

Canadian General Standards Board

CGSB

Office des normes générales du Canada

ONGC

**1-GP-120b
July 1970**

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Juillet 1970**

CANCELLATION

December 1983

**CANADIAN GENERAL
STANDARDS BOARD**

Standard for

COATING: STRIPPABLE, PROTECTIVE

This standard is hereby cancelled. 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.

ANNULATION

Décembre 1983

**OFFICE DES NORMES
GÉNÉRALES DU CANADA**

Norme

REVÊTEMENTS PROTECTEURS PELABLES

Cette norme est annulée par la présente. 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.



STANDARD
FOR
COATING: STRIPPABLE, PROTECTIVE

1-GP-120b

JULY 1970

SUPERSEDES 1-GP-120-A
10 NOVEMBER 1961

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.

THIS STANDARD APPLIES TO PIGMENTED, SPRAYABLE AND STRIPPABLE COATING FOR USE IN THE PRESERVATION OF EQUIPMENT DURING OUTSIDE STORAGE AND SHIPMENT.

MINISTRE DES APPROVISIONNEMENTS ET SERVICES



DEPARTMENT OF SUPPLY AND SERVICES

COMMITTEE ON PAINTS, PIGMENTS AND RELATED COMMODITIES

and

Aeronautical, Equipment and Ammunition Subcommittee

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FOREWORD

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Canadian Government Specifications Board
c/o Department of Supply and Services
Ottawa, Canada.

CANADIAN GOVERNMENT SPECIFICATIONS BOARD

Standard
for

COATING: STRIPPABLE, PROTECTIVE

1. DEFINITION

1.1 This standard applies to pigmented, sprayable and strippable coating for use in the preservation of equipment during outside storage and shipment.

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 CGSB 1-GP-12c, Standard Paint Colors.

2.1.2 CGSB 1-GP-71, Methods of Testing Paints and Pigments.

2.1.3 ASTM Standards on Paint, Varnish, Lacquer and Related Products.

2.2 Reference to the above publications or to test methods therein, 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 coating shall be supplied in one class.

4. GENERAL REQUIREMENTS

4.1 Strippable coating complying with this standard shall consist of suitable pigments adequately dispersed in a vinyl resin vehicle. The ingredients shall be compounded free from particles of undispersed resin or pigments.

4.2 The material as supplied shall be suitable for application by spray using conventional pressure-type equipment. It shall not cause clogging of the spray gun.

4.3 The dried film when applied by spray shall be free from pinholes and shall have a uniform gloss finish.

4.4 The compound shall not gel, precipitate, cake, turn brown or darken 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 spray satisfactorily.

5. DETAIL REQUIREMENTS

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

		<u>Min</u>	<u>Max</u>	<u>1-GP-71</u> <u>Test Method</u>
5.1	Consistency, Krebs units	70	90	4.5
5.2	Nonvolatile Matter, % by wt	32	-	Par. 7.5
5.3	Drying Time			
5.3.1	Set-to-touch, min., on an 8 mil (200 micron)* film	-	30	Par. 7.12.1
5.3.2	Through dry (tough and rubbery stage), hr	-	24	Par. 7.12.2
5.4	Tensile Strength, psi **MN/m ² or (N/mm ²)	500 3.45	-	Par. 7.7
5.5	Ultimate Elongation, %	200	-	Par. 7.7
5.6	Adhesion at normal temp., lb/in. width ***N per mm width	0.75 0.13	2.25 0.39	Par. 7.8
5.7	Water Soluble Content of film, %	-	0.20	Par. 7.9
5.8	Loss on Heating, % by wt of film	-	1.5	139.1
5.9	Benzene ϕ	-	NIL	65.1
5.10	Chlorinated compounds boiling below 257°F (125°C) ϕ	-	NIL	73.1
5.11	<u>Color</u> - The color of the material shall be Green 503-101 in accordance with CGSB 1-GP-12c.			
			Method 12.9	

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

* microns are equivalent to micro-meters (μm)

** Meganewton per square meter (N/mm², Newton per square millimeter)

*** Newton per millimeter width

5.12 Stability

- 5.12.1 *Stability at High Temperature* - When stored 30 days at 100°F (38°C) in contact with a strip of cold-rolled mild steel in a tightly sealed glass container, the compound shall show no signs of thickening, browning, blackening, precipitation or other separation and the strip shall show no corrosion. Settled pigments shall be readily redispersible by manual stirring with a small paddle to give a smooth homogeneous compound.

