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Standard Practice for Sampling Cotton Fibers for Testing¹

This standard is issued under the fixed designation D1441; 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 practice covers procedures for taking a lot sample, at the source, of cotton fibers and reducing this sample through a series of steps to provide a relatively small test specimen of loose cotton fibers, representative of the source material and suitable for the determination of a single property, or a series of fiber properties, according to established procedures.~~

1.1 This practice covers procedures for taking a lot sample of cotton fibers, from a designated source (lot), and reducing the lot sample through a series of steps to produce test specimens that are representative of the source and suitable for the determination of fiber properties according to established procedures.

1.2 This practice has been used extensively for commercial acceptance testing of cotton fibers as well as for arbitration testing and research.

~~1.3 The procedures do not cover the selection of samples for the determination of moisture. Special handling and protection of the sample from the prevailing atmosphere required for samples taken for the determination of moisture are not provided for in this practice. See Test Method D2495.~~

NOTE 1—This practice is used in taking samples of cotton for testing by Test Methods D1440, D1442, D1445, D1447, D1448, D1464, ~~D2480, D2496, and, D2480, D2812, D5866 and D5867.~~

1.3 The procedures do not cover the selection of samples for the determination of moisture. Special handling and protection of the sample from the prevailing atmosphere required for samples taken for the determination of moisture are not provided for in this practice. See Test Method D2495.

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

1.5 *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](#)
- D1440 [Test Method for Length and Length Distribution of Cotton Fibers \(Array Method\)](#)
- D1442 [Test Method for Maturity of Cotton Fibers \(Sodium Hydroxide Swelling and Polarized Light Procedures\)](#)
- D1445 [Test Method for Breaking Strength and Elongation of Cotton Fibers \(Flat Bundle Method\)](#)
- D1447 [Test Method for Length and Length Uniformity of Cotton Fibers by Photoelectric Measurement](#)
- D1448 [Test Method for Micronaire Reading of Cotton Fibers](#)
- D1464 [Practice for Differential Dyeing Behavior of Cotton](#)
- D1776 [Practice for Conditioning and Testing Textiles](#)
- ~~D2480~~
- D2480 [Test Method for Maturity Index and Linear Density of Cotton Fibers by the Causticaire Method³](#)
- D2495 [Test Method for Moisture in Cotton by Oven-Drying](#)
- D2812 [Test Method for Non-Lint Content of Cotton](#)
- D5866 [Test Method for Neps in Cotton Fibers \(AFIS-N Instrument\)](#)
- D5867 [Test Methods for Measurement of Physical Properties of Cotton Fibers by High Volume Instruments](#)
- D7139 [Terminology for Cotton Fibers](#)

¹ This practice 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 ~~June~~ July 1, 2006; 2012. Published ~~July 2006~~ August 2012. Originally approved in 1952. Last previous edition approved in 2000 ~~2006~~ as D1441 - 06. DOI: ~~10.1520/D1441-06~~ 10.1520/D1441-12.

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

3. Terminology

3.1 For all terminology relating to D13.11, Cotton Fibers, refer to Terminology D7139.

3.1.1 The following terms are relevant to this standard: laboratory sample, lot, in acceptance sampling of cotton, lot sample, in cotton, and specimen.

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

4. Summary of Practice

4.1 Sampling procedures for obtaining samples from the lot sample and for the reduction of the lot samples to the size required for fiber test specimens are presented. Steps are outlined to secure reduction of the amount of cotton fibers to be handled at various stages, so that the reduced sample continues to be representative of the lot. Provision is made for the omission of intermediate steps in the reduction of the lot sample in cases where this is desirable or necessary (see 13.1).

5. Significance and Use

5.1 The reliability of the results of any test method depend primarily upon how well the specimens tested represent the original source material. Much time and effort are required, and can justifiably be spent, to be sure that all the sampling operations are at random and are representative. Failure to provide a test specimen which accurately represents the material from which it is drawn will produce misleading test results regardless of the accuracy and precision of the test method.

5.1 The reliability of the results of any test method depends primarily upon how well the specimens tested represent the original source material or lot. Failure to provide a test specimen which accurately represents the lot from which it is drawn will produce misleading test results regardless of the accuracy and precision of the test method.

6. Apparatus

6.1 *Mechanical Fiber Blender*,⁴ designed especially for cotton fibers (optional).

6.2 *Balance*, 100 g capacity, 0.5 g sensitivity (optional).

7. Conditioning

7.1 For laboratory samples that are not to be blended, neither ~~conditioning nor preconditioning~~ preconditioning or conditioning is required.

7.2 For laboratory samples that are to be blended, bring the lot sample from the prevailing atmosphere to moisture equilibrium with the standard atmosphere for testing textiles as directed in Practice D1776. Preconditioning is not required.

8. Division into Lots

8.1 Unless there is information to the contrary, consider all the cotton ~~or cotton products~~ fiber in a single shipment or consignment as a single lot for sampling purposes. If the shipment or consignment contains cotton ~~or cotton products~~ fiber from two or more sources, consider the material from each source as a separate lot.

9. Lot Sample

9.1 ~~Acceptance Testing—As a lot sample for acceptance testing, take at random—~~ Take at random from the shipment the number of shipping containers as directed in an applicable material specification or other agreement between the purchaser and the supplier as a lot sample. In the absence of such an agreement, take ten shipping containers or 10 % of the shipping containers in the lot, whichever is the greater. Consider bales ~~Individual or other shipping containers to multiple bales may be the primary sampling units—considered as a lot.~~

~~NOTE2—An adequate specification or other agreement between the purchaser and the supplier requires taking into account the variability between shipping containers, between laboratory samples within a shipping container, and between test specimens within a laboratory sample to provide a sampling plan with a meaningful producer's risk, consumer's risk, acceptable quality level, and limiting quality level.~~ 2—An adequate specification or other agreement between the purchaser and the supplier requires taking into account the variability between shipping containers.

9.2 ~~Other Testing—Select the lot sample to meet the requirements of the particular experimental design or purpose of the fiber tests desired. Select the lot sample source material in such a manner that it will be as uniform as practicable, on the basis of available information. If the lot sample is nonhomogeneous, divide it into rational subgroups; for example, individual bales in a commercial shipment, on the basis of available information.~~

~~9.2.1 Take a sufficient number of samples to represent the source material adequately. The number of subsamples to be taken will be determined by the size and homogeneity of the lot sample, and the required precision of the results.~~

~~9.2.2 Take portions of cotton or cotton products from different parts of the source material carefully and at random to provide a composite lot sample of sufficient size. Approximately 100 g (4 oz) is sufficient for most purposes.—Select the lot sample to meet the requirements of the particular experimental design or purpose of the fiber tests desired. Select the lot sample in such a~~

⁴Fiber Blender available from Custom Scientific, or its equivalent, has been found satisfactory for this method.

⁴Commercially available.