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Standards Board

Office des normes
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Series 1
Série des 1

WITHDRAWAL

October 2011

Selected standards in the series Paints, pigments and related products

These CGSB standards and National Standards of Canada are hereby withdrawn due to limited use and support for their revision.

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 2011

Sélection de normes de la série Peintures, pigments et produits connexes

Ces normes de l'ONGC et ces Normes nationales du Canada sont retirées par le présent avis en raison de leur utilisation limitée et du manque de support pour leur révision.

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CAN/CGSB-1.5-M91

Low Flash Petroleum Spirits Thinner
(ICS 87.040)

CAN/CGSB-1.28-98

Exterior Alkyd House Paint (ICS 87.040)

CAN/CGSB-1.36-97

General Purpose Interior Alkyd Varnish
(ICS 87.040)

CAN/CGSB-1.38-2000

Interior Enamel Undercoater (ICS 87.040)

CAN/CGSB-1.40-97

Anticorrosive Structural Steel Alkyd Primer
(ICS 87.040)

CAN/CGSB-1.57-2003

Interior Alkyd Semigloss Enamel
(ICS 87.040)

CAN/CGSB-1.59-97

Alkyd Exterior Gloss Enamel (ICS 87.040)

CAN/CGSB-1.60-97

Interior Alkyd Gloss Enamel (ICS 87.040)

cette information. Ces normes doivent être consultées à des fins archivistiques seulement puisque leur contenu a été révoqué à la date du présent avis de retrait.

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CAN/CGSB-1.5-M91

Diluant, essence minérale à faible point
d'éclair (ICS 87.040)

CAN/CGSB-1.28-98

Peinture aux résines alkydes d'extérieur
pour bâtiments (ICS 87.040)

CAN/CGSB-1.36-97

Vernis d'intérieur aux résines alkydes
d'usage général (ICS 87.040)

CAN/CGSB-1.38-2000

Peinture-émail d'intérieur, pour couche de
fond (ICS 87.040)

CAN/CGSB-1.40-97

Peinture pour couche primaire
anticorrosion, aux résines alkydes, pour
acier de construction (ICS 87.040)

CAN/CGSB-1.57-2003

Peinture-émail, d'intérieur, semi-brillante,
aux résines alkydes (ICS 87.040)

CAN/CGSB-1.59-97

Peinture-émail, d'extérieur, brillante, aux
résines alkydes (ICS 87.040)

CAN/CGSB-1.60-97

Peinture-émail brillante d'intérieur aux
résines alkydes (ICS 87.040)

CAN/CGSB-1.61-2004

Exterior and Interior Marine Alkyd Enamel
(ICS 87.040)

CAN/CGSB-1.69-98

Aluminum Paint (ICS 87.040)

1-GP-71 (Oct 1983)

Methods of Testing Paints and Pigments
(ICS 87.040)

1-GP-71

Methods of Testing Paints and Pigments

No. 5-96

Drying Times of Paints and Related
Coatings (ICS 87.040)

No. 38-96

Blushing Resistance of Lacquer
Finishes (ICS 87.040)

No. 73-96

Beilstein Test for Chlorinated Solvents
(ICS 87.040)

CAN/CGSB-1.73-97

Exterior and Interior Enamel for Floors
(ICS 87.040)

CAN/CGSB-1.74-2001

Alkyd Traffic Paint (ICS 87.040)

CAN/CGSB-1.76-2000

Interior and Exterior Heat-Resistant Enamel
(ICS 87.040)

CAN/CGSB-1.81-M90

Air Drying and Baking Alkyd Primer for
Vehicles and Equipment (ICS 87.040)

CAN/CGSB-1.84-M91

Alkyd Primer for Hardwood (ICS 87.040)

CAN/CGSB-1.61-2004

Peinture-émail aux résines alkydes,
d'extérieur et d'intérieur, marine
(ICS 87.040)

CAN/CGSB-1.69-98

Peinture à l'aluminium (ICS 87.040)

1-GP-71 (oct. 1983)

