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Series 4
Série des 4

WITHDRAWAL

March 2019

Selected standards in the series Textiles

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Mars 2019

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CAN/CGSB-4.2

Textile test methods

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Résistance à la rupture des fils — Méthode à fil simple (ICS 59.080.20)

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Résistance à la rupture des fils — Méthode de l'écheveau (ICS 59.080.20)

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CAN/CGSB-4.159-75

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Désignation des fils (ICS 59.080.20)

CAN/CGSB-4.159-75

Système universel de désignation de la masse linéique (système Tex) (ICS 59.080.20)

CAN/CGSB-4.160-75

Table générale de conversion pour le remplacement des titres traditionnels des fils par des valeurs arrondies du système Tex (ICS 59.080.20)



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Textile test methods

Resistance of woven fabrics to seam slippage

ICS 59.080.01

Withdrawn



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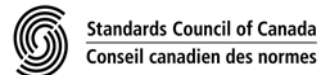
Textile test methods
Resistance of woven fabrics to seam slippage

CETTE NORME NATIONALE DU CANADA EST DISPONIBLE EN VERSIONS
FRANÇAISE ET ANGLAISE.

Prepared by the

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CAN/CGSB-4.2
No. 32.1-98


Supersedes CAN/CGSB-4.2
No. 32.1-M91
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November 2013

Preface to the National Standard of Canada

This National Standard of Canada has been reaffirmed by the CGSB Committee on Textile Test Methods and Terminology. Editorial changes have been made by the correction of the following paragraph:

- 9.1 **Source of Referenced Publications** — The publications referred to in par. 3.1.1 may be obtained from the Canadian General Standards Board, Sales Centre, Gatineau, Canada K1A 1G6. Telephone 819-956-0425 or 1-800-665-2472. Fax 819-956-5740. E-mail ncr.cgsb-ongc@tpsgc-pwgsc.gc.ca. Web site www.tpsgc-pwgsc.gc.ca/ongc-cgsb.

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 Ottawa Canada K1A 1G6	TEXTILE TEST METHODS	CAN/CGSB-4.2
	Resistance of Woven Fabrics to Seam Slippage	No. 32.1-98

Supersedes CAN/CGSB-4.2

No. 32.1-M91

Reaffirmed

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1. PURPOSE AND SCOPE

- 1.1 This method is for evaluating the resistance to slippage of weft yarns on warp yarns, or warp yarns on weft yarns, at the seam of a woven fabric.
- 1.2 The method is particularly applicable to apparel and furnishing fabrics¹ but is not intended for use on heavy industrial fabrics.
- 1.3 The method specifies two seams, one intended for use with apparel fabrics and the other for use with furnishing fabrics.
- 1.4 Resistance to seam slippage is the force per 25 mm width of seamed specimen required to produce elongations of 3 and 6 mm respectively, in excess of the elongation of the fabric under the same force.
- 1.5 The testing and evaluation of a product against this method may require the use of materials and/or equipment that could be hazardous. This document does not purport to address all the safety aspects associated with its use. Anyone using this method has the responsibility to consult the appropriate authorities and to establish appropriate health and safety practices in conjunction with any applicable regulatory requirements prior to its use.

2. PRINCIPLE

- 2.1 A strip of fabric is folded and stitched with a lock-stitch seam across its width. A gradually increasing force is applied to the strip at right angles to the direction of the seam, and the forces required to open the seam for distances of 3 and 6 mm respectively are determined. If the seam ruptures before a slippage of 6 mm has occurred, the force at which rupture occurred is recorded as the breaking strength of the seam.

3. REFERENCED PUBLICATIONS

- 3.1 The following publications are referenced in this method:

3.1.1 Canadian General Standards Board (CGSB)

CAN/CGSB-4.2 — Textile Test Methods:

No. 1 — Precision and Accuracy of Measurements

No. 2 — Conditioning Textile Materials for Testing

4-GP-85 — Nylon Thread (Continuous Multifilament)

CAN/CGSB-4.131 — Cotton-Covered or Polyester-Covered Polyester Thread

CAN/CGSB-54.1 Part 1/ISO 4915 — Stitches and Seams — Part 1: Textiles — Stitch Types — Classification and Terminology

CAN/CGSB-54.1 Part 2/ISO 4916 — Stitches and Seams — Part 2: Textiles — Seam Types — Classification and Terminology.

¹ "Furnishing" includes upholstery, drapes and bedspreads.

3.2 A reference to a regulation is always to the latest issue. A dated reference is to the issue specified. An undated reference is to the latest issue (including amendments), unless otherwise specified by the authority applying this method. The sources are given in the Notes section.

4. APPARATUS AND MATERIALS

4.1 **Electrically operated** single-needle lock-stitch sewing machine.

4.2 **Machine needle** as specified in Table 2.

4.3 **Tensile testing machine(s)** for use in this method shall operate on one of the following principles:

- a. Constant-rate-of-extension (CRE)
- b. Constant-rate-of-traverse (CRT).

