Canadian General Standards Board

Office des normes générales du Canada

1-GP-111c
September 1970

(F)1-GP-111c
Septembre 1970

WITHDRAWAL

April 1986

CANADIAN GENERAL STANDARDS BOARD

LACQUER, FLAT, HOT AND COLD SPRAY

This standard is hereby withdrawn. It has been determined that the material covered by this standard is no longer used in quantities that would warrant the continued maintenance of the standard.

RETRAIT

Avril 1986

OFFICE DES NORMES GÉNÉRALES DU CANADA

LAQUE MATE POUR PULVÉRISATION À CHAUD ET À FROID

Cette norme est retirée par le présent avis. Il a été constaté que le matériau qui fait l'objet de la présente norme n'est plus utilisé en quantité suffisante pour maintenir cette norme en vigueur.

Canada

1-GP-111c
September 1970
AMENDMENT NO. 1
February 1974

CANADIAN GOVERNMENT SPECIFICATIONS BOARD

Standard
for

LACQUER, FLAT, HOT AND COLD SPRAY

5. DETAIL REQUIREMENTS

5.15 Flexibility

Change Method 119.16 to Method 119.13.

8. NOTES

8.1 Intended Uses

Change par. 8.1.3 to read:

Primers that are to be used under the lacquer must be of the lacquer type or lacquer resistant: 1-GP-105 primer is suitable for use on steel and 1-GP-132 primer for use on light alloys. Where the lacquer is to be applied without a primer, satisfactory phosphate coatings for steel are 31-GP-105, Coating, Conversion, Zinc Phosphate, for Paint Base, and 31-GP-106, Coating, Conversion, Iron Phosphate for Paint Base.

Withdrawn/Retirée

Canadian General Standards Board

Office des normes générales du Canada

Standard for: Lacquer, Flat, Hot and Cold Spray

This standard applies to lacquer that can be applied at normal or elevated temperatures as a finishing coat over primed or phosphated metal.

Withdrawn/Retirée

1-GP-111c

September 1970

Supersedes 1-GP-111b
April 1962

Price Code: B

Pour l'édition française commander (F)1-GP-111c

This standard has been prepared by a government-industry committee to comply with the specific requirements of the Federal Government. It is intended for use in a procurement system that includes inspection procedures to ensure compliance with the requirements of the standard, and its use without such inspection procedures may not be advisable.

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Although the intended primary application of each standard is stated in its Scope clause, it is important to note that it remains the responsibility of the user of the standard to judge its suitability for his particular purpose.

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The Secretary
Canadian General Standards Board
Ottawa, Canada
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Withdrawn/Retirée

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Aeronautical, Equipment and Ammunition Subcommittee

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Withdrawn/Retiree

1-GP-111c
September 1970
Supersedes 1-GP-111b
20 April 1962

CANADIAN GOVERNMENT SPECIFICATIONS BOARD

Standard
for

LACQUER: FLAT, HOT AND COLD SPRAY

Withdrawn/Retirée

1. DEFINITION

1.1 This standard applies to lacquer that can be applied at normal or elevated temperatures as a finishing coat over primed or phosphated metal.

1.2 For more detailed information on uses, see par. 8.1.

2. APPLICABLE PUBLICATIONS

2.1 The following publications are applicable to this standard:

2.1.1 Canadian Government Specifications Board (CGSB)

1-GP-12c Standard Paint Colors
1-GP-71 Methods of Testing Paints and Pigments

2.1.2 American Society for Testing and Materials (ASTM)

Standards on Paint, Varnish and Related Products

2.2 Reference to the above publications is to the issues in effect on the date of invitation to tender, unless otherwise specified in the purchase documents.

3. CLASSIFICATION

3.1 The lacquer shall be supplied in one class.

4. GENERAL REQUIREMENTS

4.1 Lacquer complying with this standard shall consist of color-stable chalk-resistant pigments adequately dispersed in cellulose nitrate alkyd vehicle. The alkyd resin shall be of the nondrying or semidrying type. The nonvolatile vehicle, on a weight basis, shall be composed of not less than 30 per cent of cellulose nitrate and not less than 55 per cent alkyd resin, and the nonvolatile vehicle shall contain not less than 16.5 per cent phthalic anhydride.

