



Designation: **D8007—15** **D8007 – 15^{ε1}**

Standard Test Method for Wale and Course Count of Weft Knitted Fabrics¹

This standard is issued under the fixed designation D8007; 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.

^{ε1} NOTE—Editorial changes were made throughout in March 2016.

1. Scope

1.1 This test method covers the measurement of wale and course counts of weft knitted fabrics. Weft knit fabrics are made on circular or flat-bed knitting machines and include single- as well as double-knit fabric categories. ~~Typical fabrics in the single-knit category examples of single-knits include jersey and single-pique; typical fabrics in the double-knit category single-pique fabrics; typical double-knits are rib, interlock, and swiss pique-pique fabrics.~~

1.2 This test method is not applicable to warp knit fabrics such as tricot or raschel.

1.3 Wale and course counts are to be reported separately.

1.4 The values stated in inch-pound units are to be regarded as the standard. The values given in parentheses are mathematical conversions to SI units that are provided for information only and are not considered 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:*

[D123 Terminology Relating to Textiles](#)

[D1776 Practice for Conditioning and Testing Textiles](#)

[D3887 Specification for Tolerances for Knitted Fabrics](#)

[D4850 Terminology Relating to Fabrics and Fabric Test Methods](#)

[E177 Practice for Use of the Terms Precision and Bias in ASTM Test Methods](#)

[E691 Practice for Conducting an Interlaboratory Study to Determine the Precision of a Test Method](#)

3. Terminology

3.1 For terminology related to fabrics, see Terminology [D4850](#).

3.2 The following terms are relevant to this test method: ~~count-in~~ knitted fabrics, ~~course-in~~ courses-in knitted fabrics, knitted fabric, and ~~wale-in~~ wales-in knitted fabrics.

3.3 For definitions of other textile terms used in this test method, refer to Terminology [D123](#).

4. Summary of Test Method

4.1 The number of wales and the number of courses per unit distance of a knitted fabric are counted using a suitable ruler, magnifying device, or digital camera system. For an illustration of a simple knitted fabric wale and course orientation, see [Fig. 1](#).

5. Significance and Use

5.1 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 that the test samples to be used are as homogeneous as possible and drawn from the material from which the disparate test results were obtained. The test specimens are to be randomly assigned in equal numbers to each laboratory for testing.

¹ This test method is under the jurisdiction of ASTM Committee [D13](#) on Textiles and is the direct responsibility of Subcommittee [D13.59](#) on Fabric Test Methods, General. Current edition approved July 1, 2015. Published September 2015. DOI: ~~10.1520/D8007-15~~ [10.1520/D8007-15E01](#).

