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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

No. 4.5-M86

Retail packages of yarn — Determination of mass (ICS 59.080.20)

No. 5.2-M87

Linear density of yarn in SI units (ICS 59.080.20)

No. 9.2-M90

Breaking strength of fabrics — Grab method — Constant-time-to-break principle (ICS 59.080.30)

No. 9.3-M90

Breaking strength of high-strength fabrics — Constant-time-to-break principle (ICS 59.080.30)

No. 9.4-M91

Breaking strength of yarns — Single strand method (ICS 59.080.20)

No. 9.5-M89

Breaking strength of yarns — Skein method (ICS 59.080.20)

No. 9.6-93

Breaking strength of nonwoven textiles (ICS 59.080.30)

CAN/CGSB-4.2

Méthodes pour épreuves textiles

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Bobines de fil vendues au détail — Détermination de la masse (ICS 59.080.20)

N° 5.2-M87

Masse linéique du fil en unités SI (ICS 59.080.20)

N° 9.2-M90

Résistance à la rupture des tissus — Méthode d'arrachement — Principe de rupture à temps constant (ICS 59.080.30)

N° 9.3-M90

Résistance à la rupture des tissus de haute résistance — Principe de rupture à temps constant (ICS 59.080.30)

N° 9.4-M91

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

N° 9.5-M89

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

N° 9.6-93

Résistance à la rupture des non-tissés (ICS 59.080.30)

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Colourfastness to perspiration
(ICS 59.080.01)

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Dimensional change of textile fabrics to
open-head steaming (ICS 59.080.30)

No. 26.1-M88

Water resistance — Static head
penetration test (ICS 59.080.01)

No. 26.5-M89

Water resistance — High-pressure
penetration test (ICS 59.080.30)

No. 28.2-M91

Resistance to micro-organisms — Surface-
growing fungus test — Pure culture
(ICS 59.080.01)

No. 28.4-M91

Resistance to micro-organisms — Fungus
damage test — Pure culture — Qualitative
(ICS 59.080.01)

No. 30.1-M89

Effect of solvents on the permanence of
textile finishes (ICS 59.080.01)

No. 32.1-98

Resistance of woven fabrics to seam
slippage (ICS 59.080.01)

N° 10-M87

Allongement (ICS 59.080.30)

N° 23-M90

Solidité de la couleur à la sueur
(ICS 59.080.01)

N° 25.2-M89

Changement dimensionnel des textiles à
l'aide d'une presse à plateau inférieur
vaporisant (ICS 59.080.30)

N° 26.1-M88

Résistance à l'eau — Essai de
pénétration sous pression constante
(ICS 59.080.01)

N° 26.5-M89

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(ICS 59.080.30)

N° 28.2-M91

Résistance aux micro-organismes —
Essai par fungus se propageant en
surface — En culture pure
(ICS 59.080.01)

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Évaluation des dommages causés par
fungus — En culture pure — Qualitative
(ICS 59.080.01)

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N° 56.1-M87

Évaluation de l'extension unidirectionnelle et de la récupération dimensionnelle des tissus élastiques (ICS 59.080.30)

N° 60-M89

Résistance aux accrocs — Essai à la masse (ICS 59.080.01)

N° 65-M91

Détermination de la résistance du liage des tissus contre-collés, stratifiés et thermocollés (ICS 59.080.10)

No. 66-M91

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CAN/CGSB-4.159-75

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CAN/CGSB-4.158-75

Désignation des fils (ICS 59.080.20)

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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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June 2000

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November 2013

Textile test methods

Breaking strength of nonwoven textiles

ICS 59.080.30



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NATIONAL STANDARD OF CANADA

**CAN/CGSB-4.2
No. 9.6-93**

Supersedes CAN/CGSB-4.2
No. 9.6-M86
Extended
June 2000
Reaffirmed
November 2013

Textile test methods

Breaking strength of nonwoven textiles

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

Prepared by the

Canadian General Standards Board 

Approved by the



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CAN/CGSB-4.2
No. 9.6-93

Supersedes CAN/CGSB-4.2
No. 9.6-M86
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June 2000
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Preface to the National Standard of Canada

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

- 8.1 **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.

