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Canadian General
Standards Board

Office des normes
générales du Canada

Series 1
Série des 1

WITHDRAWAL

June 2011

Selected standards in Series (Paints, Pigments and Related Coatings)

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RETRAIT

June 2011

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CAN/CGSB-1.5-M91

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CGSB 1-GP-71 August 1974

Supplement to 1-GP-71

(F) 1-GP-71 Août 1974

Supplément à 1-GP-71

CGSB 1-GP-72 January 1981

(F) 1-GP-72 Janvier 1981

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Canadian
General
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1-GP-71

No. 5-96

Supersedes 1-GP-71,
Methods 5.1, 5.10 and 5.14

Methods of Testing Paints and Pigments

Drying Times of Paints and Related Coatings

CGSB Standard



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Canadian General Standards Board

**1-GP-71
No. 5-96**

Supersedes 1-GP-71,
Method 5.1, May 1978 and
Methods 5.10 and 5.14,
August 1974

METHODS OF TESTING PAINTS AND PIGMENTS

DRYING TIMES OF PAINTS AND RELATED COATINGS

Prepared by the

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 Ottawa Canada K1A 1G6	METHODS OF TESTING PAINTS AND PIGMENTS	1-GP-71
	Drying Times of Paints and Related Coatings	No. 5-96

Supersedes 1-GP-71,
Method 5.1, May 1978
Methods 5.10 and 5.14, August 1974

1. PURPOSE AND SCOPE

- 1.1 This standard describes three methods¹ for determining the various stages of drying of paints, varnishes, enamels, lacquers and related coatings:

Method A — General Drying Time Method

Method B — After-Tack Referee Method

Method C — Complete Cure of Multi-Component Materials.

- 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 material under test is applied to a clean, non-absorbent surface to produce a film of a specified thickness. The film is tested at various intervals to determine the condition or stage of drying.

3. REFERENCED PUBLICATIONS

- 3.1 The following publications are referenced in this method:

3.1.1 Canadian General Standards Board (CGSB)

1-GP-71 — Methods of Testing Paints and Pigments:

Method 98.1 — General Procedures for Applying Paints for the Preparation of Test Panels and Films

Method 98.2 — Coating of Metal and Glass Panels with One Coat of Material

Method 102.1 — Preparation of Glass Panels

Method 103.1 — Drying Conditions — Air Drying

Method 135.1 — Adhesion — Knife Test

9-GP-5Ma — Paper, Unbleached Kraft, Wrapping.

- 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, unless otherwise specified by the authority applying these methods. The source is given in the Notes section.

¹ Method A supersedes 1-GP-71 Method 5.1, Method B supersedes Method 5.10 and Method C supersedes Method 5.14.

4. DEFINITIONS

4.1 The following definitions are applicable to this method:

After-tack (Poissage)

A film is considered to be free from after-tack when it shows no pull on the thumb, or when a piece of previously weighted paper drops off when the test panel is inverted.

Dry-for-recoat (Recouvrable)

A film is considered dry for recoating when an additional coat can be applied without the development of any film irregularities such as lifting or loss of adhesion of the first coat.

Hard-dry (Durci à cœur)

A film is considered to have dried hard when the pressure exerted by the thumb on the film, without twisting, shows no tackiness and does not move the film or leave a mark that remains noticeable after the film is lightly polished with a soft cloth or absorbent cotton.

Set-to-touch (Sec au toucher)

A film is considered to have set-to-touch when a light touch of the finger shows a tacky condition but none of the coating adheres to the finger.

Surface-dry (Sec hors-poussière)

A film is considered to be surface dry when it is tack-free and does not rub up appreciably when the finger is lightly rubbed across the surface.

Tack-free (Sec hors-poisie)

A film is considered to be free of tack when the surface does not feel sticky to a light touch of the finger.

5. APPARATUS AND MATERIALS

- 5.1 **Drawdown blades:** with clearances to give required film thicknesses.
- 5.2 **Balance:** equal arm (2-pan), capacity of 2 kg, accurate to 1 g.
- 5.3 **Cylindrical weight:** 5 mm in diameter and weighing 2.85 kg to produce a pressure of 13.8 kPa.
- 5.4 **Glass panels:** complying with CGSB standard 1-GP-71, Method 102.1.
- 5.5 **Clean soft cloth or absorbent cotton.**
- 5.6 **No. 1 kraft wrapping paper:** 130 g/m² basis weight, complying with CGSB standard 9-GP-5Ma.
- 5.7 **Watch glass:** 63.5 mm in diameter and with a smooth edge.

