Designation: D1448 – 11

Standard Test Method for Micronaire Reading of Cotton Fibers[1]

This standard is issued under the fixed designation D1448; 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.

This standard has been approved for use by agencies of the U.S. Department of Defense.

1. Scope

1.1 This test method covers the determination of the micronaire reading of loose cotton fibers by measuring the resistance of a specific mass (plug) of cotton fibers to air flow under prescribed conditions.

NOTE 1—For other methods for determining the fineness of fibers based on the air-flow principle, refer to Test Method D1449, Test Method for Specific Area and Immaturity Ratio of Cotton Fibers (Arealometer Method),[2] and to Test Method D1282, Test Method for Resistance to Air Flow as an Indication of Average Fiber Diameter of Wool Top, Card Sliver, and Scoured Wool.

1.2 *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:*[2]

D123 Terminology Relating to Textiles

D1282 Test Method for Resistance to Airflow as an Indication of Average Fiber Diameter of Wool Top, Card Sliver, and Scoured Wool

D1441 Practice for Sampling Cotton Fibers for Testing

D1449 Method of Test for Specific Area and Immaturity Ratio of Cotton Fibers (Arealometer Method) (Withdrawn 1977)[3]

D1776 Practice for Conditioning and Testing Textiles

D5867 Test Methods for Measurement of Physical Properties of Raw Cotton by Cotton Classification Instruments

D7139 Terminology for Cotton Fibers

3. Terminology

3.1 For all terminology related to D13.11, refer to Terminology D7139.

3.1.1 The following terms are relevant to this standard: calibration cotton standards, fineness, micronaire reading.

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

4. Summary of Test Method

4.1 The resistance a specific mass (plug) of cotton fibers offers to the flow of air is measured as an approximate indication of the fineness of fiber. A predetermined mass of loose cotton fibers is placed in the specimen holder and compressed to a fixed volume. The resistance to air flow is measured and expressed as a micronaire reading.

5. Significance and Use

5.1 This test method is considered satisfactory for acceptance testing when the levels of the laboratories are controlled by the use of the same reference standard cotton samples because the current estimates of between-laboratory precision are acceptable under these conditions. 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, ensure the test samples to be used are as homogeneous as possible, are drawn from the material from which the disparate test results were obtained, and are randomly assigned in equal numbers to each laboratory for testing. The test from the two laboratories should be compared using a statistical test for unpaired data, at a probability level chosen prior to the testing series. If a bias is found, either its cause must be found and corrected, or future test results for that material must be adjusted in consideration of the known bias.

5.2 The micronaire reading of cotton fibers is a function of both fineness and maturity and is related to mill processing performance and to the quality of the end products. Factors correlated with micronaire reading include cleaning efficiency, neppiness, and the strength and uniformity of the yarn.

NOTE 2—A modification of this test method is used in commercial

[1] This test method is under the jurisdiction of ASTM Committee D13 on Textiles and is the direct responsibility of Subcommittee D13.11 on Cotton Fibers.

Current edition approved Jan. 1, 2011. Published January 2011. Originally approved in 1954 to replace portions of D414. Last previous edition approved in 2005 as D1448–05. DOI: 10.1520/D1448-11.

[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] The last approved version of this historical standard is referenced on www.astm.org.