Méthodes d'essai des peintures et pigments
(ICS 87.040)

1-GP-71

Méthodes d'essai des peintures et pigments

N° 5-96

Durée de séchage des peintures et
revêtements apparentés (ICS 87.040)

N° 38-96

Résistance à l'opalescence des
produits-laque de finition (ICS 87.040)

N° 73-96

Détermination de la présence de
solvants chlorés par l'essai de Beilstein
(ICS 87.040)

CAN/CGSB-1.73-97

Peinture-émail d'extérieur et d'intérieur,
pour sols (ICS 87.040)

CAN/CGSB-1.74-2001

Peinture alkyde de démarcation routière
(ICS 87.040)

CAN/CGSB-1.76-2000

Peinture-émail résistant à la chaleur,
d'intérieur et d'extérieur (ICS 87.040)

CAN/CGSB-1.81-M90

Peinture pour couche primaire aux résines
alkydes, séchant à l'air ambiant et au four,
pour véhicules automobiles et équipement
(ICS 87.040)

CAN/CGSB-1.84-M91

Peinture d'impression aux résines alkydes,
pour bois dur (ICS 87.040)

CAN/CGSB-1.88-92

Gloss Alkyd Enamel, Air Drying and Baking
(ICS 87.040)

CAN/CGSB-1.100-99

Interior Flat Latex Paint (ICS 87.040)

CAN/CGSB-1.104-M91

Semigloss Alkyd Air Drying and Baking
Enamel (ICS 87.040)

CAN/CGSB-1.105-M91

Quick-Drying Primer (ICS 87.040)

CAN/CGSB-1.114-M91

Quick-Drying Flat Enamel (ICS 87.040)

CAN/CGSB-1.118-95

Interior Flat Alkyd Finish (ICS 87.040)

CAN/CGSB-1.119-2000

Interior Latex Primer-Sealer (ICS 87.040)

CAN/CGSB-1.122-99

Anticorrosive Vinyl Primer (ICS 87.040)

CAN/CGSB-1.132-M90

Zinc Chromate Primer, Low Moisture
Sensitivity (ICS 87.040)

CAN/CGSB-1.135-99

Flat Alkyd Enamel for Equipment
(ICS 87.040)

CAN/CGSB-1.138-97

Exterior Latex Flat Paint (ICS 87.040)

CAN/CGSB-1.143-98

Silicone Alkyd Heat-Resistant Aluminum
Enamel (ICS 87.040)

CAN/CGSB-1.88-92

Peinture-émail brillante aux résines alkydes,
séchant à l'air ambiant et au four
(ICS 87.040)

CAN/CGSB-1.100-99

Peinture-émulsion mate d'intérieur
(ICS 87.040)

CAN/CGSB-1.104-M91

Peinture-émail semi-brillante aux résines
alkydes séchant à l'air ambiant et au four
(ICS 87.040)

CAN/CGSB-1.105-M91

Peinture pour couche primaire à séchage
rapide (ICS 87.040)

CAN/CGSB-1.114-M91

Peinture-émail mate à séchage rapide
(ICS 87.040)

CAN/CGSB-1.118-95

Peinture de finition mate d'intérieur aux
résines alkydes (ICS 87.040)

CAN/CGSB-1.119-2000

Peinture-émulsion d'impression d'intérieur
(ICS 87.040)

CAN/CGSB-1.122-99

Peinture pour couche primaire, aux résines
vinyliques, anticorrosion (ICS 87.040)

CAN/CGSB-1.132-M90

Peinture pour couche primaire, au chromate
de zinc, à faible sensibilité à l'humidité
(ICS 87.040)

CAN/CGSB-1.135-99

Peinture-émail mate aux résines alkydes
pour équipement (ICS 87.040)

CAN/CGSB-1.138-97

Peinture-émulsion (latex) mate, d'extérieur
(ICS 87.040)

CAN/CGSB-1.143-98

Peinture-émail aux résines silicones-
alkydes résistante à la chaleur (ICS 87.040)