4.2 The lacquer shall be supplied in a consistency suitable for spraying with the appropriate equipment when heated to a temperature of 160-170°F (71-77°C). On reduction of two volumes of lacquer with one volume of 1-GP-50 or 1-GP-110 thinner, the lacquer shall be suitable for spraying at normal temperature.

4.3 The lacquer shall be quick-drying and shall produce a smooth, hard and adherent film of good appearance and durability.

4.4 The dried film, when applied by spray, shall show no mottling, seeding, wrinkling, pitting, blistering, pinholes nor open pores.

4.5 The lacquer shall not gel, thicken excessively or cake in the original unopened container for one year from date of shipment when stored at a temperature not exceeding 100°F (38°C). At the end of this time, it shall be readily mixed to a uniform condition by stirring and shall be suitable for use.

5. DETAIL REQUIREMENTS

Lacquer to this standard shall comply with the following detail requirements:

		Min	Max	Test Method 1-GP-71	Test Method ASTM
5.1	Consistency				
5.1.1	As Received, Krebs Units	60	65	4.5	-
5.1.2	Thinned (see 4.2), No. 4 Ford Cup, sec.	18	25		D1200
5.2	Dry Hard Time, min.	-	30	5.1	-
5.3	Gloss, specular, units	-	6	13.1	-
5.4	Hiding Power, sq ft/gal	500	-	14.2	-
	m^2/liter	10.21	-	14.2	-
	Exceptions:				
5.4.1	Blues as deep as 502-307 sq ft/gal	400	-	14.2	-
	m^2/liter	8.17	-	14.2	-
5.4.2	Yellows as deep as 505-301 sq ft/gal	300	-	14.2	-
	m^2/liter	6.13	-	14.2	-
5.4.3	Reds as deep as 509-302 sq ft/gal	300	-	14.2	-
	m^2/liter	6.13	-	14.2	-
5.5	Fineness of Grind, Hegman	5	-		D1210
5.6	Volatile Matter, % by wt	-	58	17.1	-
5.7	Nonvolatile Vehicle, % by wt	26	-	19.1	-
* 5.8	Benzene	-	Nil	65.1	-
* 5.9	Chlorinated Solvents Boiling Below 257°F (125°C)	-	Nil	73.1	-

* This requirement may be checked at the discretion of inspecting authority.

Withdrawn/Retired

5.10 Color - The lacquer shall be supplied in any of the flat colors in 1-GP-12c as may be specified by the purchaser.

Method 12.9

5.11 Skinning Properties - The lacquer shall be nonskinning.

Method 10.1

5.12 Heat Stability - After being held at 170°F (77°C) for 24 hours the lacquer shall pass the requirements for consistency (5.1.1), water resistance (5.14), flexibility (5.15), accelerated weathering (5.16), salt-spray resistance (5.17), self-lifting (5.18) and adhesion (5.19).

Method 30.6

5.13 Vehicle Composition

5.13.1 The vehicle shall consist of cellulose nitrate, alkyd resin and plasticizer dissolved in an appropriate solvent mixture.

5.13.2 Individual samples of both the alkyd resin solution (excluding plasticizer) and the cellulose nitrate resin solution, identical in composition with those used in the lacquer vehicle, but which are packaged in separate containers, shall meet the following analytical requirements:

	Min	Max	Test Method 1-GP-71	Test Method ASTM
Alkyd Resin Solution				
Phthalic Anhydride Content, % by wt of nonvolatile vehicle portion of alkyd resin solution	30	-	57.1	-
Cellulose Nitrate Solution				
Nitrogen content, % by wt of the dried cellulose nitrate	11.8		12.2	D301

The above requirements are intended to be tested for qualification purposes only.

