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Canadian General Standards Board | Office des normes générales du Canada

CAN/CGSB-1.123-92

ICS 87.040

WITHDRAWAL

October 2016

Vinyl antifouling paint for ship's bottoms

This National Standard of Canada is hereby withdrawn due to limited use and support for its revision. This withdrawal notice removes all remaining standards in the series.

The Standards Council of Canada requires that accredited Standards Development Organizations, such as the CGSB, regularly review a consensus Standard to determine whether to re-approve, revise or withdraw. The review cycle is normally five years from the publication date of the latest edition of the Standard.

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RETRAIT

Octobre 2016

Peinture aux résines vinyliques, antisalissure, pour carènes

Cette Norme nationale du Canada est retirée par le présent avis en raison de son utilisation limitée et du manque de support pour sa révision. Cet avis de retrait supprime toutes les normes restantes de la présente série.

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CANADIAN GENERAL STANDARDS BOARD

VINYL ANTIFOULING PAINT FOR SHIPS' BOTTOMS

Change reference to 1-GP-121 -- Coating, Vinyl, Pretreatment, for Metals (Vinyl Wash Primer) in par. 1.1, 4.14.1, 7.2, 7.2.1 and 7.3.1 to CAN/CGSB-1.213 -- Etch Primer (Pretreatment Coating) for Steel and Aluminum.

7. NOTES

7.4 Sources of Referenced Publications

Change the address in par. 7.4.1 to read:

7.4.1 The publications referred to in par. 2.1.1 and 7.3.1 may be obtained from the Canadian General Standards Board, Sales Centre, Ottawa, Canada K1A 1G6. Telephone (819) 956-0425 or 1-800-665-CGSB (Canada only). Fax (819) 956-5644.

7.4.2 The publication referred to in par. 2.1.2 may be obtained from the American Society for Testing and materials, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959, U.S.A. or from the Global Info Centre Canada, 240 Catherine Street, Suite 305, Ottawa, Ontario K2P 2G8. Telephone (613) 237-4250 or (800) 854-7179. Fax (613) 237-4251.

OFFICE DES NORMES GÉNÉRALES DU CANADA

PEINTURE AUX RÉSINES VINYLIQUES, ANTISALISSURE, POUR CARÈNES

Modifier la référence à 1-GP-121 -- Enduit aux résines vinyliques, préparation des surfaces métalliques (peinture primaire réactive vinylique) dans les par. 1.1 et 7.2 et dans les al. 4.14.1, 7.2.1 et 7.3.1, par CAN/CGSB-1.213 -- Peinture primaire réactive (enduit de traitement préliminaire) pour l'acier et l'aluminium.

REMARQUES

Sources de diffusion des publications de référence

Modifier l'adresse de l'al. 7.4.1 comme suit:

Les publications mentionnées aux al. 2.1.1 et 7.3.1 sont diffusées par l'Office des normes générales du Canada, Centre des ventes, Ottawa, Canada K1A 1G6. Téléphone (819) 956-0425 ou 1-800-665-CGSB (Canada seulement). Télécopieur (819) 956-5644.

La publication mentionnée à l'al. 2.1.2 est diffusée par l'American Society for Testing and Materials, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959, U.S.A., ou par le Centre canadien d'information globale, 240, rue Catherine, bureau 305, Ottawa, Ontario K2P 2G8. Téléphone (613) 237-4250 ou (800) 854-7179. Télécopieur (613) 237-4251.

NATIONAL STANDARD OF CANADA

CAN/CGSB-1.123-92

Supersedes 1-GP-123M

Vinyl Antifouling Paint for Ships' Bottoms

Canadian General Standards Board

CGSB

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Standards Council of Canada
350 Sparks Street
Ottawa, Ontario
K1P 6N7

NATIONAL STANDARD OF CANADA

CAN/CGSB-1.123-92

Supersedes 1-GP-123M
April 1977

VINYL ANTIFOULING PAINT FOR SHIPS' BOTTOMS

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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Acknowledgment is made for the French translation of this National Standard of Canada by the Translation Bureau of the Department of the Secretary of State.

CANADIAN GENERAL STANDARDS BOARD

VINYL ANTIFOULING PAINT FOR SHIPS' BOTTOMS

1. SCOPE

1.1 This standard applies to antifouling paint for use on steel over a system comprising a vinyl pretreatment coating and a vinyl primer conforming to CGSB standards 1-GP-121 and CAN/CGSB-1.122 respectively.

1.2 For more detailed information on intended uses, see par. 7.2.

1.3 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)

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

CAN/CGSB-8.2 — Sieves, Testing, Woven Wire, Metric.