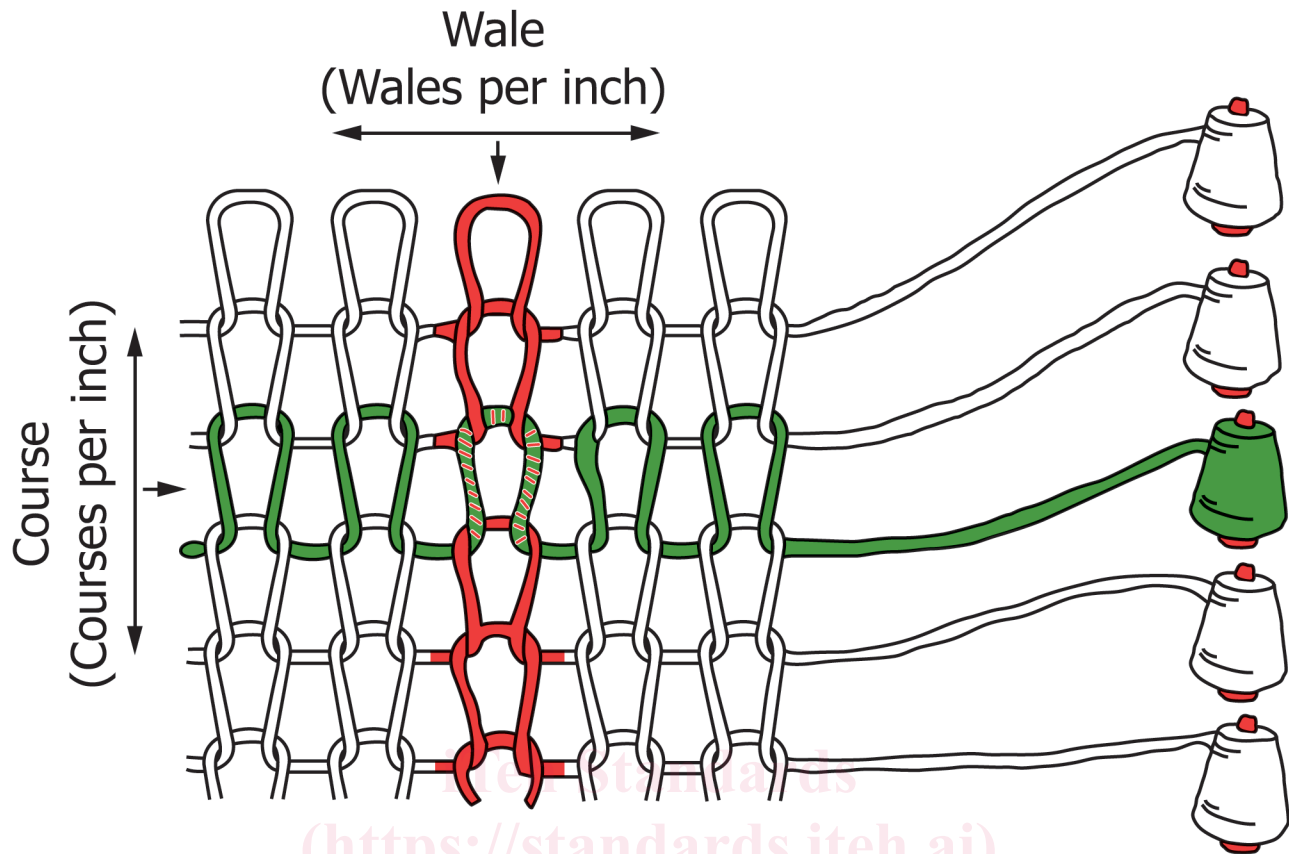


FIG. 1 Wale and Course Orientation in Single Knitted Fabric

Courtesy of Cotton Incorporated, Cary, NC, *Circular Knitting Science Intermediate Workshop Notebook* and *The Art of Knitting: An Interactive Guide to the Basics of Knitting* educational CD, www.cottoninc.com.

The test results from the participating laboratories should be compared using a statistical test for unpaired data to a probability level chosen before initiation of the testing. If a bias is found, either its cause shall be found and corrected, or future test results for that material shall be adjusted in consideration of the known bias.

5.2 The results obtained by this test method may be used to determine if fabrics meet the tolerances for fabric counts given in Specification D3887.

6. Apparatus

6.1 Use any suitable device, such as a pick glass, ruler, microscope, or digital camera system that will allow counting by unit distance.

6.2 The use of a stylus, pointer, or pick needle is recommended when using a pick glass, ruler, or if the microscope does not have a micrometer.

7. Sampling

7.1 *Lot Sample*—As a lot sample for acceptance testing, take at random the number of rolls of fabric as directed in an applicable material specification or other agreement between the purchaser and the supplier. Consider rolls of fabric to be the primary sampling unit.

7.1 *Laboratory Lot Sample*—As a laboratory sample, take a full width swatch at least 2 yd (2 m) long from each roll of fabric in the lot sample. lot sample for acceptance testing, take at random the number of rolls of fabric as directed in an applicable material specification or other agreement between the purchaser and the supplier. Consider rolls of fabric to be the primary sampling unit.

7.1.1 *Laboratory Sample*—As a laboratory sample, take a full width swatch at least 2 yd (2 m) long from each roll of fabric in the lot sample.

