



Standard Test Methods for Quantitative Analysis of Textiles¹

This standard is issued under the fixed designation D629; 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

Methods D629-59 T, Quantitative Analysis of Textiles, were discontinued in 1969 because the responsible subcommittee failed to recommend their adoption as a standard after several years of publication as a tentative. The subcommittee action was based on the members' knowledge that the standard did not include several fiber types introduced to the textile trade after the method was published, and that the techniques required for their identification were lacking in the text, allowing it to become out of date. The procedures included in the text, however, are believed to be reliable for the fiber types named and the techniques described are currently being used in the trade and are referenced by other standards sponsored by Committee D-13 on Textiles. Reinstatement as a standard using the previously assigned number was requested since the listed procedures were reliable and the text considered to be the best available, though not all inclusive. Extensive editorial changes were made in various sections in 1972, and the methods were reinstated as D629-72. Editorial changes have again been made throughout the text, and statements on precision and bias and suitability for acceptance testing have been added.

The text of Methods D629-59 T was published by the American Association of Textile Chemists and Colorists in that society's Technical Manual as "Test Method 20A-1959" issued in the years 1959 through 1974. The AATCC Method was revised completely in 1975 and since published as "Test Method 20A-1975."

1. Scope

1.1 These test methods cover procedures for the determination of the fiber blend composition of mixtures of the fibers listed in 1.2. Procedures for quantitative estimation of the amount of moisture and certain nonfibrous materials in textiles are also described, for use in the analysis of mixtures, but these are not the primary methods for the determination of moisture content for commercial weights.

1.2 These test methods cover procedures for the following fiber types:

1.2.1 Natural Fibers:

1.2.1.1 Cellulose-Base Fibers:

Cotton
Hemp
Flax
Ramie

1.2.1.2 Protein-Base Fibers:

Animal hairs (other than wool)
Silk, cultivated
Silk, Tussah
Wool

1.2.2 Man-Made Fibers:

1.2.2.1 Cellulose-Base Fibers:

Acetate (secondary)
Rayon, viscose or cuprammonium
Triacetate

1.2.2.2 Synthetic-Base Fibers:

Acrylic
Aramid
Modacrylic
Nylon 6, Nylon 6-6, others
Olefin
Polyester
Spandex

1.3 These test methods include the following sections and tables:

¹ These test methods are under the jurisdiction of ASTM Committee D13 on Textiles and are the direct responsibility of Subcommittee D13.51 on Conditioning, Chemical and Thermal Properties.

Current edition approved Feb. 1, 2015. Published March 2015. Originally approved in 1941. Last previous edition approved in 2008 as D629-08. DOI: 10.1520/D0629-15.

Referenced Documents	2
Terminology	3

Section

Section

Summary of Methods	4
Uses and Significance	5
Sampling	7
Purity of Reagents	6
Moisture Content or Moisture Regain	9
Nonfibrous Materials	8
Mechanical Separation or Dissection	10
Chemical Test Methods:	
Summary of Methods	11
Specimens and Symbols	12
No. 1 Acetate Mixed With Other Fibers	13
No. 2 Modacrylic Mixed With Cellulosic Fiber or Wool	14
No. 3 Nylon 6 or Nylon 6-6 Mixed With Natural Fibers or Rayon	15
No. 4 Rayon Mixed With Cotton	16
No. 5 Wool or Polyester Mixed With Cellulosic Fibers or Silk	17
No. 6 Polyester or Acrylic Mixed With Wool	18
No. 7 Natural Cellulosic Material and Rayon Mixed With Acrylic, Modacrylic, and Polyester	19
No. 8 Polyester Mixed With Olefin	20
No. 9 Polyester Mixed With Acetate or Nylon 6,6-6	21
No. 10 Acrylic Fiber or Linear Spandex Mixed With Nylon or Polyester	22
Microscopical Analysis	
Scope	23
Summary of Method	24
Sampling	26
Apparatus	25
Procedure	27
Keywords	28