2.1.2 ASTM

D 185 — Test Methods for Coarse Particles in Pigments, Pastes, and Paints

D 283 — Test Methods for Chemical Analysis of Cuprous Oxide and Copper Pigments

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

2.2 Reference to the above publications and to other related standards 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. GENERAL REQUIREMENTS

3.1 The paint shall consist of cuprous oxide adequately milled in a vehicle comprising 1 part polyvinyl copolymer resin and 4 parts rosin together with the necessary thinners. Dioctyl phthalate (Note 1) shall be used as a plasticizer as outlined in Appendix A.

3.2 The paint is formulated at a high viscosity for hot or airless spray. It shall be satisfactory for spraying with conventional equipment when reduced with thinner to conform to CGSB standard 1-GP-4 in accordance with the manufacturer's instructions.

3.3 The paint shall dry to a uniform appearance without wrinkling or sagging.

3.4 The paint shall not thicken excessively or cake in the original unopened container for twelve months from date of shipment when stored at temperatures not exceeding 40°C. At the end of this time, it shall be readily mixed to a uniform condition by stirring and shall meet the requirements for behaviour towards undercoats and self-lifting when tested in accordance with par. 4.14.

Note 1: *The presence of dioctyl phthalate may be determined at the discretion of the testing authority. This requirement does not preclude the use of small amounts of dibutyl phthalate as a pigment dispersant.*

4. DETAILED REQUIREMENTS

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

				Test Method	
		Min.	Max.	CGSB 1-GP-71	ASTM
4.1	Flash point, Pensky-Martens closed cup, °C	6	—	3.1	—
4.2	Consistency, Krebs units	85	—	4.5	—
4.3	Coarse particles retained on 45 µm (No. 325) sieve*, % by mass	—	0.5	—	D 185
4.4	Fineness of grind, Hegman units	5	—	—	D 1210
4.5	Volatile matter, % by mass	12	14	17.1	—
4.6	Non-volatile vehicle, % by mass	15	17	19.1	—
4.7	Pigment content, % by mass	70	72	21.1	—
4.8	Water, % by mass	—	0.5	24.1	—

**See standard CAN/CGSB-8.2.*

4.9 **Vinyl Resin Composition** — The copolymer resin used in the paint and supplied in the sample shall contain 85 to 88% by mass of vinyl chloride when tested in accordance with CGSB standard 1-GP-71, Method 82.3.

4.10 **Pigment Composition** — The pigment shall not contain less than 95% cuprous oxide and on analysis shall not yield less than 85% copper. Its total reducing power shall not be less than 97% Cu_2O to conform to ASTM D 283.

4.11 **Drying Time** — When applied by spray to produce a dry film 36 ± 4 µm thick, the paint shall dry hard in 1 h when tested in accordance with CGSB standard 1-GP-71, Method 5.1.

4.12 **Dilution Stability** — When 20 mL of the paint is mixed with 80 mL of thinner composed of equal parts by volume of toluene and methyl isobutyl ketone, and examined immediately and after 30 min, there shall be no thickening, curdling or other evidence of incompatibility when tested in accordance with CGSB standard 1-GP-71, Method 45.1.

4.13 **Resistance to Cathodic Protection** — Blasted mild steel panels, prepared, coated and exposed for 100 d to sea water immersion shall show no detectable loss of adhesion. Only intercoat blistering, between the primer and antifouling paint film, is permitted. There is no limitation on size and number of blisters within 6 mm from the scratch but beyond the 6 mm score area, the blisters must not be greater than 1.5 mm in diameter nor cover more than 5% of the surface area. Cathodic currents shall not exceed 50 µA at the end of this period when tested in accordance with CGSB standard 1-GP-71, Method 151.

4.14 **Behavior Towards Undercoats and Self-lifting**

4.14.1 One coat of paint applied to steel primed with a system of one coat of vinyl pretreatment coating conforming to CGSB standard 1-GP-121 and one coat of vinyl primer conforming to CGSB standard CAN/CGSB-1.122 shall not cause crawling, wrinkling or lifting when examined immediately and at 15 min intervals. When allowed to dry 1 h, there shall be no softening of the undercoats.

4.14.2 A second coat of the paint applied after 1 h drying of the first coat shall not cause crawling, wrinkling or lifting when examined immediately. After 24 h drying, there shall be no softening or film irregularities when tested in accordance with CGSB standard 1-GP-71, Method 133.2.

4.15 **Adhesion**

4.15.1 One coat of the paint applied over vinyl primer conforming to CAN/CGSB-1.122 shall show good adhesion after 24 h drying when subjected to the knife test.

4.15.2 A second coat of the paint, applied after 1 h drying of the first coat, shall show good adhesion to the first coat after 24 h drying when subjected to the tape test and tested in accordance with CGSB standard 1-GP-71, Method 135.4.

