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Canadian General Standards Board | Office des normes générales du Canada

Series 4

Série des 4

WITHDRAWAL

December 2016

Standards in series
Textiles

These CGSB standards and National Standards of Canada are hereby withdrawn due to limited use and support for their revision.

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RETRAIT

Décembre 2016

Normes de la série
Textiles

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4-GP-80Ma
Cotton Thread (ICS 59.060.10)

4-GP-85Ma
Nylon Thread (Continuous Multifilament) (ICS 59.060.20)

4-GP-97Ma
Polyester Thread (Continuous Multifilament) (ICS 59.060.20)

CAN/CGSB-4.131-93
Cotton-Covered or Polyester-Covered Polyester Thread (ICS 59.060.20)

CAN/CGSB-4.139-94
Polyester Staple Thread (ICS 59.060.20)

4-GP-80Ma
Fil de coton (ICS 59.060.10)

4-GP-85Ma
Fil de nylon (multifilaments continus) (ICS 59.060.20)

4-GP-97Ma
Fil de polyester (multifilaments continus) (ICS 59.060.20)

CAN/CGSB-4.131-93
Fil polyester guipé de coton ou de polyester (ICS 59.060.20)

CAN/CGSB-4.139-94
Fil en fibres de polyester (ICS 59.060.20)

NATIONAL STANDARD OF CANADA

CAN/CGSB-4.131-93

Supersedes 4-GP-131Ma

QUALITY

Cotton-Covered or Polyester-Covered Polyester Thread

Canadian General Standards Board

CGSB

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NATIONAL STANDARD OF CANADA

CAN/CGSB-4.131-93

Supersedes 4-GP-131Ma
March 1984

COTTON-COVERED OR POLYESTER-COVERED POLYESTER THREAD

Prepared by the
Canadian General Standards Board

Approved by the
Standards Council of Canada

Published December 1993 by the
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Supersedes 4-GP-131Ma
March 1984

CANADIAN GENERAL STANDARDS BOARD

COTTON-COVERED OR POLYESTER-COVERED POLYESTER THREAD

1. SCOPE

1.1 This standard applies to two classes of core-spun thread made of continuous multifilament polyester yarns covered with cotton or with polyester, soft or glazed finish, intended for use in hand and machine sewing.

1.2 The testing and evaluation of a product against this standard 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 standard 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. APPLICABLE PUBLICATIONS

2.1 The following publications are applicable to this standard:

2.1.1 Canadian General Standards Board (CGSB)

CAN/CGSB-4.2 — Textile Test Methods:

No. 2 — Conditioning Textile Materials for Testing

No. 5.2 — Linear Density of Yarns in SI Units

No. 8.3/ISO 2 — Textiles — Designation of the Direction of Twist in Yarns and Related Products

No. 9.4 — Breaking Strength of Yarns — Single Strand Method

No. 10 — Elongation

No. 18.3/ISO 105-B02 — Textiles — Tests for Colourfastness — Part B02: Colourfastness to Artificial Light: Xenon Arc Fading Lamp Test

No. 19.1 — Colourfastness to Washing — Accelerated Test — Launder-Ometer

No. 20 — Colourfastness to Water

No. 21 — Colourfastness to Sea Water

No. 22 — Colourfastness to Rubbing (Crocking)

No. 23 — Colourfastness to Perspiration

No. 29.1 — Colourfastness to Dry Cleaning Solvent

No. 31/ISO 105/X11 — Textiles — Tests for Colourfastness — Part X11: Colourfastness to Hot Pressing

No. 35.1 — Colourfastness to Burnt Gas Fumes

No. 46/ISO 105-A02 — Textiles — Tests for Colourfastness — Part A02: Grey Scale for Assessing Change in Colour

No. 47/ISO 105-A03 — Textiles — Tests for Colourfastness — Part A03: Grey Scale for Assessing Staining

No. 52.1 — Colourfastness to Chlorinated Water

No. 64 — Chromatic Transference Scale

CAN/CGSB-9.0 — Methods of Testing Pulp and Paper

No. 7 — Grammage of Paper and Paperboard.

