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 Wool Felt.

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[2] *Annual Book of ASTM Standards*, Vol 07.01.

[3] Discontinued. See 1986 *Annual Book of ASTM Standards*, Vol 07.02.

[4] *Annual Book of ASTM Standards*, Vol 07.02.

[5] *Federal Register*, Vol 30, No. 161, August 20, 1965, pp. 10829-10833.

[6] *Federal Register*, Vol 33, No. 248, December 21, 1968, pp. 19073-19076.

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