



Standard Tolerances for Yarns Spun on the Woolen System¹

This standard is issued under the fixed designation D2644; 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 reappraisal. A superscript epsilon (ϵ) indicates an editorial change since the last revision or reappraisal.

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 [D2645](#).

2. Referenced Documents

2.1 *ASTM Standards*:²

- [D123 Terminology Relating to Textiles](#)
- [D1422 Test Method for Twist in Single Spun Yarns by the Untwist-Retwist Method](#)
- [D1423 Test Method for Twist in Yarns by Direct-Counting](#)
- [D1578 Test Method for Breaking Strength of Yarn in Skein Form](#)
- [D1907 Test Method for Linear Density of Yarn \(Yarn Number\) by the Skein Method](#)
- [D2256 Test Method for Tensile Properties of Yarns by the Single-Strand Method](#)
- [D2257 Test Method for Extractable Matter in Textiles](#)
- [D2258 Practice for Sampling Yarn for Testing](#)
- [D2494 Test Method for Commercial Mass of a Shipment of Yarn or Manufactured Staple Fiber or Tow](#)
- [D2645 Tolerances for Yarns Spun on the Cotton or Worsted Systems](#)
- [D4849 Terminology Related to Yarns and Fibers](#)

3. Terminology

3.1 For terminology related to yarn test methods, refer to Terminology [D4849](#).

3.2 For definitions of other terms, refer to Terminology [D123](#).

4. Sampling

4.1 Take samples as directed in the applicable material specification, or as agreed upon by the purchaser and the

¹ These tolerances are under the jurisdiction of ASTM Committee [D13](#) on Textiles and are the direct responsibility of Subcommittee [D13.58](#) Yarns and Fibers. Current edition approved Feb. 1, 2012. Published March 2012. Originally approved in 1967. Last previous edition approved in 2007 as D2644 – 02(2007). DOI: 10.1520/D2644-12.

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.

supplier. In the absence of an applicable specification or other agreement, proceed as directed in Practice [D2258](#).

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 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 [D2494](#).

6. Test Methods

6.1 *Strength*—Determine the breaking force by Test Method [D1578](#) or Test Method [D2256](#), as agreed or specified.

6.2 *Yarn Number*—Determine the yarn number by Test Method **D1907**, using Option 1, 3, or 6 as agreed or specified.

6.3 *Twist*—Determine the twist by Test Method **D1423**, or, by agreement (for single yarns only), Test Method **D1422**.

6.4 *Extractable Matter*—Determine the percent of extractable matter by Test Method **D2257** soxhlet extraction.

6.5 *Mass*—Determine the net mass and, if required, the commercial mass of the shipment by Test Method **D2494**.

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

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