2.1.2 Canadian Pulp and Paper Association (CPPA)

B.7 — Quantitative Analysis of Fibre Mixtures

D.4 — Thickness and Density of Paper and Paperboard

D.8 — The Bursting Strength of Paper.

2.1.3 International Organization for Standardization (ISO)

ISO 105-G01-1978 — Textiles — Tests for colour fastness — Part G01: Colour fastness to nitrogen oxides.

2.2 Reference to the above publications is to the latest issues, unless otherwise specified by the authority applying this standard. The sources of these publications are shown in the Notes section.

3. CLASSIFICATION

3.1 Polyester thread shall be supplied in the following classes and types, as specified (par. 8.1):

3.1.1 ***Classes***

Class A — Polyester core, cotton-covered

Class B — Polyester core, polyester-covered.

3.1.2 ***Types***

Type 1 — Soft finish

Type 2 — Glazed finish for class A only.

4. GENERAL REQUIREMENTS

4.1 The thread shall be manufactured from continuous multifilament uniform polyester yarn, evenly wrapped with cotton or polyester staple, twisted and lubricated to perform satisfactorily in high-speed sewing machines.

4.2 **Finish** — No treatment or finish having a deleterious effect on cotton or polyester, or causing degradation during prolonged storage, shall be used.

4.3 **Colour** — The finished thread shall be clean, and uniform in colour. The colour shall be as specified (par. 8.1). In the case of thread purchased for use with specific garments, the purchaser shall provide a colour swatch of the material to which the colour of the thread is to be matched.

5. DETAILED REQUIREMENTS

5.1 **Materials**

5.1.1 ***Core Yarn*** — The core yarn for the thread shall be made from continuous multifilament high-tenacity polyester.

5.1.2 ***Core Wrapping*** — Each core yarn shall be wrapped with a continuous and evenly spun wrapping of either cotton or polyester staple.

5.2 **Construction** — The thread shall be made by twisting together, evenly, two or more ends of the combination yarn (Note 1).

5.2.1 ***Type 1*** — Type 1 thread shall be of twisted multiple-cord (ply) construction, and shall contain no finishing treatment other than that specified in par. 4.2 and/or par. 5.7.

5.2.2 ***Type 2*** — Type 2 thread shall have the same construction as Type 1, except that it shall have a glazed finish and shall contain no additional finishing treatment other than that specified in par. 4.2.

Note 1: Combination yarn: one that is made of two or more different single yarns that are twisted together. The single yarns may be of the same stock and one single yarn may have higher twist per centimetre than the other; or the singles may be composed of two different stocks, such as one of cotton and one of worsted.

5.3 **Direction of Twist** — When tested in accordance with CAN/CGSB-4.2 No. 8.3/ISO 2, the thread shall be twisted "twist against twist." Unless otherwise specified (par. 8.1), the direction of the final twist shall be "Z."

5.4 **Linear Density, Breaking Strength and Elongation** — Both classes and types of thread shall meet the requirements for linear density when tested in accordance with CAN/CGSB-4.2 No. 5.2, breaking strength when tested in accordance with CAN/CGSB-4.2 No. 9.4, and elongation when tested in accordance with CAN/CGSB-4.2 No. 10, given in Table 1. Ticket numbers (par. 6.2) are given for identification only.