Table

Chemical Methods for Analysis of Fiber Mixtures	1
Solubilities of Various Fibers in Solvents Used in Chemical Methods	2
Fineness Ranges and Fiber Diameters of Various Textile Fibers	3
Density and Moisture Regain of Common Fiber Types	4

1.4 The analytical procedures described in the test methods are applicable to the fibers listed in 1.2. The test methods are not satisfactory for the separation of mixtures containing fibers that fall within the same generic class but differ somewhat, either physically or chemically, from each other. These test methods are not satisfactory for the determination of bicomponent fibers.

NOTE 1—For other methods of analysis covering specific determinations, refer to: Test Methods [D461](#), Test Method [D584](#), Methods [D885](#), Test Method [D1113](#), Test Method [D1334](#), and Test Method [D2130](#). Methods for moisture are covered in Methods [D885](#), Test Method [D1576](#), Test Method [D2462](#), Test Method [D2495](#) and Test Methods [D2654](#). For the determination of commercial weight, refer to Test Method [D2494](#).

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](#)

[D276 Test Methods for Identification of Fibers in Textiles](#)

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.

[D461 Test Methods for Felt](#) (Withdrawn 2003)³

[D584 Test Method for Wool Content of Raw Wool—Laboratory Scale](#)

[D885 Test Methods for Tire Cords, Tire Cord Fabrics, and Industrial Filament Yarns Made from Manufactured Organic-Base Fibers](#)

[D1113 Test Method for Vegetable Matter and Other Alkali-Insoluble Impurities in Scoured Wool](#)

[D1193 Specification for Reagent Water](#)

[D1334 Test Method for Wool Content of Raw Wool—Commercial Scale](#)

[D1576 Test Method for Moisture in Wool by Oven-Drying](#)

[D1909 Standard Tables of Commercial Moisture Regains and Commercial Allowances for Textile Fibers](#)

[D2130 Test Method for Diameter of Wool and Other Animal Fibers by Microprojection](#)

[D2462 Test Method for Moisture in Wool by Distillation With Toluene](#)

[D2494 Test Method for Commercial Mass of a Shipment of Yarn or Manufactured Staple Fiber or Tow](#)

[D2495 Test Method for Moisture in Cotton by Oven-Drying](#)

[D2654 Test Method for Moisture in Textiles](#) (Withdrawn 1998)³

[D4920 Terminology Relating to Conditioning, Chemical, and Thermal Properties](#)

2.2 *AATCC Method:*

[20 A Test Method for Fiber Analysis: Quantitative](#)⁴

3. Terminology

3.1 For definitions of textile terms used specifically in these test methods, refer to Terminology [D4920](#).

3.2 For definitions of other generic textile terms used in these test methods, refer to Terminology [D123](#).

4. Summary of Test Methods

4.1 Summaries of the specific methods used for different tests are given in the appropriate sections.

4.2 The methods for fiber analysis are grouped under three headings, as follows: Mechanical Separation or Dissection, Chemical Test Methods, and Microscopical Analysis.

NOTE 2—It is assumed that the analyst knows from qualitative tests (as directed in Test Methods [D276](#)) what fibers are present and, therefore, which method of analysis is applicable. The choice of method will depend upon the nature of the material to be analyzed and, in some cases, on the accuracy required.

5. Significance and Use

5.1 Qualitative and quantitative fiber identification is actively pursued by committee RA24 (Fiber Identification) of AATCC and presented in AATCC Test Methods 20 and 20A. Since precision and bias development is also part of the AATCC test methods, both AATCC and ASTM D13 have agreed that new development will take place in RA24.

³ The last approved version of this historical standard is referenced on www.astm.org.

⁴ AATCC Technical Manual, available from the American Association of Textile Chemists and Colorists, P.O. Box 12215, Triangle Park, NC 27709, www.aatcc.org.