7.1.2 Wale and course counts should be made no closer to a fabric selvage or tubular edge than one tenth of the width of the fabric or within 0.5 yd (0.5 m) of the end of the roll or piece.

7.1.3 Wale and course counts may be made on either the face or the back side of the fabric sample. Select the fabric side that allows for the best visual observation of the wales and courses.

7.1.4 It is not necessary to cut out swatches from the laboratory sample for each wale and course count to be taken. Consider each designated place at which wale and course counts are made as a test specimen. It is recommended that a wale and a course count be taken at the same site on the laboratory sample then at different locations along the length and across the width of the laboratory sample.

7.2 ~~When like~~ For garments or textile items that represent a laboratory sample, wale and course counts should be made at locations on different panels of the garments or products at least 2 in. (5 cm) away from seams, pockets, plackets, or other assembly sites.

8. Conditioning

8.1 Condition specimens as directed in Practice **D1776**. Testing may be performed without conditioning. However, in cases of dispute, specimens shall be conditioned before testing.

8.2 If testing is performed in conditions not specified in Practice **D1776**, report the prevailing conditions at the time of testing. Such results may not correspond with the results obtained when testing in the standard atmosphere for testing textiles.

9. Procedure

~~9.1 Wale and course counts should be made no closer to a fabric selvage or tubular edge than one tenth of the width of the fabric or within 0.5 yd (0.5 m) of the end of the roll or piece.~~

~~9.1.1 Wale and course counts may be made on either the face or the back side of the fabric sample. Select the fabric side that allows for the best visual observation of the wales and courses.~~

~~9.1.2 For garments or textile items, see 7.3.~~

9.1 For counting wales, position a ruler or counting device along the width direction of the fabric. Using a stylus or the pointer of a counting device, place the starting point between two wales along a single course row. Move the stylus or pointer along the width direction, counting the number of wales until a 1-in. (2.5 cm) distance is reached. Record the count.

9.1.1 Repeat [9.29.1](#) in two additional locations.

9.1.2 For counting wales on a rib knitted fabric, only the visible wales are counted and recorded for the side of the fabric chosen for counting.

NOTE 1—A designation of 1×1 , 2×2 , or 3×3 is used to describe a balanced rib knit fabric, that is, one in which the same number of wales per unit length are visible on each side of the fabric.

9.2 For counting courses, place a ruler or counting device in the length fabric direction along a wale column. Position a stylus or the pointer of a counting device between two courses as the starting point. Move the stylus or pointer along the wale direction, counting the number of courses until a 1-in. (2.5 cm) distance has been reached.

9.2.1 Repeat [9.39.2](#) in two additional locations. [ASTM D8007-15e1](#)

9.3 If using a digital counting microscope, follow the manufacturer's instructions for counting wales and courses to the selected distance of measurement.

9.4 If counting wales and courses on garments or products, select locations in three different panels of the garment or product.

9.5 For any measurement device used (ruler, fabric counter, or microscope), if there is a difference of two or more wales or courses between the three locations, count and record wales or courses in three locations at 3- or 5-in. (7.5 or 25.4 cm) or greater distances. Counting distances greater than 1 in. (2.5 cm) will produce more precise wale and course counts.

9.6 For fancy knitted fabrics in which one or more yarns do not appear at regular, short intervals, perform counts over at least one full pattern repeat of each design component rounding to the nearest whole number wale or course. Record the counts and the distances measured.

10. Calculation

10.1 Calculate the average number of wales and courses per 1 in. (2.5 cm) separately to the nearest whole number.

10.2 In instances in which 3-in. (7.5 cm) or greater distances are counted, divide the average counts by three, or the distance measured, to report a count per 1 in. (2.5 cm).

10.3 In the case of counting fancy knitted fabrics in which pattern repeats or areas of different components in the design are used, divide the number of wales (or courses) by the distance counted to achieve a count per 1 in. (2.5 cm) and average the respective counts to the nearest whole number.

11. Report

11.1 Samples were tested as directed in Test Method D8007.

11.2 Report the following information:

11.2.1 Each sample's identification, lot number, and so forth;