



WITHDRAWAL

March 2019

Selected standards in the series Textiles

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RETRAIT

Mars 2019

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CAN/CGSB-4.2

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CAN/CGSB-4.2

No. 28.4-M91

Supersedes CAN/CGSB-4.2

Method 28.4

July 1977

Extended

April 1997

Reaffirmed

November 2013

Textile test methods

Resistance to micro-organisms — Fungus damage test — Pure culture — Qualitative

ICS 59.080.01



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NATIONAL STANDARD OF CANADA

CAN/CGSB-4.2
No. 28.4-M91

Supersedes CAN/CGSB-4.2
Method 28.4
July 1977
Extended
April 1997
Reaffirmed
November 2013

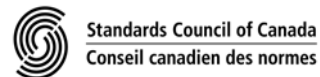
Textile test methods
Resistance to micro-organisms — Fungus damage test —
Pure culture — Qualitative

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

Prepared by the

Canadian General Standards Board 

Approved by the



Published August 1991 by the
Canadian General Standards Board
Gatineau, Canada K1A 1G6

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Acknowledgment is made for the translation of this National Standard of Canada by the Translation Bureau of Public Works and Government Services Canada.


CAN/CGSB-4.2
No. 28.4-M91

Supersedes CAN/CGSB-4.2
Method 28.4
July 1977
Extended
April 1997
Reaffirmed
November 2013

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. It is published without editorial changes.

Withdrawn

 Ottawa Canada K1A 1G6	TEXTILE TEST METHODS	CAN/CGSB-4.2
	Resistance to Micro-organisms — Fungus Damage Test — Pure Culture — Qualitative	No. 28.4-M91

Supersedes CAN/CGSB-4.2
Method 28.4
July 1977
Extended
April 1997
Reaffirmed
November 2013

1. PURPOSE AND SCOPE

- 1.1 This method determines the resistance of textile materials containing cellulosic fibres to deterioration by the action of a cellulolytic fungus. The method is to be used for textile materials from which it is not convenient to take specimens for breaking strength determinations, (e.g., double-jacketed fire hose).
- 1.2 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 The fabric is leached with water to remove any fungicidal substance likely to be rapidly removed by wetting. Specimens taken from the leached fabric are subjected to the action of a cellulolytic fungus under controlled conditions, and in the absence of any source of assimilable carbon other than that present in the material. The resistance of the fabric is assessed by the ability of the test organism to grow on it, as judged visually, after exposure to the organism for a sufficient period to produce growth on the same fabric that has not received any protective treatment.

3. APPARATUS AND MATERIALS

- 3.1 **Organism** — *Chaetomium Globosum*: ATCC 6205 (Note 1).
- 3.2 **Maintenance of organism**: the fungus is grown on nutrient agar slants in test tubes, and spore suspensions are made on nutrient agar at sufficiently frequent intervals to maintain viable pure cultures. Cultures, under refrigeration, may be kept as long as six to nine months.
- 3.3 **Salts — Agar culture medium**: grow the organism on sterile filter paper placed on mineral salts agar, a typical satisfactory formula is:

Sodium nitrate (NaNO ₃)	2.0 g
Magnesium sulphate (MgSO ₄)	0.5 g
Potassium chloride (KCl)	0.5 g
Ferric sulphate (Fe ₂ (SO ₄) ₃ ·H ₂ O)	0.01 g
Potassium orthophosphate dihydrogen (KH ₂ PO ₄)	0.14 g
Potassium orthophosphate monohydrogen (K ₂ HPO ₄)	1.2 g
Yeast extract	0.02 g
Agar	15.0 g
Distilled water	1.0 L

Adjust pH to 7.2 ± 0.1 with hydrochloric acid, plus sodium hydroxide if necessary, and store in flask.

Note 1: Cultures of this organism may be obtained from American Type Culture Collection, 12301 Parklawn Drive, Rockville, MD 20852, U.S.A.

3.4 **Autoclave:** an autoclave capable of being operated at a steam pressure of 103 to 117 kPa (gauge) and an exhaust temperature of 121 to 123°C, these being the sterilizing conditions used throughout.