CAN/CGSB-1.145-97

Solvent-Based Pigmented Stain
(ICS 87.040)

CAN/CGSB-1.146-99

Cold Curing, Gloss Epoxy Coating
(ICS 87.040)

CAN/CGSB-1.150-M91

Clear Lacquer for Wood Furniture
(ICS 87.040)

CAN/CGSB-1.153-2000

High-Build, Gloss Epoxy Coating
(ICS 87.040)

CAN/CGSB-1.154-M89

Latex Type Paint for Concrete Floors
(ICS 87.040)

CAN/CGSB-1.158-M89

Cellulose Nitrate Primer, Modified Alkyd
Type (ICS 87.040)

CAN/CGSB-1.159-92

Acrylic Cellulose Nitrate Gloss Lacquer
(ICS 87.040)

CAN/CGSB-1.160-93

Low Gloss Acrylic Cellulose Nitrate
Lacquer (ICS 87.040)

CAN/CGSB-1.162-2004

Emulsion Coating for Stucco and Masonry
(ICS 87.040)

CAN/CGSB-1.165-2004

Cold-Curing Epoxy Primer (ICS 87.040)

CAN/CGSB-1.171-98

Inorganic Zinc Coating (ICS 87.040)

CAN/CGSB-1.175-97

Polyurethane Interior Coating (ICS 87.040)

CAN/CGSB-1.145-97

Teinture pigmentée à base de solvant
(ICS 87.040)

CAN/CGSB-1.146-99

Revêtement aux résines époxydiques,
durcissant à froid, brillant (ICS 87.040)

CAN/CGSB-1.150-M91

Vernis-laque pour meubles en bois
(ICS 87.040)

CAN/CGSB-1.153-2000

Revêtement par peinture aux résines
époxydiques, à pouvoir garnissant élevé,
brillant (ICS 87.040)

CAN/CGSB-1.154-M89

Peinture-émulsion (latex) pour sols en béton
(ICS 87.040)

CAN/CGSB-1.158-M89

Peinture-laque pour couche primaire, au
nitrate de cellulose et aux résines alkydes
modifiées (ICS 87.040)

CAN/CGSB-1.159-92

Produit-laque brillant à la résine acrylique et
au nitrate de cellulose (ICS 87.040)

CAN/CGSB-1.160-93

Peinture-laque aux résines acryliques et au
nitrate de cellulose, peu brillante
(ICS 87.040)

CAN/CGSB-1.162-2004

Revêtement de type émulsion pour stuc et
maçonnerie (ICS 87.040)

CAN/CGSB-1.165-2004

Peinture pour couche primaire aux résines
époxydiques, durcissant à froid
(ICS 87.040)

CAN/CGSB-1.171-98

Enduit au zinc minéral (ICS 87.040)

CAN/CGSB-1.175-97

Revêtement de polyuréthane d'intérieur
(ICS 87.040)

CAN/CGSB-1.176-2000

Interior Clear Moisture-Curing Polyurethane Coating (ICS 87.040)

CAN/CGSB-1.177-M91

Two-Component Polyurethane Coating, Resistant to Chalking and Yellowing (ICS 87.040)

1-GP-180Ma (Feb 1996)

Coating, Polyurethane, Two-Package, General Purpose (ICS 87.040)

CAN/CGSB-1.181-99

Ready-Mixed Organic Zinc-Rich Coating (ICS 87.040)

CAN/CGSB-1.183-99

Zinc-Rich Epoxy Coating (ICS 87.040)

CAN/CGSB-1.184-98

Coal Tar-Epoxy Coating (ICS 87.040)

CAN/CGSB-1.188-2004

Emulsion Filler for Masonry Block (ICS 87.040)

CAN/CGSB-1.189-2000

Exterior Alkyd Primer for Wood (ICS 87.040)

CAN/CGSB-1.190-M90

Sanding Type Primer Surfacer (ICS 87.040)

1-GP-191M (Apr 1980)

Enamel, Automotive Refinishing, Fast Drying, Gloss (ICS 87.040)