TABLE 1
Physical Thread Requirements

Identification			Maximum Linear Density CAN/CGSB-4.2 No. 5.2 Tex**	Minimum Average Breaking Strength CAN/CGSB-4.2 No. 9.4 N**	Maximum Elongation CAN/CGSB-4.2 No. 10 %**
Tex Ticket No.	Conventional Ticket No.				
	Ne_c*	Thread Size (Metric)			
R 27 tex	100	120	32	9.0	28
R 35 tex	70	100	42	12.0	28
R 40 tex	50	80-90	48	14.5	28
R 50 tex	40	75	60	18.0	28
R 60 tex	30	50-60	74	22.0	28
R 70 tex			84	22.0	28
R 80 tex		40	97	27.5	28
R 90 tex	24	36	108	30.0	28
R 105 tex		30	125	40.0	28
R 135 tex	16	25	155	44.0	28
R 180 tex	12	20	215	58.0	28

* *Cotton (English) Yarn System*
** *Applies to finished thread*

5.5 **Shrinkage (Types 1 and 2)** — Type 1 and 2 threads shall not shrink more than 2% in wet heat when tested in accordance with par. 7.3.1.

5.6 **Colourfastness (par. 8.1)**

5.6.1 ***Colourfastness to Washing*** — Unless otherwise specified (par. 8.1), and when tested in accordance with CAN/CGSB-4.2 No. 19.1 Test No. 3, the colourfastness of the dyed and finished thread shall be equal to or better than Grey Scale 4 contrast for change in shade and staining.

5.6.2 Colourfastness of the dyed and finished thread to light (CAN/CGSB-4.2 No. 18.3/ISO 105-B02), to water (CAN/CGSB-4.2 No. 20), to sea water (CAN/CGSB-4.2 No. 21), to rubbing (crocking) (CAN/CGSB-4.2 No. 22), to perspiration (CAN/CGSB-4.2 No. 23), to dry cleaning solvent (CAN/CGSB-4.2 No. 29.1), to hot pressing (CAN/CGSB-4.2 No. 31/ISO 105/X11), to burnt gas fumes (CAN/CGSB-4.2 No. 35.1), to chlorinated water (CAN/CGSB-4.2 No. 52.1) and to nitrogen oxides (ISO 105-G01-1978) shall be as specified, but at least equal to that specified for the material with which it is being used (par. 8.1).

5.6.3 When colourfastness to dry heat (sublimation) is required (as in post curing of permanent press garments), it shall be tested in accordance with the method in par. 7.3.2.

5.6.4 The degree of colourfastness required shall be assessed by reference to CAN/CGSB-4.2 No. 46/ISO 105/A02 and No. 47/ISO 105/A03 and No. 64.

5.7 **Water Repellency** — When specified to be water repellent (par. 8.1), the thread shall be treated with an approved water repellent compound so that the water absorbency of the treated thread is not more than one-third of the water absorbency of the untreated thread. Where no untreated thread is available for comparison, the treated thread shall have a water absorbency of not more than 30% when tested as described in par. 7.3.3. The treatment shall not unduly affect the sewing properties, colourfastness or strength of the thread.

5.8 **Knots** — There shall not be more than one finished thread-knot per 1000 m.

6. PREPARATION FOR DELIVERY

6.1 **Packaging, Labelling, Packing and Marking** — Unless otherwise specified (par. 8.1), normal commercial practice of packaging, labelling, packing and marking shall be acceptable.

Note: Commercial packaging may be on a mass or length basis.

6.2 **Identification** — Each unit (spool, cone, tube, etc.) shall have a label attached in such a manner as to remain in place and be clearly legible until all thread has been removed. Commercial identification markings giving the following information shall be acceptable, unless otherwise specified (par. 8.1):

Length

Ticket number

Name of wrapping

Finish, if other than soft

Colour

If water repellent

Name of manufacturer.

7. INSPECTION

7.1 **Sampling** — Samples for test shall be taken from thread that has not been stitched into any fabric or article. The number of units (spools, cones, tubes, etc.) selected from the inspection lot for the assessment of compliance with the requirements of this standard shall be as follows:

Number of Units in Inspection Lot	Number of Units to be Sampled
1-99	5 (or all, if less than 5)
100-299	6
300-499	8
500-999	10
1000 or more	15

Each unit in the test sample shall be selected at random from a different package in the inspection unit.

7.2 **Inspection** — Inspection shall be at the discretion of the purchaser.