 Ottawa Canada K1A 1G6	TEXTILE TEST METHODS	CAN/CGSB-4.2
	Breaking Strength of Nonwoven Textiles	No. 9.6-93

Supersedes CAN/CGSB-4.2
No. 9.6-M86
Extended June 2000
Reaffirmed December 2013

1. PURPOSE AND SCOPE

- 1.1 This method determines the breaking strength of nonwoven textile fabrics. It is intended primarily for testing materials that are difficult to grip in the clamps of the testing machine and that cannot be tested satisfactorily by CAN/CGSB-4.2 No. 9.1 or 9.2 (Note 1).
- 1.2 The procedure is applicable to fabric either in the conditioned state or wet.
- 1.3 The procedure is recommended particularly for use with a constant-rate-of-extension tensile testing machine (e.g., strain gauge) (Note 2).
- 1.4 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 existing applicable regulatory requirements prior to its use.

2. PRINCIPLE

- 2.1 Breaking strength is defined as the maximum tensile force observed during a test in which a specimen is stretched until it breaks.
- 2.2 A specimen is held between two clamps and tension is applied until the specimen ruptures.

3. APPLICABLE PUBLICATIONS

- 3.1 The following publications are applicable to 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
 - No. 9.1 — Breaking Strength of Fabrics — Strip Method — Constant-time-to-break Principle
 - No. 9.2 — Breaking Strength of Fabrics — Grab Method — Constant-time-to-break Principle.
- 3.2 Reference to the above publications is to the latest issues, unless otherwise specified by the authority applying this method. The source of these publications is shown in the Notes section.

4. APPARATUS

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

Note 1: This test method is recommended for determining breaking strength of nonwoven textiles greater than 200 g/m² in mass, as an alternative to CAN/CGSB-4.2 Nos. 9.1 and 9.2 where jaw breaks may be a problem.

Note 2: This method was developed for use on CRE type machines and the validity of the test results, if a CRT type machine were used, is not known.

4.1.1 The maximum error of the indicated force at any point in the range shall not exceed 2% of the true force.

4.2 Clamps

4.2.1 The clamps of the machine shall be capable of holding the specimen without allowing it to slip. The faces of the jaws shall be flat (Note 3) and all edges that might cause a cutting action shall be rounded to a radius of not more than 0.5 mm (Note 4). When specimens cannot be satisfactorily held in this way, lining materials that will not injure the specimen (e.g., thin cork, adhesive tape) may be used on the gripping surfaces.

4.2.2 The dimensions of the front and back gripping surfaces shall be at least 25 mm in the direction of the application of the force and at least 15 mm wider than the maximum width of the test specimen.

4.3 Die capable of cutting specimens as described in par. 5.1.5 and Figure 1.

5. TEST SPECIMENS

5.1 Conditioned Test

5.1.1 The fabric shall be conditioned in accordance with CAN/CGSB-4.2 No. 2.

5.1.2 The fabric sample shall be the full width of the fabric and at least 2.5 m in length.

5.1.3 At least ten specimens shall be tested in both the machine and the cross directions. If a higher degree of precision is required, more specimens shall be tested (Note 5).

5.1.4 The specimens shall be taken across the fabric in both the machine and the cross directions with the 225 mm length parallel to the direction of test (Figure 2).

5.1.5 Each dumbbell test specimen shall be 225 mm long and 50 mm wide and shall conform to the dimensions in Figure 1.

5.1.6 Specimens shall be die-cut.

5.2 Wet Test

5.2.1 Specimens to be tested in the wet condition shall be selected and prepared according to par. 5.1.1 to 5.1.6 inclusive, and shall be immersed and thoroughly wetted in water at room temperature to which 0.2 to 0.4 g/L of a neutral nonionic wetting agent has been added (Note 6).

5.2.2 The wet specimens shall be tested within 1 min after being withdrawn from the water (par. 5.2.1) to avoid partial drying.

6. PROCEDURE

6.1 Unless otherwise specified, the distance between the clamps shall be 100 ± 1 mm.

Note 3: As a practical method of determining the degree of flatness and parallelism of the gripping surfaces of each clamp, it is recommended that a sheet of thin white paper between two sheets of carbon paper be placed between the gripping surfaces and the surfaces then be brought together with light pressure. Areas of contact will be shown by darkening of the white sheet.

Note 4: Clamps that can be closed by hydraulic pressure are recommended but clamps that are closed manually are satisfactory if sufficiently high closing forces can be attained.

Note 5: If the precision with which breaking strength is to be measured is specified, reference should be made to CAN/CGSB-4.2 No. 1 for procedures to determine the number of test specimens required.

Note 6: The only conclusive evidence that the time of immersion has been sufficient to wet the fabric thoroughly is that further immersion does not produce any additional change in breaking strength. This method of testing must be used in case of dispute. For routine testing, however, it may be sufficient to immerse the material for 1 h. This procedure should be used with caution when testing fabrics that do not wet out readily because of the presence of protective coatings or water repellents.