1-GP-192Ma (Feb 1985)

Deck Coating, Nonslip, Epoxy (ICS 87.040)

CAN/CGSB-1.176-2000

Revêtement de polyuréthane, d'intérieur, durci à l'humidité, non pigmenté (ICS 87.040)

CAN/CGSB-1.177-M91

Revêtement de polyuréthane, à deux constituants séparés, non jaunissant et non farinant (ICS 87.040)

1-GP-180Ma (févr. 1996)

Revêtement de polyuréthane, à deux constituants séparés, pour utilisation générale (ICS 87.040)

CAN/CGSB-1.181-99

Enduit riche en zinc, organique et préparé (ICS 87.040)

CAN/CGSB-1.183-99

Enduit aux résines époxydiques, riche en zinc (ICS 87.040)

CAN/CGSB-1.184-98

Revêtement à base de goudron de houille-résines époxydiques (ICS 87.040)

CAN/CGSB-1.188-2004

Apprêt-émulsion pour blocs de maçonnerie (ICS 87.040)

CAN/CGSB-1.189-2000

Peinture d'impression, d'extérieur, aux résines alkydes, pour le bois (ICS 87.040)

CAN/CGSB-1.190-M90

Peinture pour couche primaire surfaçante de type ponçable (ICS 87.040)

1-GP-191M (avr. 1980)

Peinture-émail brillante, à séchage rapide, pour le repeinture des carrosseries de véhicules automobiles (ICS 87.040)

1-GP-192Ma (févr. 1985)

Revêtement de pont, antidérapant, aux résines époxydiques (ICS 87.040)

CAN/CGSB-1.193-99

High-Build Epoxy Marine Coating
(ICS 87.040)

CAN/CGSB-1.195-99

Interior Latex Semigloss Paint (ICS 87.040)

CAN/CGSB-1.198-2001

Cementitious Primer for Galvanized
Surfaces (ICS 87.040)

1-GP-200Ma (Jan 1985)

Deck Coating, Nonslip, Polyurethane
(ICS 87.040)

CAN/CGSB-1.202-2003

Interior Alkyd Low Gloss Enamel
(ICS 87.040)

CAN/CGSB-1.203-2003

Exterior Latex Wood Primer (ICS 87.040)

CAN/CGSB-1.204-98

Exterior Latex Pigmented Stain
(ICS 87.040)

CAN/CGSB-1.205-2003

Sealer for Application to Asbestos-Fibre
Releasing Materials (ICS 87.040)

CAN/CGSB-1.207-98

Low-Temperature Curing Epoxy Coating
(ICS 87.040)

CAN/CGSB-1.208-99

Marine Interior Water-Borne Gloss Enamel
(ICS 87.040)

CAN/CGSB-1.209-2003

Interior Latex Low Gloss Paint (ICS 87.040)

CAN/CGSB-1.210-2003

Quick-Drying Alkyd Primer for Structural
Steel (ICS 87.040)

CAN/CGSB-1.193-99

Revêtement aux résines époxydiques, à
pouvoir garnissant élevé, marin
(ICS 87.040)

CAN/CGSB-1.195-99

Peinture-émulsion semi-brillante d'intérieur
(ICS 87.040)

CAN/CGSB-1.198-2001

Peinture primaire additionnée de ciment,
pour surfaces galvanisées (ICS 87.040)

1-GP-200Ma (janv. 1985)

Revêtement de pont, antidérapant, aux
résines polyuréthanes (ICS 87.040)

CAN/CGSB-1.202-2003

Peinture-émail d'intérieur, aux résines
alkydes, peu brillante (ICS 87.040)

CAN/CGSB-1.203-2003

Peinture-émulsion (latex) d'impression
extérieure, pour bois (ICS 87.040)

CAN/CGSB-1.204-98

Teinture-émulsion pigmentée pour extérieur
(ICS 87.040)

CAN/CGSB-1.205-2003

Peinture d'obturation pour matériaux
renfermant des fibres d'amiante
(ICS 87.040)