Method 30.5

- 5.12.2 *Stability at Low Temperature* - After cooling 72 hours in a tightly sealed container to -10°F (-23°C), and subsequent conditioning 5 hours at 73°F (23°C), the compound shall revert to a gel-free fluid, and shall flow and immediately fill the opposite end of the container when the latter is inverted.

Method 31.2

5.13 Heat Resistance

- 5.13.1 A film of the compound shall show no evidence of plasticizer separation after heating 168 hours at 160°F (71°C). After cooling to room temperature, the film shall be strippable manually without tearing or breaking, and the steel surface shall show no greying, blackening, pitting nor other evidence of attack.

Method par. 7.10.1

- 5.13.2 A film of the compound shall show no visible shrinkage nor separation from the panel surface, and no yellowing, browning, blackening or bubbling, after heating 3 hours at 350°F (177°C). The film surface contacting the steel shall also be unaffected. There shall be no pitting, greying, blackening nor other visible evidence of attack on the steel surface.

Method Par. 7.10.2

- 5.14 Corrosion Resistance - Steel panels coated with a film of the compound shall show no corrosion when subjected to the salt spray test for 168 hours. The film shall show no visual evidence of leaching, pinholing or separation from the metal surface.

Method Par. 7.11

- 5.15 Flame Resistance - A strip of conditioned film held 10 seconds in an oxidizing bunsen flame shall not continue to glow or burn for more than 2 seconds after removal from the flame.

Method 118.6 and Par. 7.6

5.16 Flexibility at Low Temperature - A film of the material shall show no cracking at -40°F (-40°C) both before and after accelerated weathering.

Method 119.18 and Par. 7.6

5.17 Accelerated Weathering

5.17.1 After exposure in an accelerated weathering machine for twenty 24-hour cycles, a film applied to a steel panel shall show no visible evidence of degradation and shall be strippable in one continuous sheet. The panel surface shall show no evidence of corrosion. The weathered films shall meet the requirements for adhesion (par. 5.6), low temperature flexibility (par. 5.16) and tensile strength (par. 5.4), and the ultimate elongation (par. 5.5) shall not differ by more than 5 per cent of the values obtained on the unweathered films.

5.17.2 After exposure in an accelerated weathering machine for 1,500 hours the film shall meet the requirements of par. 5.17.1 except that a decrease in ultimate elongation of the weathered film to 85 per cent of the initial value is permitted.

Method 122.17 and Par. 7.6

5.18 Behavior Toward Metal - Steel panels coated with a film of the compound shall show no corrosion after air drying for 24 hours at 73°F (23°C) and force drying 24 hours at 140°F (60°C).

Method Par. 7.6

5.19 Behavior Toward Applied Films

5.19.1 Panels finished with 1-GP-98 Type II baking enamel and coated with a film of the compound shall show no evidence of damage to the enamel film after heating 168 hours at 160°F (71°C), cooling and stripping.

5.19.2 The film shall be manually strippable without tearing or breaking.

Method 131.4 and Par. 7.6

5.20 Application Properties

5.20.1 The unreduced material, after agitation, shall be capable of being sprayed smoothly at 73°F (23°C) to a minimum dry film thickness of 8 mils (200 microns) in one pass of a pressure gun having a fluid nozzle 0.07 inch (1.78 mm) in diameter.

Method 136.3

- 5.20.2 The unreduced material applied under the same conditions used in par. 5.20.1 shall be capable of being sprayed within 2 minutes to a 12 x 12 inch (300 x 300 mm) steel panel, mounted vertically, to provide a film that on drying has a thickness of 37.5 ± 2.5 mils (950 ± 60 microns) without runs, sags or pinholes.

Method 136.3

- 5.21 Nonbridgeability After Drying - A film of the compound applied to a bent painted panel having a 1/4 inch (6.4 mm) radius shall not bridge the radius or otherwise loosen from the painted surfaces after 96 hours air drying.