3.5 **Incubator:** an incubator room or cabinet maintained at $30 \pm 2^\circ\text{C}$.

3.6 **Petri dishes:** 100 mm in diameter.

3.7 **Leaching Apparatus**

3.7.1 This shall consist of a reservoir of water at $24 \pm 3^\circ\text{C}$ from which water is passed to a suitable vessel containing the fabric to be leached. The size of this vessel will depend on the size of the sample to be leached. The rate of flow of water through the vessel should be such as to provide approximately four changes of water per hour.

3.7.2 The water used must not contain any material that may react with any of the constituents of the sample being tested (Note 2). Wherever possible, distilled water or demineralized water shall be used.

3.7.3 The pH of the water shall not be less than 5.0 nor greater than 8.0.

3.8 **Low power binocular microscope (50X).**

4. **TEST SPECIMENS**

4.1 **Fabrics** — A minimum of five specimens (40 mm diameter circles or 50 x 50 mm squares) are taken from widely distributed areas of the sample (Note 3).

4.2 **Yarns** — A minimum of five representative specimens, each approximately 500 mm long, are taken and wound into loops approximately 50 mm long.

4.3 The specimens are leached for 24 h (Note 4).

5. **PROCEDURE**

5.1 Sterilize the required number of 100 mm Petri dishes under the conditions specified in par. 3.4.

5.2 Sterilize the salts-agar culture medium, pour it into the sterile Petri dishes, and allow to stand until the agar has hardened.

5.3 Using a sterile loop of nichrome, tungsten or platinum wire, add scrapings from a ripe fruiting culture of the organism, 10 to 14 d old, and sufficient to cover a 150 mm Petri dish, to an Erlenmeyer flask containing 100 mL of sterile water. Shake the suspension of spore clusters in the flask with sterile glass beads until the spores are in suspension. In order to maintain a uniform suspension, the addition of a surface-active agent is recommended (Note 5).

5.4 Inoculate the surface of the agar with approximately 1.0 mL of spore suspension. Place the specimen on the seeded agar. Using a pipette, inoculate the specimen with 0.2 to 0.5 mL of spore suspension.

Note 2: An example of the use of an unsuitable type of water is to employ a water containing alkaline impurities to leach a sample carrying a phenolic type fungicide; depending on the degree of alkalinity, solubilization of the fungicide by the alkali in the water will occur through the formation of a soluble phenate, and the loss thus occasioned would not represent a loss through water solubility of the original phenolic compound.

Note 3: For specimens whose surfaces are not plane (e.g., rubber-lined fire hose), it is recommended that the size of the specimens be reduced to a point at which they are reasonably flat so as to maintain good contact with the agar surface in the inoculation and incubation procedure.

Note 4: To facilitate wetting by the spore suspension, it is desirable that the inoculation of the specimens (section 5) be proceeded with immediately following leaching, before the specimens have become dry. Where drying has occurred, the specimens should be dampened by being thoroughly sprayed with distilled water and allowed to stand for 1 to 2 h, flat, on a non-absorbent surface in a closed container, to avoid dessication.

Note 5: The product Aerosol OT (sodium di-octyl sulphosuccinate) at a concentration of 0.05% is suitable.

- 5.5 In order to ensure that the organism is capable of satisfactory performance, carry out a viability check using sterile filter paper (e.g., Whatman No. 2) approximately 50 mm in diameter, inoculated and incubated as above.
- 5.6 Incubate the Petri dishes and contents for two weeks at $30 \pm 2^\circ\text{C}$. Examine the specimen for fungal growth with a low power binocular microscope. Keep the specimens under observation during that period, and note the presence or absence of growth, as well as the presence or absence of fruiting bodies.
- 5.7 If by the end of the incubation period there has been appreciable growth of the test organism, continue the test for a further period of one week, and note any further growth occurring in this period.

6. REPORT

Report the following:

- 6.1 The presence or absence of growth in the first two-week period, together with information on such further growth that may have occurred (par. 5.7).
- 6.2 The number of this method: CAN/CGSB-4.2 No. 28.4-M91.

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