- 6.2 Secure the specimen centrally in the clamps of the testing machine so that the long dimension is parallel to the direction of the application of the force. Care must be taken to ensure that the tension in the specimen is uniform across its full width.
- 6.3 Select a force range of the testing machine such that the specimens will break between 20 and 85% of the full-scale force. Set constant-rate-of-extension at 200 mm/min.
- 6.4 If a specimen slips in the clamps or breaks within the clamps, or if there is any reason to suspect faulty operation of the machine, discard the results (Note 7).
- 6.5 Record the time to break in seconds.

7. REPORT

- 7.1 Calculate the average breaking strength for each direction of the fabric from the individual values, and report separately in newtons (Note 8).
- 7.2 Also report the following additional information:
- 7.2.1 Type of tensile testing machine and force range used.
- 7.2.2 Type of clamp liner, if used.
- 7.2.3 Average time to break the specimen.
- 7.2.4 State of specimens (conditioned or wet).
- 7.2.5 The number of this test method: CAN/CGSB-4.2 No. 9.6-93.

8. NOTES

- 8.1 **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 (613) 941-8703 or 941-8704. Fax (613) 941-8705.

Note 7: A test result is considered satisfactory when there is no specimen slippage and the specimen does not break at the clamps of the testing machine. If slippage occurs, increase the closing pressure of the jaws; if jaw breaks occur, reduce the pressure.

Note 8: 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 lie for any given probability.

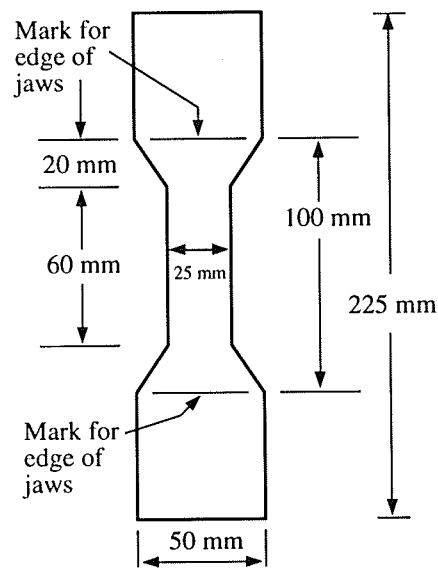


FIGURE 1
Dimensions of Specimen

Take specimens from the test sample in the following manner:

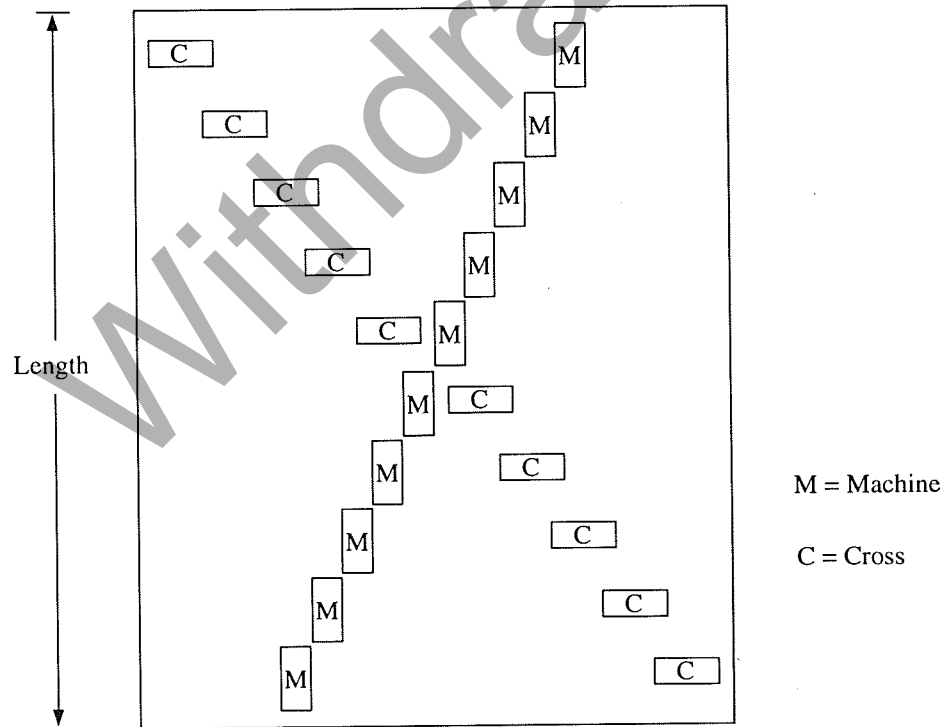


FIGURE 2
Sampling Procedure