

Canadian General Standards Board

CGSB

Office des normes générales du Canada

ONGC

CAN/CGSB-1.199-92
July/Juillet 1992

WITHDRAWAL

February 1999

**CANADIAN GENERAL
STANDARDS BOARD**

HIGH-BUILD VINYL COATING

This standard is hereby withdrawn. As far as can be determined it is no longer being used in quantities that would warrant the continued maintenance of the standard.

RETRAIT

Février 1999

**OFFICE DES NORMES
GÉNÉRALES DU CANADA**

**REVÊTEMENT PAR PEINTURE AUX RÉSINES
VINYLIQUES À POUVOIR GARNISSANT ÉLEVÉ**

Cette norme est retirée par le présent avis. Dans la mesure où il est possible de le constater, elle n'est plus utilisée en quantité suffisante pour la maintenir en vigueur.

Canada

NATIONAL STANDARD OF CANADA

CAN/CGSB-1.199-92

Supersedes 1-GP-199M

High-Build Vinyl Coating



QUALITY

Withdrawn/Retired

Canadian General Standards Board

CGSB

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HIGH-BUILD VINYL COATING

The Department of National Defence administers a Qualification Listing Program for products conforming to the requirements of this standard. Further information on the listing program is available from the Director of Engineering and Maintenance Planning and Standardization (DEMPS 4) Ottawa, Canada K1A 0K2.

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CANADIAN GENERAL STANDARDS BOARD

HIGH-BUILD VINYL COATING

1. SCOPE

- 1.1 This standard applies to a high-build vinyl coating suitable for use in marine atmospheres including immersion in sea water.
- 1.2 For more detailed information on intended uses, see par. 7.2.
- 1.3 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)

- 1-GP-12 — Standard Paint Colors

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

- 1-GP-121 — Coating, Vinyl, Pretreatment, for Metals (Vinyl Wash Primer)

- CAN/CGSB-1.122 — Anticorrosive Vinyl Primer

- 1-GP-171 — Coating, Inorganic Zinc.

- 2.1.2 Department of Consumer and Corporate Affairs

- Hazardous Products Act.

- 2.1.3 ASTM

- D 1210 — Test Method for Fineness of Dispersion of Pigment-Vehicle Systems

- D 1212 — Method for Measurement of Wet Film Thickness of Organic Coatings

- D 3359 — Test Methods for Measuring Adhesion by Tape Test.

- 2.2 Reference to the publications in par. 2.1.1 and 2.1.3 and to other related standards is to the latest issues, unless otherwise specified by the authority applying this standard. The sources of all publications are shown in the Notes section.

3. GENERAL REQUIREMENTS

- 3.1 The coating shall consist of a lead free pigment mixture adequately dispersed in a suitable vinyl copolymer resin, together with the necessary thinners and additives.
- 3.2 The pigment for an aluminum coating shall be a leafing grade of aluminum pigment and the primary pigment for other coatings shall be nonchalking titanium dioxide.
- 3.3 When the material is thoroughly mixed, normally without thinning, and applied by spraying in accordance with the manufacturer's instructions, it shall be capable of being applied to produce a uniform dry film thickness of

125 ± 25 µm without runs, sags or other surface irregularities. The coating shall also be suitable for brush application to small areas for touch-up purposes.

- 3.4 **Colour** — The coating shall be supplied in white, aluminum or dark grey colours as may be specified (par. 7.1).
- 3.5 The material shall not thicken excessively nor cake when stored in the original unopened container for six months from the date of shipment at temperatures not exceeding 40°C. At the end of this time, the material shall be readily mixed by stirring to a uniform condition and shall meet the requirements for applicability and appearance in accordance with par. 4.10.