CAN/CGSB-1.207-98

Revêtement aux résines époxydiques
durcissant à basse température
(ICS 87.040)

CAN/CGSB-1.208-99

Peinture-émail brillante en suspension
aqueuse, marine, d'intérieur (ICS 87.040)

CAN/CGSB-1.209-2003

Peinture-émulsion d'intérieur peu brillante
(ICS 87.040)

CAN/CGSB-1.210-2003

Peinture primaire aux résines alkydes à
séchage rapide pour acier de charpente
(ICS 87.040)

CAN/CGSB-1.211-95

Coating Systems for Marine Floating Navigational Aids (Buoys) (ICS 87.040)

CAN/CGSB-1.212-2004

Heavy-Metal-Free Marine Primer for Steel and Light-Alloy Surfaces (ICS 87.040)

CAN/CGSB-1.213-2004

Etch Primer (Pretreatment Coating or Tie Coat) for Steel and Aluminum (ICS 87.040)

CAN/CGSB-1.214-2004

Heavy-Metal-Free, Water-Borne, Marine Primer for Steel and Light-Alloy Surfaces (ICS 87.040)

CAN/CGSB-1.215-96

Two-Package Epoxy Blockfiller (ICS 87.040)

CAN/CGSB-1.216-97

Exterior Water-Borne Gloss Enamel (ICS 87.040)

CAN/CGSB-1.219-2001

Lead and Chromate-Free Waterborne Traffic Paint (ICS 87.040)

CAN/CGSB-1.220-2001

Lead and Chromate-Free Alkyd Traffic Paint (ICS 87.040)

CAN/CGSB-1.223-2004

Heavy-Metal-Free, Water-Borne Wash Primer-Tie Coat (ICS 87.040)

CAN/CGSB-1.300-2000

Applied Coating System of Semigloss Baked Finish for Metal Office Furniture (ICS 87.040)

CAN/CGSB-1.500-75

Methods for Test for Toxic Trace Elements in Protective Coatings (ICS 87.040)

CAN/CGSB-1.211-95

Systèmes de revêtement pour aides à la navigation flottantes (bouées) (ICS 87.040)

CAN/CGSB-1.212-2004

Peinture primaire sans métal lourd, marine, pour surfaces en acier et en alliage léger (ICS 87.040)

CAN/CGSB-1.213-2004

Peinture primaire réactive (enduit de traitement préliminaire ou couche de liaison) pour l'acier et l'aluminium (ICS 87.040)

CAN/CGSB-1.214-2004

Peinture primaire, sans métal lourd, en suspension aqueuse, marine, pour surfaces en acier et en alliage léger (ICS 87.040)

CAN/CGSB-1.215-96

Apprêt pour blocs aux résines époxydiques en deux constituants (ICS 87.040)

CAN/CGSB-1.216-97

Peinture-émail brillante d'extérieur en suspension aqueuse (ICS 87.040)

CAN/CGSB-1.219-2001

Peinture à l'eau de démarcation routière sans plomb ni chromate (ICS 87.040)

CAN/CGSB-1.220-2001

Peinture alkyde de démarcation routière sans plomb ni chromate (ICS 87.040)

CAN/CGSB-1.223-2004

Peinture primaire réactive – Couche de liaison, sans métal lourd, en suspension aqueuse (ICS 87.040)

CAN/CGSB-1.300-2000

Système de revêtement de finition semi-brillant, cuit au four, pour meubles métalliques de bureau (ICS 87.040)

CAN/CGSB-1.500-75

Méthodes d'essai des éléments toxiques à l'état de trace dans les revêtements protecteurs (ICS 87.040)

CAN/CGSB-1.501-M89

Method for Permeance of Coated
Wallboard (ICS 87.040)

CAN/CGSB-1.501-M89

Méthode de détermination de la perméance
des panneaux muraux revêtus (ICS 87.040)



Canadian
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CAN/CGSB-1.193-99

Supersedes 1-GP-193Ma
November 1983

High-Build Epoxy Marine Coating

National Standard of Canada

Canada



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The principal objectives of the Council are to foster and promote voluntary standardization as a means of advancing the national economy, benefiting the health, safety and welfare of the public, assisting and protecting the consumer, facilitating domestic and international trade, and furthering international co-operation in the field of standards.