Method 145.1 and Par. 7.6

- 5.22 Outdoor Weathering - A film of the compound, after exposure outdoors in Ottawa, Canada for one year, shall show no visible evidence of degradation and shall be strippable in one continuous sheet; and the panel surface shall show no evidence of corrosion. The outdoor-weathered film shall meet the requirements for adhesion, tensile strength, ultimate elongation and low temperature flexibility except that a decrease in ultimate elongation to 85 per cent of the initial value determined is permitted.

Method 143.5 and Par. 7.6

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 labelled to show the following information:

Manufacturer's Name and Address
Name of Material
Date of Manufacture
CGSB Standard Number
Qualification No. (when required)
Manufacturer's Batch No.
Manufacturer's Code No.
Gross, Tare and Net Weight

CAUTION: DO NOT THIN. KEEP AWAY FROM FLAME

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

either by performing the tests specified in this 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 - Sampling shall be carried out in accordance with Method 1.1 of CGSB 1-GP-71.

7.3 Testing - Unless otherwise specified, the methods of testing shall be those specified in 1-GP-71.

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 prolonged accelerated weathering (par. 5.17.2) and outdoor weathering (par. 5.22), and may reject a lot or batch on the basis of any requirement in the standard.

7.5 Nonvolatile Content - Use Method 17.1 but heat 3 hr, cool, weigh, reheat, cool and weigh at 1 hr periods until the loss in weight between successive weighings is 1% of the sample weight or less. Use the final weight to calculate the per cent of nonvolatile matter. Carry out two simultaneous determinations and report the mean value. If the first two determinations do not agree within 1%, repeat and report the mean of four determinations.

7.6 Preparation of Test Panels - All test panels shall be selected and cleaned in accordance with ASTM D609, Procedure A. Spray the panels on one surface to a dry film thickness of 37.5 ± 2.5 mils (950 ± 60 microns) (Method 136.3, except that other air caps and fluid tips may be used if desired). After coating, dry the panels 24 hr (Method 103.1) and then oven dry them for 24 hr (Method 103.2) at $60 \pm 3^{\circ}\text{C}$ ($140 \pm 3.5^{\circ}\text{F}$) before subjection to tests. Test films shall exhibit a smooth surface free from pinholes, bubbles and other irregularities. A slight waviness or orange-peel finish is acceptable. Test panels so prepared are referred to as "finished panels". Remove the film from two panels to determine compliance with the requirements of par. 5.18.

7.7 Tensile Strength and Ultimate Elongation - Determine in accordance with ASTM D412 using five specimens cut from each of three 6 x 12 in. (150 x 300 mm) finished panels (par. 7.6) and five weatherometer panels (3 x 6 in.) (75 x 150 mm) using die A.

7.8 Adhesion - Two 4 x 12 in. (100 x 300 mm) panels (par. 7.6) are cut through to the metal to form three 1-in. strips of material parallel to the long dimension. The edges of the panel shall not be used as one side of the long edge of the test strips. Strip one end of each test strip for approximately one-half the length of the panel, and clamp the stripped end of the panel in the bottom grip of a suitable tensile machine so that the center line of the grip lines up with the center line of the test strip to be pulled. Bend back the loose end of the strip 180 degrees and fasten to the top grip of the machine. Separate the grips at a rate of 2 in. (50 mm) per minute until approximately 4 in. (100 mm) more of the specimen is stripped from the panel. The average maximum force necessary to strip the six specimens is reported as the adhesion value in pounds per inch of width (Newtons per mm width).

7.9 Water Soluble Content - Obtain four specimens, each approximately 1 x 3 in. (25 x 75 mm) and 30 mils (760 microns) thick, by stripping spray-applied films (Method 136.3) that have air dried 24 hr (Method 103.1). Condition the specimens 72 hr at $60 \pm 2^{\circ}\text{C}$ ($140 \pm 3.5^{\circ}\text{F}$), cool in a desiccator and weigh. Leave one sample in the desiccator and suspend each of the others 24 hr in 400 ml distilled water in 600 ml beakers at $23 \pm 2^{\circ}\text{C}$ ($73 \pm 3.5^{\circ}\text{F}$). Remove the specimens and condition all four 24 hr at 60°C , cool and weigh as before. The correction for losses due to the second heating period is the loss in weight of the unimmersed sample. Subtract the correction from the loss in weight of each immersed sample and calculate the per cent weight loss and mean per cent weight loss.