7.3 **Test Methods**

7.3.1 ***Shrinkage (Type 1)***

7.3.1.1 *Apparatus*

Hot plate capable of heating water to the boil

Suitable beaker (400 mL)

Wall-mounted metre stick with horizontal pin for hanging thread loop

10 g and 50 g weights

Neutral soap.

7.3.1.2 *Test Specimens* — Cut six specimens, each 1 m long, three from each of two units per ticket number, to be tested. Knot each specimen to form a loop. Condition the specimens in accordance with CAN/CGSB-4.2 No. 2.

7.3.1.3 *Procedure* — Suspend each specimen over a horizontal pin on a vertical metre scale (Figure 1), and apply tension by attaching an appropriate weight to the bottom of the loop (ticket no. R 27 tex to R 135 tex - 10 g; ticket no. R 180 tex - 50 g). Measure and record the length of the loop to the nearest millimetre. Remove the weight and lay the specimen flat and unrestrained in the beaker. Add 250 mL of 0.1% soap solution (1 g of soap per litre of distilled water), raise the solution to 100°C and boil gently for 10 min. Remove the specimen, hang it vertically without tension from horizontal pin and allow it to dry at room temperature for 24 h. Remeasure the specimen under the appropriate tension (as previously specified). Calculate the percent shrinkage to the nearest 0.1%. Average the results of the six specimens. Care should be taken to ensure that twist is not affected during the test.

7.3.2 ***Colourfastness to Dry Heat (Sublimation)***

7.3.2.1 *Apparatus and Materials*

Scorch Tester (Note 2) providing even heat transfer at controlled temperature by close contact with both sides of the specimen.

Two pieces of Multifiber Test Fabric No. 10 (Note 3), 25 × 50 mm in size, with the bands perpendicular to the 50 mm dimension.

Grey Scale for assessing change in colour (CAN/CGSB-4.2 No. 46/ISO 105/A02).

Grey Scale for assessing staining (CAN/CGSB-4.2 No. 47/ISO 105/A03).

7.3.2.2 *Test Specimen* — The thread shall be formed into a 1 g skein of suitable size and placed between the two pieces of multifibre fabric, in contact with the bands of the test fabric, to form a composite specimen. Condition the specimen in accordance with CAN/CGSB-4.2 No. 2.

7.3.2.3 *Procedure* — Place the composite specimen in the Scorch Tester for 30 s at 175 ± 2°C (par. 7.3.2.4). Apply sufficient pressure to the composite test specimen to assure intimate contact between the test specimen and the plates of the tester. (Minor variations in pressure do not affect the result.) Remove the composite specimen from the tester and separate the components for evaluation. Measure and report the colour change of the test specimen using CAN/CGSB-4.2 No. 46/ISO 105/A02:

a. after 1 min, and

b. after conditioning (CAN/CGSB-4.2 No. 2).

Measure and report the staining of each kind of fibre in the multifiber test cloth using CAN/CGSB-4.2 No. 47/ ISO 105/A03.

7.3.2.4 The accuracy of this test is dependent upon the uniformity of the heat supplied by the Scorch Tester and upon the temperature of the thread. It is suggested that the thread temperature be measured with a thermocouple or thermopaper placed between the specimen being tested and the multifibre test fabric. It is desirable to calibrate the instrument periodically to ensure its accuracy. Although a thermocouple is preferable for measuring the temperature, thermostat paper (Note 4) will give quite an accurate measurement of temperature.

7.3.3 ***Static Water Absorption Test***

7.3.3.1 *Apparatus and Materials*

Wringer — A household laundry type wringer equipped with soft rubber squeeze rolls, approximately 300 mm long, 54 to 57 mm in diameter, and having a hardness (durometer, A scale) of 70 to 80 units. Provision shall be made for maintaining pressure on the specimen as it passes between the rolls. This pressure shall be maintained by a 30 kg