4. DETAILED REQUIREMENTS

Material to this standard shall comply with the following detailed requirements:

		Min.	Max.	Test Method	
				CGSB 1-GP-71	ASTM
4.1	Volatile matter, % by mass	—	55	17.1	—
4.2	Fineness of grind, Hegman units (except aluminum)	4	—	—	D 1210
4.3	Pressure buildup (aluminum formulations) kPa	—	2.9	87.2	—
4.4	Hiding Power — When applied by drawblade to a hiding power chart to a wet film thickness of 300 µm, the coating shall completely hide the contrasting squares when tested in accordance with CGSB standard 1-GP-71, Method 14.1.				
4.5	Flexibility — The dry film shall show no cracking nor peeling when subjected to the bending test using a 25 mm mandrel when tested in accordance with par. 6.2.2.				
4.6	Salt Spray Corrosion Resistance — The dried film, on scored and unscored steel panels, applied over inorganic zinc primer, conforming to CGSB standard 1-GP-171, shall show no evidence of blistering, loss of adhesion or other defects when exposed 30 d in a salt spray cabinet. There shall be no corrosion of the substrate panel, except in the score lines, and there shall be no appreciable undercreepage at the score lines when tested in accordance with CGSB standard 1-GP-71, Method 129.1 and par. 6.2.1.				
4.7	Fresh Water Immersion — The dried film immersed in water at 40°C for 40 d shall not show any evidence of blistering, loss of adhesion nor corrosion when tested in accordance with CGSB standard 1-GP-71, Method 110.1 and par. 6.2.1.				
4.8	Adhesion — The adhesion of the dried film to the inorganic zinc primer conforming to CGSB standard 1-GP-171 shall not be less than classification 3, as determined by the knife test when tested in accordance with par. 6.2.1 and ASTM D 3359, Method B.				
4.9	Accelerated Weathering Resistance — When applied to steel over inorganic zinc primer conforming to CGSB standard 1-GP-171, the dried film shall withstand an exposure period of thirty 24 h cycles in an accelerated weathering machine without showing any signs of checking, cracking or loss of adhesion, as determined by the knife test when tested in accordance with par. 6.2.3.				
4.10	Applicability and Appearance — When applied by means of a spray gun as recommended by the manufacturer, the coating shall apply at a minimum wet film thickness of 300 µm with no sagging nor crawling and no more than a few bubbles or craters. Surface dry and hard dry times shall not be greater than 1 h and 24 h respectively when tested in accordance with CGSB standard 1-GP-71, Method 5.1 and par. 6.2.4.				

5. PREPARATION FOR DELIVERY

- 5.1 Unless otherwise specified (par. 7.1), normal commercial packaging, packing and marking shall be acceptable.

5.2 **Toxic Elements** — This coating shall be labelled to conform to the requirements of the Hazardous Products Act in respect to designated toxic elements.

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

Name of material

Standard number: CAN/CGSB-1.199-92

1-GP-12 colour

NATO stock number (when required)

Manufacturer's name and address

Manufacturer's batch number

Manufacturer's code number

Date of manufacture

THINNING INSTRUCTIONS

APPLICATION CONDITIONS, including temperature and humidity conditions

Type of spray gun recommended

CAUTIONARY NOTE to indicate that:

— the material shall be used only under adequately ventilated conditions

— the material is flammable, therefore should be kept away from sparks and open flames.

6. INSPECTION

6.1 **Sampling** — Sampling shall be carried out in accordance with CGSB standard 1-GP-71, Method 1.1.

6.2 Testing

6.2.1 **Panel Preparation** — Coat 7, 75 x 150 mm, steel panels conforming to CGSB standard 1-GP-71, Method 100.2 with inorganic zinc primer conforming to CGSB standard 1-GP-171 to a dry film thickness of $75 \pm 10 \mu\text{m}$ and cure for 7 d at $23 \pm 2^\circ\text{C}$ and 95 to 100% RH. Unless otherwise specified, apply by spray the material under test to a wet film thickness of at least $300 \mu\text{m}$ using one vertical and one horizontal wet-on-wet application, with 50% overlap on each pass of the spray gun. Dry the coating under test for 7 d under standard conditions in accordance with CGSB standard 1-GP-71, Method 103.1. For immersion tests, protect the backs and edges of panels with a suitable material.