5.13.3 Phenolic resins shall be absent.

Method 75.2

5.14 Water Resistance - A dry film of the heat-conditioned lacquer (Method 30.6) shall withstand 18 hours immersion in water at 73°F (23°C) without blistering, wrinkling or apparent loss of adhesion. Two hours after removal from the water, the film shall show no softening, loss of adhesion nor change in color.

Method 110.1

Withdrawn/Retired

5.15 Flexibility - A film of the heat-conditioned lacquer (Method 30.6) that has been dried 24 hours at 221°F (105°C) shall show no cracking nor flaking when bent over a 1/8 inch (3.2 mm) mandrel.

Method 119.16

5.16 Accelerated Weathering - A film of the heat-conditioned lacquer (Method 30.6) shall withstand an exposure period of ten 24-hour cycles in an accelerated weathering machine, without showing evidence of chalking, checking, cracking, flaking or peeling and not more than slight color change.

Method par. 7.5

5.17 Salt-Spray Resistance - A film of the heat-conditioned lacquer (Method 30.6), prepared and tested as prescribed and examined immediately following removal from the salt-spray chamber after 144 hours exposure, shall show no rust creepage or undercutting beyond 1/8 inch (3.2 mm) from the score marks. At all other points on the panel the lacquer shall show no rusting nor blistering.

Method 129.3

5.18 Self-Lifting - The dried film of the heat-conditioned lacquer (Method 30.6) shall take application of a second coat of lacquer at intervals of 4, 8, 24 and 48 hours without blistering, wrinkling, loosening, softening or other defects due to intercoat action.

Method 132.1

5.19 Adhesion - An air-dried film of the heat-conditioned lacquer (Method 30.6) shall show no removal of the lacquer by the adhesive tape beyond 1/16 inch (1.6 mm) on either side of the score line.

Method par. 7.6

5.20 Outdoor Exposure - When exposed for 6 months in the Miami, Florida area, one coat of lacquer applied to steel primed with 1-GP-105 primer shall show no appreciable film deterioration, no loss of adhesion and not more than moderate chalking or color change, except that Yellow 505-302 and 505-301 may show some darkening.

Method 143.2

Withdrawn/Retirée

6. PREPARATION FOR DELIVERY

6.1 Unless otherwise specified in the purchase documents, commercial packaging, packing and marking shall be acceptable.

6.2 Labelling - In addition to the labelling requirements of any relevant Acts or Regulations, each container shall be suitably labelled to show the following information:

Manufacturer's Name and Address
Name of Material
CGSB Standard No.
Qualification No. (when required)
1-GP-12c Color
Manufacturer's Batch No.
Manufacturer's Code No.
Date of Manufacture
Thinning Instructions

- For cold spray application, using 1-GP-50 or 1-GP-110 thinner.
- For hot spray application, see 1-GP-111 Appendix or appropriate instruction manuals.

7. INSPECTION

7.1 General - Unless otherwise stipulated in the contract, it is the prime contractor's responsibility to satisfy the inspection authority that the commodity conforms to this standard. This may be accomplished by performing the tests specified in the standard or by demonstrating to the satisfaction of the inspecting authority that manufacturing processes and techniques are so controlled that conformity to this standard is ensured. The contractor may utilize his own facilities or any commercial testing establishment acceptable to the inspection authority.

7.2 Sampling shall be carried out in accordance with Method 1.1 of CGSB 1-GP-71.

7.3 The methods of testing shall be as specified with each requirement.

7.4 Classification of Tests - Tests for determining compliance with this standard shall be classified as follows:

7.4.1 *Qualification Tests* - Those tests that are performed on all samples submitted for qualification as a satisfactory product. They shall consist of the tests necessary to establish compliance with all the requirements of this standard.

7.4.2 *Lot Acceptance Tests* - Those tests that are used to determine the acceptability of a lot or batch of a qualified product. The inspecting authority may request the testing of the material for compliance with any of the requirements of this standard, except outdoor exposure (5.20), and vehicle composition (5.13), and may reject a lot or batch on the basis of any requirement in the standard.