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Note 2: Scorch Tester is available from Atlas Electric Devices Company, 4114 North Ravenswood Avenue, Chicago, IL 60613, U.S.A. (Canadian agent J.B. Atlas Company, 9 Canso Road, Rexdale, Ontario M9W 4L9).
Note 3: Multifiber Test Fabric No. 10 consists of acetate, cotton, nylon 6,6, polyester (polyethylene glycol terephthalate), acrylic and wool, and is available from Testfabrics Inc., P.O. Drawer O, 200 Blackford Avenue, Middlesex, N.J. 08846, U.S.A.
Note 4: Thermostat paper is available from Paper Thermometer Co., Dept. T., P.O. Box 129, Greenfield, N.H. 03047, U.S.A.

weight rather than by spring loading. The wringer shall be power-driven at a constant rate so that the specimen passes through the rolls at a rate of 25 mm/s.

Blotting Paper (Note 5) — Sheets of white blotting paper 250 × 250 mm meeting the following requirements shall be used.

Stock — 100% bleached chemical wood pulp (CPPA Standard B.7)

Grammage — 250 g/m² with a ±5% tolerance (CAN/CGSB-9.0 No. 7)

Thickness — Not less than 0.48 mm or more than 0.56 mm (CPPA Standard D.4)

Bursting Strength — Not less than 105 kPa (CPPA Standard D.8)

Absorption Rate — 30 to 50 mm in each direction determined as follows:

The apparatus shall consist of a suitable glass or metal container, a support for the test specimen, and a measuring scale. Cut 10 specimens, 25 × 125 mm from the samples to be tested, in each principal direction. Suspend the specimens vertically with one end dipped approximately 3.2 mm in distilled water at room temperature. After 5 min ± 10 s, record the rise of the water in the specimen above the level of the water in the container. Report the average rise in millimetres, in each direction, to the nearest 3 mm, for the ten specimens tested.

7.3.3.2 *Test Specimens* — The static water absorption test is conducted on three separate 1 g skeins taken at random from the samples submitted.

7.3.3.3 *Procedure* — Accurately weigh a weighing bottle (M_1), reweigh the bottle plus a skein of thread weighing approximately 1 g (bone dry mass) (M_2). Totally immerse the skein by means of a sinker for 20 min in distilled water at a temperature of 20 ± 2°C then place the skein between two sheets of blotting paper and pass through a wringer. Replace the skein in the weighing bottle and reweigh (M_3). Calculate the percent water absorbed to the nearest 0.1%.

$$\% \text{ water absorbed} = \frac{M_3 - M_2}{M_2 - M_1} \times 100$$

Average the results of the three tests.

8. NOTES

8.1 **Options** — The following options must be specified in the application of this standard:

a. Class and type of polyester thread (par. 3.1)

b. Colour (par. 4.3)

c. Direction of twist, if other than "Z" (par. 5.3)

d. Type and degree of colourfastness required (par. 5.6)

e. Colourfastness to washing, if other than as specified (par. 5.6.1)

f. If thread is to be water repellent (par. 5.7)

g. Packaging, labelling, packing and marking details, if normal commercial practice is not suitable (par. 6.1)

h. Identification, if other than as specified (par. 6.2).

8.2 **Sources of Referenced Publications**

8.2.1 The publications referred to in par. 2.1.1 may be obtained from the Canadian General Standards Board, Sales Centre, Ottawa, Canada K1A 1G6. Telephone 1-800-665-CGSB. Fax (613) 941-8705.

8.2.2 The publications referred to in par. 2.1.2 may be obtained from the Canadian Pulp and Paper Association, Publications Section, Sun Life Building, 19th Floor, 1155 Metcalfe Street, Montreal, Quebec H3B 4T6.

8.2.3 The publication referred to in par. 2.1.3 may be obtained from the Standards Council of Canada, Standards Sales Branch, 45 O'Connor Street, Suite 1200, Ottawa, Ontario K1P 6N7.

Note 5: Blotting paper meeting the requirements specified in par. 7.3.3.1 may be obtained from Domtar Fine Papers Limited, 325 De Maisonneuve Blvd. W., P.O. Box 7211, Montreal, Quebec H3C 3M2.