4.3.1 **Constant-Rate-of-Extension (CRE) Machine** — A testing machine in which one end of the specimen is held by a virtually stationary clamp attached to a suitable weighing system for detecting and recording the force applied. The other end of the specimen is gripped in a clamp that is driven at a constant speed.

4.3.2 **Constant-Rate-of-Traverse (CRT) Machine** — A testing machine in which one end of the specimen is held by a clamp driven at a constant speed while the other end is gripped in a clamp attached to a weighing mechanism of a type that permits movement of the attached clamp, e.g. as in pendulum machines. The specimen is therefore not extended at a constant rate.²

4.3.3 The tensile testing machine shall be equipped with an autographic recording device for tracing a force-elongation curve of the test specimen.

4.4 Clamps for Tensile Testing Machine

4.4.1 The clamps of the machine shall be capable of holding the specimen without allowing it to slip, and shall be so designed that they do not cut or otherwise weaken the specimen. The faces of the jaws shall be plane and parallel.

4.4.2 The dimensions of the front gripping surface shall be as shown in Table 1.

TABLE 1
Dimensions of Clamp Gripping Surfaces

	Front Face (mm)	Back Face (mm)
Parallel to the direction of application of the force	25	25
Perpendicular to the direction of the application of the force	25	50 (min.)

4.5 Sewing Thread³

4.5.1 White core-spun polyester/cotton thread in accordance with CAN/CGSB-4.131, Class A, Type 1, 40 or 50 tex, or

4.5.2 Bonded multicord nylon thread in accordance with CGSB standard 4-GP-85, Type 2, 70 tex.

² Significant errors due to inertia are frequently encountered in testing machines whose weighing mechanisms are massive, especially if such machines are used on materials with low extensibilities or are operated at high speeds. Caution should therefore be exercised in testing specimens when the forces recorded are near the lower end of the force range of such machines.

³ For sewing threads that meet these requirements, it is suggested that the user contact the thread manufacturers for technical information.

5. TEST SPECIMENS

- 5.1 The fabric shall be conditioned in accordance with CAN/CGSB-4.2 No. 2.
- 5.2 At least five specimens shall be tested with the seam sewn parallel to the warp and five specimens with the seam parallel to the weft. If a higher degree of precision is required, more specimens shall be tested.⁴
- 5.3 Prepare each specimen for determining resistance to seam slippage with the seam parallel to the warp, by cutting from the sample a piece of about 100 × 350 mm, the longer dimension being at right angles to the warp direction of the fabric.
- 5.4 Draw on each specimen, with a soft marking pencil, a line parallel to the yarns forming the long dimension and 40 mm from the edge, to aid in placing the specimen in the testing machine.
- 5.5 Fold the specimen back upon itself so that the distance from the fold to one end is about 100 mm taking care to have the fold parallel to the warp yarns. Sew the two layers of fabric together at least 15 mm from the fold, using a lock-stitch.⁵ It is important that during sewing the thread is held under uniform tension and the seam is parallel to the warp yarns. After seaming, cut the specimen along the fold and trim away excess fabric exactly 12 mm from the seam.
- 5.5.1 Unless otherwise specified, stitching shall be in accordance with Table 2.

TABLE 2

Fabric	Sewing Thread	Needle Size	Stitches per 100 mm
Apparel ≤220 g/m ²	40 tex (par. 4.5.1)	12/80	40
Apparel >220 g/m ²	50 tex (par. 4.5.1)	16/100	40
Furnishing	70 tex (par. 4.5.2)	18/110	32

- 5.6 Prepare each weft specimen as described in par. 5.3, 5.4 and 5.5 except that the long dimension shall be at right angles to the weft yarns and the seam sewn parallel to the weft yarns.

6. PROCEDURE

- 6.1 The distance between the clamps of the testing machine at the start of the test shall be 75 ± 1 mm. The speed of the clamp through which the force is applied shall be 300 ± 10 mm per minute. When using a Constant-Rate-of-Traverse (CRT) (pendulum) type machine, the ratchet pawls shall be rendered inoperative during the test.
- 6.2 **Force-Elongation Curve of Fabric**
- 6.2.1 Clamp the specimen in the upper clamp, at the end farthest from the seam and 25 mm in from the end, so that the edges of the clamps are 40 mm from the edge of the specimen and coincide with the line drawn on the specimen. Tighten the lower clamp, taking care to ensure that the tension in the specimen is uniform across the clamped width.

⁴ The average result for the specimens tested is an estimate of the true average for the material under test. A measure of the reliability of this estimate can be obtained by determining the confidence interval (CAN/CGSB-4.2 No. 1, par. 6.2) within which the true mean will be for any given probability.

⁵ The lock-stitch shall conform to Type 301 of CAN/CGSB-54.1 Part 1/ISO 4915 and the seam to Type 1.01.01 of CAN/CGSB-54.1 Part 2/ISO 4916.