Withdrawn/Retirée

7.5 Accelerated Weathering - Apply one coat of the heat-conditioned lacquer (Method 30.6) by spray (Method 98.2) on two $2\frac{3}{4}$ x 6 in. (70 x 150 mm) phosphated steel panels (Method 100.3). Allow the material to dry seven days (Method 103.1) during which the backs and edges of the panels are coated for protection. Select, measure, expose and examine the panels in accordance with Methods 112.1 and 122.2.

7.6 Adhesion - Apply the heat-conditioned lacquer (Method 30.6) by spray (Method 98.2) on a $2\frac{3}{4}$ x 6 in. (70 x 150 mm) or 4 x 6 in. (100 x 150 mm) phosphated steel panels (Method 100.3). Allow the material to dry 1 hr. under standard conditions (Method 103.1). Test the adhesion of the applied lacquer film in accordance with the Tape Test (Method 137.1).

8. NOTES

8.1 Intended Uses

8.1.1 Lacquer complying with this standard is intended for use as a flat finish coat on primed or phosphated surfaces of shells, bombs, grenades, vehicles, other metal equipment and their component parts.

8.1.2 Although the lacquer may be reduced with 1-GP-50 or 1-GP-110 thinner and sprayed at room temperature, it is intended primarily for hot-spray application. Recommended gun and pressure settings for hot-spray application are given in Appendix A. Thinning instructions for cold-spray application will be found on the label of the container.

8.1.3 Primers that are to be used under the lacquer must be of the lacquer type or lacquer resistant: 1-GP-105 primer is suitable for use on steel and 1-GP-132 primer for use on light alloys. Where the lacquer is to be applied without a primer, satisfactory phosphate coatings for steel are 31-GP-105, Coating: Conversion, Iron Phosphate for Paint Base.

8.1.4 For severe exposures (automotive) it is recommended that both a treatment (such as 1-GP-121 vinyl pretreatment or the phosphate coatings listed above) and a primer be applied prior to the finish coat of lacquer.

8.1.5 For a description of other coatings and related materials, covered by CGSB Standards, and their uses, see 1-GP-72, Guide to the Selection of Paint Standards on Use Basis.

8.2 Ordering Data - In ordering lacquer to this standard the purchaser shall specify the following:

(a) Color (par. 5.10).
(b) Details of packaging, packing and marking, if commercial practice is not acceptable (par. 6.1).
(c) If a qualified product is required.

Withdrawn/Retiree

8.3 Qualification

8.3.1 *Qualification Procedure* - Details of procedure for qualification of 1-GP-111 lacquers may be obtained from:

Director General
Quality Assurance
Canadian Forces Headquarters
Department of National Defence
Ottawa 4, Canada.

8.3.2 *Qualified Products* - Federal government departments and agencies may also obtain information from the above address regarding availability of qualified products.

8.4 Related Specifications - This standard is based in part on U.S. MIL-L-11195, Lacquer, Lusterless, Hot Spray.

8.5 The publications referred to in par. 2.1.1 are available from the Canadian Government Specifications Board.

8.6 The publications referred to in par. 2.1.2 are available from the American Society for Testing and Materials, 1916 Race St., Philadelphia, Pa. 19103, U.S.A.

8.7 SI (Metric) Units - The SI (Metric) equivalents for customary inch/pound units are shown in this standard. Since the equivalents are not exact, the SI values are for information only, to familiarize readers with units that will ultimately be adopted nationally.

Withdrawn/Retirée

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APPENDIX A

Requirements for Hot-Spray Operation

Atomization air temperature (room temperature)	79-90°F (21-32°C)
Atomization air pressure	50 lb. max.
Cold lacquer feed-tank pressure	10-15 lb.
Fluid- and air-adjustment valves on spray gun	Wide open
Air Cap and Fluid Tip	DeVilbiss (or equivalent) Type FX Tip and No. 704 Air Cap
Lacquer temperature at spray gun	160 ± 5°F (71 ± 3°C)
Distance from spray gun to work	6-8 in.
Lacquer flow rate at nozzle	10-20 fluid oz. per min.
Thermostatic setting on lacquer heating unit	175°F (80°C) max.

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À l'attention de: Ventes
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