7.10 Heat Resistance

7.10.1 Place a 3 x 6 in. (75 x 150 mm) finished panel (par. 7.6) in a ventilated circulating oven (Method 103.2) at $71 \pm 2^{\circ}\text{C}$ ($160 \pm 3.5^{\circ}\text{F}$) for 168 hr. Inspect the film daily for evidence of plasticizer separation indicated by exudation of oily matter. At the end of the heating period the panel remove from the oven and cool to $23 \pm 2^{\circ}\text{C}$ ($73 \pm 3.5^{\circ}\text{F}$). Strip the film manually from the panel and examine for tears and breaks. Also examine the steel surface.

7.10.2 Trim a 3 x 6 in. (75 x 150 mm) finished panel (par. 7.6) with a sharp cutting edge so that the coating is the same size as the panel, care being taken not to lift the film. Place the panel in a ventilated circulating oven (Method 103.2) at $177 \pm 2^{\circ}\text{C}$ ($350 \pm 3.5^{\circ}\text{F}$) for 3 hr. At the end of this time remove the panel from the oven and examine the film for separation or degradation. Strip the film from the panel, and examine the back of the film and the steel surface. Removal of the film for examination of the contacting surfaces may be assisted by inserting a spatula under the film and prying before the panel has cooled thoroughly.

7.11 Corrosion Resistance - Prepare two panels 3 x 6 in. (75 x 150 mm) according to par. 7.6, except that the material is applied on all surfaces (the edges shall be dipcoated to ensure proper sealing), subject them to a salt spray (fog) test according to ASTM B117. The panels are supported 15 degrees from the vertical, parallel to the horizontal flow of fog through the chamber. After 168 hrs remove the panels, rinse with water and dry. Examine the films and then strip them from the panels. Assess the panels for corrosion in accordance with Method 95.1.

7.12 Drying Time

7.12.1 *Set-to-Touch* - Test the material for set-to-touch time in accordance with Method 5.1, except that the material is applied (Method 136.3) to yield a dry film 8.2 ± 0.5 mils (208 ± 13 microns thick).

7.12.2 *Through-Dry* - Spray the material (Method 136.3) on clean steel panels (ASTM D609, Procedure A) to form a dry film of 37.5 ± 2.5 mils (950 ± 60 microns). (About four passes of the gun should give the correct thickness.) Place the panels in a horizontal position under standard conditions (Method 103.1) and an illumination of 30 ± 5 foot-candles (323 ± 54 lumens/m²). At intervals place a panel between thumb and forefinger and exert maximum pressure for 20 sec. The film is considered to have through-dried to a tough and rubbery condition when the pressure does not rupture the surface or remove any film from the substrate, and the film recovers from the indentation that should form under pressure.

8. NOTES

8.1 Intended Uses

8.1.1 Coating material to this standard is intended for use in the preservation of equipment during storage and shipment. It is for use on dry, painted or unpainted surfaces of metal, wood, rubber and fabric, but should not be applied to plastic materials.

8.1.2 The dried coating provides a tough, elastic, waterproof film that is an effective barrier to the passage of moisture. The film can be hand-stripped in large pieces without damaging the protected surface.

8.1.3 The material should not be solvent-thinned but must be well-agitated before application. It is applied by pressure-feed spray guns equipped with external-mix air nozzles using air pressures of 60 to 100 psi (0.41 to 0.69 MN/m²) and fluid pressures of 25 to 40 psi (0.17 to 0.28 MN/m²) depending upon the temperature. Minor breaks in the film can be repaired by applying additional material by brush or spray.

8.1.4 For more details on material preparation and application, see CGSB 1-GP-72, Guide to the Selection of Paint Specifications on a Use Basis.

8.2 Ordering Data - In ordering strippable coating to this standard, the purchaser should specify the following:

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

8.3 Qualification

8.3.1 *Qualification Procedure* - Details regarding procedure for qualification of 1-GP-120 coatings 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 Specification - U.S. Military Specification MIL-C-16555C, Coating, Compound, Strippable, Sprayable.

8.5 The publications referred to in par. 2.1.1 and 2.1.2 are applicable from the Canadian Government Specifications Board.

8.6 The publication referred to in par. 2.1.3 is 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.