6. PROCEDURES

- 6.1 **Drying Conditions** — Unless otherwise specified, the drying conditions shall conform to CGSB standard 1-GP-71, Method 103.1.
- 6.2 **Method A — General Drying-Time Method**
 - 6.2.1 Apply the material with a drawdown blade to glass panels, prepared as directed in CGSB standard 1-GP-71, Method 102.1, or agreed upon thoroughly cleaned non-absorbent surface, to yield a dry-film thickness² in accordance with CGSB standard 1-GP-71, Method 98.2.
 - 6.2.2 Place the panels in a horizontal position under standard conditions and under diffused light, using an illumination of

² Where two coats of the same material are to be applied, produce both coats at the same dry-film thickness.

320 ± 50 lx for referee tests. At appropriate intervals or at the specified time, test the film at points not less than 20 mm from any edge to determine the relevant stages of drying as follows:

- 6.2.2.1 *Set-to-touch and Tack-free Conditions* — Apply a clean and dry finger lightly to the film for 1 s. Assess whether the film meets one of the defined conditions.
- 6.2.2.2 *Surface-dry* — Lightly rub the finger across the film after it is considered to be tack-free. Evaluate whether the surface of the film rubs up.
- 6.2.2.3 *Hard-dry* — Place the panel on one pan of the balance (par. 5.2), tare to balance the panel mass, and place a 1 kg weight on the other pan. Then counter-balance the weight by pressing a clean thumb on the panel for 20 s. Remove the thumb, assessing whether there is any tackiness and examine the film for marks. If a mark is evident, wipe the area gently with a soft cloth or dry absorbent cotton for a maximum of 20 s. After 5 min examine the panel for the presence or absence of the mark.
- 6.2.2.4 *After-tack* — Exert maximum pressure on the panel between the thumb and forefinger for 2 s. Assess whether there is any pull on the thumb when the pressure is released. In the event of disagreement on the results, use Method B as the referee method.
- 6.2.2.5 *Dry-for-recoat* — Apply by brush on one panel and by spray on a second panel an additional coat of material at the specified time. After the panels have dried, examine the system for blistering, wrinkling, loosening, loss of adhesion or other film irregularities.

6.2.3 Report the condition of the film at the specified time(s) or the time at which the film reaches (a) given condition(s).

6.3 Method B — After-Tack Referee Method

- 6.3.1 Apply the material and allow to dry as specified in Method A.
- 6.3.2 At the specified time, place a 50 × 75 mm piece of kraft paper on the film and place the weight on the paper for 5 s.
- 6.3.3 Remove the weight, invert the panel and note the time required for the paper to drop off. The film is considered to be free from after-tack if the paper drops off within 10 s of the inversion of the panel.

6.4 Method C — Complete Cure of Multi-Component Materials

- 6.4.1 Apply (CGSB 1-GP-71, Method 98.1) the material with a drawdown blade to glass panels, prepared as directed in CGSB standard 1-GP-71, Method 102.1, to yield a dry film of the specified thickness and cure the film for 7 d (CGSB 1-GP-71, Method 103.1).
- 6.4.2 Fill a 63.5 mm diameter watch glass with methyl isobutyl ketone (MIBK) or other specified solvent. Place the panel over the watch glass to form a tight seal, invert the panel and the watch glass, and allow the solvent to remain in contact with the film at 23 ± 2°C.
- 6.4.3 At the end of the specified time, pour off the solvent and allow any solvent remaining on the panel to evaporate. Examine the area under the watch glass as required and compare with the untreated area for softening using the knife test (CGSB 1-GP-71, Method 135.1). Where specified, check the area for softening after the specified recovery period using the knife test.

7. REPORT

Report the following information:

- 7.1 The method(s) used.
- 7.2 The material(s) under test.
- 7.3 The condition of the film at the specified time(s), or the time at which the film reaches (a) given condition(s).
- 7.4 The number of this method: 1-GP-71 No. 5-96.

8. NOTES

- 8.1 Source of the 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 1-800-665-CGSB (Canada only). Fax (613) 941-8705.
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