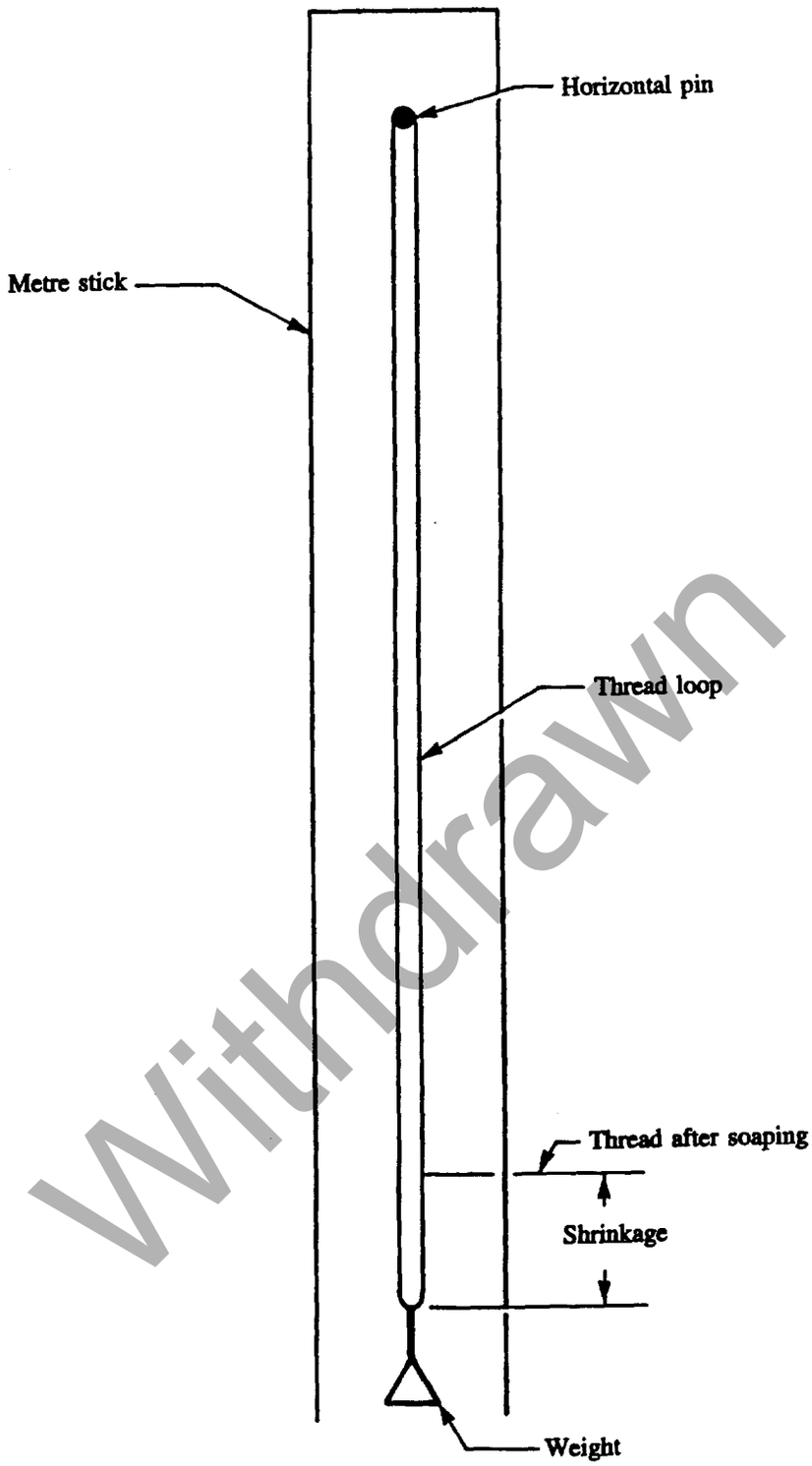

FIGURE 1

Shrinkage Test

Notes