6.2.2 With the pen on the chart set at the zero force point (usually the ordinate) and on any convenient point of the abscissa, start the machine and apply force until the specimen breaks or a suitable maximum force is reached; at the same time record the force-elongation curve automatically.

6.3 Force-Elongation Curve of the Fabric and Seam

6.3.1 Grip the same specimen in the clamps of the machine (par. 6.2.1) so that the seam is located midway between the upper and lower clamps and the edges of the clamps coincide with the line drawn on the specimen. Reset the pen on the same chart at the zero force ordinate and on the same abscissa line used in par. 6.2.2 (if possible use the same chart coordinate as in 6.2.2 or slightly higher on the abscissa line). Start the machine and record autographically the force-elongation curve of the fabric-plus-seam part of the specimen to the point of rupture or until a suitable maximum force is reached.

7. CALCULATION OF RESULTS

7.1 Measure on the 5 N⁶ abscissa line, with a ruler or preferably with a pair of dividers, the distance between the two elongation curves. Taking into consideration the ratio of travel of the clamps with the chart, add to this measurement the 3 mm chart travel equivalent distance. Slide one point of the dividers along one curve and observe the location of the second point when touching the other curve, both points on the same abscissa line. Read the force at the coordinate. Repeat this procedure replacing the 3 mm distance with the 6 mm distance. (Figure 1)

7.2 Calculate the averages, to the nearest newton, of the results obtained for each set of five specimens tested. Subtract 5 N from each average to obtain the resistance to seam slippage.⁷

7.3 When no separation occurs at the 3 and 6 mm, record the seam strength or that the seam strength exceeded the capacity of the machine.

8. REPORT

Report the following:

8.1 The average resistance to 3 mm seam slippage, as well as the individual results, with seams parallel to the warp and the weft respectively.

8.2 The average resistance to 6 mm seam slippage, as well as the individual results, with seams parallel to the warp and the weft respectively.

8.3 The breaking strength of the seam if 6 mm seam slippage did not occur, and whether the break was thread or fabric.

8.4 The type of thread and stitch density used in the seam.

8.5 The type and capacity of the testing machine used.

8.6 The number of this method: CAN/CGSB-4.2 No. 32.1-98.

9. NOTE

9.1 **Source of Referenced Publications** — The publications referred to in par. 3.1.1 may be obtained from the Canadian General Standards Board, Sales Centre, Ottawa, Canada K1A 1G6. Telephone (819) 956-0425 or 1-800-665-CGSB (Canada only). Fax (819) 956-5644.

⁶ The difference between the elongations of the fabric and the fabric-plus-seam at a force of 5 N is used to compensate for the difficulty of inserting each part of the specimen in the clamps of the testing machine under precisely the same tension.

⁷ In subtracting 5 N from the total force recorded, it is assumed that a 5 N force is sufficient to remove all slack from the fabric and the fabric-plus-seam specimens, and that little or no actual separation at the seam has occurred. Therefore, the elongation of fabric and fabric-plus-seam specimens under a force of 5 N is taken as 0.

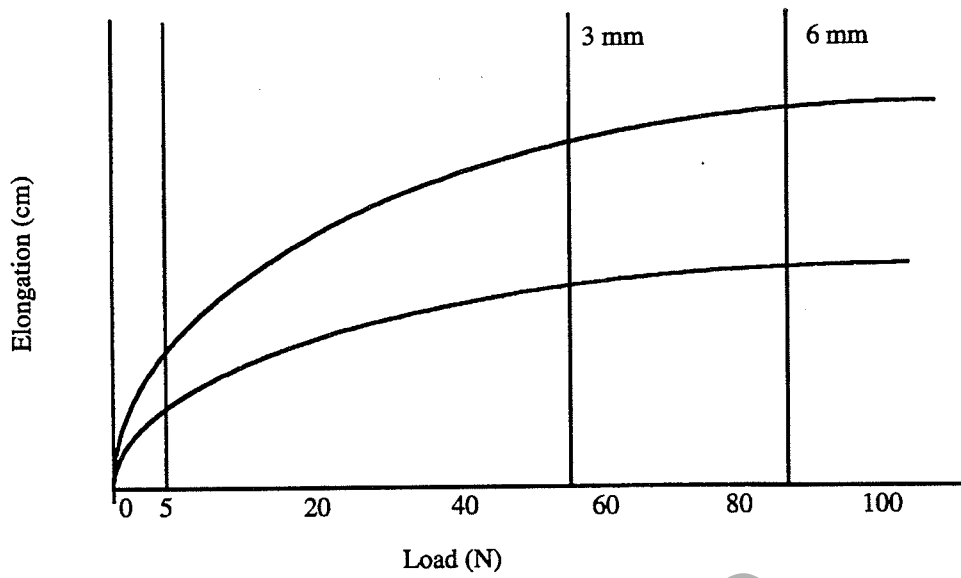


FIGURE 1
Slippage Chart

Withdrawn