4.16 **Low Temperature Stability** — After exposure to -18°C for 24 h, the consistency, when measured at 25°C, shall not be more than ten units higher than the original maximum specified conforming to par. 6.2.1.

5. PREPARATION FOR DELIVERY

5.1 **Packaging** — The material shall be supplied in round, open-head containers suitably lined so that leakage will not occur within one year.

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

Name of material

Standard number: CAN/CGSB-1.123-92

Manufacturer's name and address

Manufacturer's batch number

Manufacturer's code number

Date of manufacture

Thinning instructions for spraying using the thinner conforming to CGSB standard 1-GP-124

CAUTIONARY NOTE to state that:

— the material should be kept away from flames

— paint cans should be inverted every three months.

5.3 **Packing and Marking** — Except as specified above, and unless otherwise specified (par. 7.1), normal commercial packing and marking shall be acceptable.

6. INSPECTION

6.1 **Sampling**

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

6.1.2 The supplier shall furnish a sample of the resin or resin blend (without plasticizer) used in formulating the paint.

6.2 **Testing**

6.2.1 ***Low Temperature Stability*** — Cool a sample of the paint 24 h at -18°C and then bring it back to standard temperature when tested in accordance with CGSB standard 1-GP-71, Method 31.3. After mixing, determine the consistency in accordance with CGSB standard 1-GP-71, Method 4.5.

7. NOTES

7.1 **Option** — The following option must be specified in the application of this standard:

a. Packing and marking details, if normal commercial practice is not suitable (par. 5.3).

7.2 **Intended Uses** — Material to this standard is intended as an antifouling coating for ships' bottoms. The metal surfaces must first be properly cleaned and treated with vinyl pretreatment coating conforming to CGSB standard 1-GP-121 and then coating with the appropriate type of anticorrosive primer conforming to CAN/CGSB-1.122 (depending on the type of metal surface) before the antifouling paint is applied. New wooden surfaces should be

primed with one coat of vinyl wood sealer conforming to CGSB standard 1-GP-126 prior to application of the antifouling paint. Such systems should keep the bottom free from fouling for a period of at least two years.

7.2.1 For maintenance painting, spent antifouling paint should first be removed by sandwashing and the remaining exposed sound film subsequently treated with vinyl pretreatment coating conforming to CGSB standard 1-GP-121 prior to application of a fresh coat of anticorrosive primer conforming to CAN/CGSB-1.122 and a coat of this paint. The pressure for sandwashing is 34 MPa.

7.3 **Related Publications**

7.3.1 CGSB standards:

As to system:

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

CAN/CGSB-1.122 — Anticorrosive Vinyl Primer

CAN/CGSB-1.126 — Vinyl Sealer for Wood.

As to use:

1-GP-124 — Thinner for Vinyl Coatings.

7.3.2 U.S. Military Specification

MIL-P-15931E — Paint, Antifouling, Vinyl (Formulas No. 121 and No. 129).

7.4 **Sources of Referenced Publications**

7.4.1 The publications referred to in par. 2.1.1 and 7.3.1 may be obtained from the Canadian General Standards Board, Sales Unit, Ottawa, Canada KlA 1G6. Telephone: (819) 956-0425 or 956-0426. Fax (819) 956-5644.

7.4.2 The publications referred to in par. 2.1.2 may be obtained from ASTM, 1916 Race Street, Philadelphia, PA 19103, U.S.A. or from Standards Council of Canada, Standards Sales Branch, 45 O'Connor Street, Suite 1200, Ottawa, Ontario K1P 6N7.

7.4.3 The publication referred to in par. 7.3.2 may be obtained from the Naval Publications and Forms Center, 5801 Tabor Avenue, Philadelphia, PA 19120, U.S.A.

A1. REFERENCE FORMULA

A1.1 The reference formula shown below has been found to perform satisfactorily and, if the ingredients are properly incorporated and milled, it meets the requirements of this standard. The formula given is slightly in excess of 400 L to allow for normal manufacturing losses.

Ingredients	kg/400 L	% by mass
Cuprous oxide	172.2	70.1
Rosin	26.5	10.8
Vinyl resin (Note A1)	6.6	2.7
DOP	6.0	2.45
MIBK	19.8	8.0
Toluene	13.7	5.6
ASA (Note A2)	0.6–1.1(0.8)	0.24–0.45(0.35)

Note A1: *Typical Properties are: vinyl chloride-vinyl acetate copolymer containing 85–88% vinyl chloride and 12–15% vinyl acetate; relative density 1.35 to 1.37 and not less than 98% passing through an* 850 µm *(No. 20) sieve; intrinsic viscosity 0.53 in cyclohexanone* (1 g/100 mL).

Note A2: *To meet the requirements of par. 3.4, sufficient antisettling agent should be included to prevent hard settling of the pigment.*