6.2.2 **Flexibility of the Cured Film** — Apply one coat of the material to steel panels in accordance with CGSB standard 1-GP-71, Method 100.2 to a dry film thickness of $125 \pm 25 \mu\text{m}$ and allow to dry 7 d in accordance with CGSB standard 1-GP-71, Method 103.1. With the film side up and in a time interval of approximately 1 s, bend each panel through 180° over a 25 mm diameter mandrel. Cracks visible under 10X magnification constitute a failure. Edge cracks extending no further than 6 mm shall be disregarded.

6.2.3 **Accelerated Weathering Resistance** — Prepare panels as described in par. 6.2.1. Seven days after application of the high-build vinyl coating under test, expose the panels for the required time in an accelerated weathering machine in accordance with CGSB standard 1-GP-71, Method 122.2 and examine the coating in accordance with CGSB standard 1-GP-71, Method 122.1. In addition, check the coating for adhesion in accordance with Method B of ASTM D 3359.

6.2.4 **Applicability and Appearance** — Coat 0.5 x 1 m cleaned steel panels in accordance with CGSB standard 1-GP-71, Method 100.2 with inorganic zinc primer in accordance with CGSB standard 1-GP-171 of Type 1 to a dry film thickness of approximately $75 \pm 10 \mu\text{m}$ and cure for 7 d at $23 \pm 2^\circ\text{C}$ and 95 to 100% RH. Apply by spray a mist coat of thinned high-build vinyl coating under test, followed approximately 10 min later with a full coat by spraying with two passes, one horizontal and one vertical, and overlapping each pass 50% for a total dry film thickness of 200 to $250 \mu\text{m}$. Immediately measure the wet film thickness in accordance with ASTM D 1212. After drying, examine for bubbling, sagging, pinholing, or other defects.

7. NOTES

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

- a. Colour required (par. 3.4)
- b. Packaging, packing and marking details, if normal commercial practice is not suitable (par. 5.1).

7.2 Intended Uses

- 7.2.1 High-build vinyl is intended for interior and exterior use as a protective coating on substrates exposed to fresh and sea water, tidal and splash zones, high humidity, condensation, brine and alkali/acid chemical atmospheres. It can be applied by conventional or airless spray to a dry film thickness of $125 \pm 25 \mu\text{m}$ over inorganic zinc primer conforming to CGSB standard 1-GP-171 or vinyl wash primer conforming to CGSB standard 1-GP-121 systems as recommended by the manufacturer.
- 7.2.2 The coating may also be applied over a primer system consisting of one coat of vinyl wash primer conforming to CGSB standard 1-GP-121 and two coats of vinyl anticorrosive primer, type 1 conforming to CAN/CGSB-1.122. Total minimum dry film thickness of the above primer system is $50 \mu\text{m}$.
- 7.2.3 The coating is mainly intended for use on suitably primed steel surfaces but may also serve as a protective coating on suitably treated and primed galvanized steel.

7.3 Sources of Referenced Publications

- 7.3.1 The publications referred to in par. 2.1.1 may be obtained from the Canadian General Standards Board, Sales Unit, Ottawa, Canada K1A 1G6. Telephone (819) 956-0425 or 956-0426. Fax (819) 956-5644.
- 7.3.2 The publication referred to in par. 2.1.2 may be obtained from the Canada Communication Group, Publishing, Ottawa, Canada K1A 0S9. Telephone (819) 956-4802.
- 7.3.3 The publications referred to in par. 2.1.3 may be obtained from ASTM, 1916 Race Street, Philadelphia, PA 19103, U.S.A. or from the Standards Council of Canada, Standards Sales Branch, 45 O'Connor Street, Suite 1200, Ottawa, Ontario K1P 6N7.