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Standard Tolerances for Yarns Spun on the Woolen System[1]

This standard is issued under the fixed designation D 2644; 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.

ε[1] NOTE—Editorial changes were made throughout standard in February 1997.

1. Scope

1.1 These tolerances are applicable to all yarns spun on the woolen system and composed of any fiber or mixture of fibers, even though there might not be any wool present in the yarn.

NOTE 1—For tolerances for other spun yarns, see Tolerances D 738 and D 2645 and Specifications D 541 and D 681.

2. Referenced Documents

2.1 *ASTM Standards:*

D 123 Terminology Relating to Textiles[2]
D 541 Specification for Single Jute Yarn[2]
D 681 Specification for Jute Rove and Plied Yarn for Electrical and Packing Purposes[2]
D 738 Tolerances and Methods for Rope Made from Bast and Leaf Fibers[3]
D 1422 Test Method for Twist in Single Spun Yarns by the Untwist-Retwist Method[2]
D 1423 Test Method for Twist in Yarns by the Direct-Counting Method[2]
D 1578 Test Method for Breaking Strength of Yarn in Skein Form[2]
D 1907 Test Method for Yarn Number by the Skein Method[2]
D 2256 Test Method for Tensile Properties of Yarns by the Single-Strand Method[2]
D 2257 Test Method for Extractable Matter in Textiles[2]
D 2258 Practice for Sampling Yarn for Testing[2]
D 2494 Test Method for Commercial Mass of a Shipment of Yarn or Man-Made Staple Fiber or Tow[2]
D 2645 Tolerances for Yarns Spun on the Cotton or Worsted Systems[2]

3. Terminology

3.1 *Definitions:*

3.1.1 *tolerances, n—in mathematics*, prescribed limits of variation for specified properties of a particular material based on observed values obtained by specified test methods and on samples that are representative of the material.

3.1.2 *wool, n—used in the generic sense in these tolerances*, the fiber from the fleece of the sheep or lamb, the hair of the Angora or Cashmere goat, rabbit hair, and the so-called specialty fibers from the hair of the camel, alpaca, llama, and vicuna.

3.1.3 *woolen-spun, adj*—of, or pertaining to, material produced by the woolen system of yarn spinning as distinct from materials made by the worsted system of spinning.

3.1.3.1 *Discussion*—Woolen-spun yarns do not necessarily contain any wool.

3.1.4 *woolen system, n*—a spinning system employing a minimum of drafting and producing yarns of low bulk density.

3.1.4.1 *Discussion*—Roving is produced by rub aprons in the condenser section at the front of a roller-top card. There is no roller drafting, or other intermediate process between carding and spinning.

3.1.5 For definitions of other textile terms used in these tolerances see Terminology D 123.

4. Sampling

4.1 Take samples as directed in the applicable material specification, or as agreed upon by the purchaser and the supplier. In the absence of an applicable specification or other agreement, proceed as directed in Practice D 2258.

5. Tolerances

5.1 *Strength*—The average breaking force of each lot shall be equal to or greater than the specified minimum average.

5.2 *Yarn Number*—The average yarn number shall be within the following tolerances:

	Deviation from the Specified Yarn Number, %
500 tex or 0.6 woolen run to 165 tex or 1.86 woolen run	± 7.5
Finer than 165 tex or 1.86 woolen run	± 5.0

5.3 *Twist*:

5.3.1 The direction of twist in each package or end shall be S or Z, as specified.

5.3.2 The average twist shall conform to the limits: specified value ± 7.5 % of the specified value.

5.3.3 The average twist of the package containing the

[1] These tolerances are under the jurisdiction of ASTM Committee D-13 on Textiles, and are the direct responsibility of Subcommittee D13.58, Yarn Test Methods, General.

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

[3] Discontinued—See *1971 Book of ASTM Standards*, Part 25.

highest average twist shall not be higher than that of the package containing the lowest average twist by more than 15.0 % of the lower average.

5.4 *Extractable Matter*—The average percent extractable matter shall not exceed the following values:

	%
Dry-spun	2.0
Oil-spun, semi-scoured	15.0
Oil-spun scoured:	
Blends, 50 % wool or less	4.0
All wool or more than 50 % wool	10.0

5.5 *Commercial Mass*—In the absence of other contractual agreements, the invoice mass, that is the commercial mass as adopted in a specific branch of the textile trade and as determined by the supplier, shall not exceed the commercial mass as determined by the purchaser, by more than 1 %. In branches of the textile trade which use the net mass as the commercial mass, the latter is subject to the same limitation.

NOTE 2—Particular attention is drawn to the results of an interlaboratory test described in Section 10 of Test Method D 2494.

6. Test Methods

6.1 *Strength*—Determine the breaking force by Test Method D 1578 or Test Method D 2256, as agreed or specified.

6.2 *Yarn Number*—Determine the yarn number by Test Method D 1907, using Option 1, 3, or 6 as agreed or specified.

6.3 *Twist*—Determine the twist by Test Method D 1423, or, by agreement (for single yarns only), Test Method D 1422.

6.4 *Extractable Matter*—Determine the percent of extractable matter by Test Method D 2257 soxhlet extraction.

6.5 *Mass*—Determine the net mass and, if required, the commercial mass of the shipment by Test Method D 2494.

7. Conformance

7.1 The purchaser and the supplier may agree on a procedure to establish conformance, including control charts furnished by the supplier, a sequential-sampling plan, or the double-sampling plan outlined in 7.2.

7.2 In the absence of a control-chart or sequential-sampling plan, proceed as directed in 7.2.1-7.2.3.

7.2.1 If the test results for the lot conform to the tolerances for all characteristics specified in Section 5, consider the lot a valid delivery.

7.2.2 If the test results for one or more characteristics do not conform to the tolerances, take a new laboratory sample from either the original lot sample or a new lot sample. Retest the lot for the characteristic(s) that did not conform to the tolerances in the first test, and average the results of the first and second samples as if all results were from one test of double the original number of specimens. If the new average(s) conform(s) to the specified tolerances, consider the lot a valid delivery.

7.2.3 If the test results obtained as directed in 7.2.2 do not conform to the specified tolerances, consider the lot a nonvalid delivery.

8. Keywords

8.1 tolerances; woolen system; yarn