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Approval of a standard as a National Standard of Canada indicates that a standard conforms to the criteria and procedures established by the Standards Council of Canada. Approval does not refer to the technical content of the standard; this remains the continuing responsibility of the accredited standards-development organization.

Those who have a need to apply standards are encouraged to use National Standards of Canada whenever practicable. These standards are subject to periodic review; therefore, users are cautioned to obtain the latest edition from the organization preparing the standard.

The responsibility for approving National Standards of Canada rests with the:

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HIGH-BUILD EPOXY MARINE COATING

Prepared by the
Canadian General Standards Board 

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CANADIAN GENERAL STANDARDS BOARD

HIGH-BUILD EPOXY MARINE COATING

1. SCOPE

- 1.1 This standard applies to a two-component high-build epoxy coating suitable for application over epoxy or inorganic zinc-rich primer to provide exterior and interior protection to steel and other surfaces, except wood, under conditions of marine atmosphere or severe industrial environments.
- 1.2 This coating is intended for interior and exterior use and primarily for the protection of steel surfaces but may also be used to protect suitably treated galvanized steel, suitably treated aluminum, masonry and concrete surfaces.
- 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 applicable regulatory requirements prior to its use.

2. REFERENCED PUBLICATIONS

- 2.1 The following publications are referenced in this standard:
 - 2.1.1 Canadian General Standards Board (CGSB)
1-GP-71 — Methods of Testing Paints and Pigments
CAN/CGSB-1.171 — Inorganic Zinc Coating.
 - 2.1.2 Health Canada
Hazardous Products (Liquid Coating Materials Regulations) Act.
 - 2.1.3 American Society for Testing and Materials (ASTM)
D 1210 — Standard Test Method for Fineness of Dispersion of Pigment-Vehicle Systems by Hegman-Type Gage
D 1212 — Standard Test Method for Measurement of Wet Film Thickness by Notch Gages
D 3359 — Standard Test Methods for Measuring Adhesion by Tape Test
D 3960 — Standard Practice for Determining Volatile Organic Compound (VOC) Content of Paints and Related Coatings
D 4587 — Standard Practice for Conducting Tests on Paint and Related Coatings and Materials Using a Fluorescent UV-Condensation Light- and Water-Exposure Apparatus.
 - 2.1.4 U.S. General Services Administration
Federal Standard
595B — Colors Used in Government Procurement.
- 2.2 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 this standard. The sources are given in the Notes section.

3. GENERAL REQUIREMENTS

- 3.1 The coating shall consist of a pigmented resin component and a curing agent component.
- 3.2 When stored in their respective original unopened containers for one year from date of shipment at temperatures between 5° and 30°C, the components shall be readily mixed to a uniform condition by stirring. When the components are mixed together, the mixture shall meet the requirements for drying time as specified in par. 4.1 and for applicability and appearance, par. 4.9.
- 3.3 This coating shall be supplied in white and light grey colours conforming to the U.S. Federal Standard 595B colour or to an adequately defined commercial colour specified (par. 7.1). If deeper or other shades are required, it is advisable to check with the manufacturer to see if such a colour is available.
- 3.4 **Toxic Elements** — The paint shall be manufactured to conform to the requirements of the *Hazardous Products (Liquid Coating Materials Regulations) Act* for designated toxic elements.

4. DETAILED REQUIREMENTS

When mixed as described in par. 3.2 and applied in accordance with par. 6.2.1, the coating shall comply with the following detailed requirements:

		Test Method			
		Min.	Max.	CGSB 1-GP-71	ASTM
4.1	Drying time of 12.0 ± 10 µm, dry film				
	Set-to-touch, h	—	2	No. 5, Method A	—
	Complete cure, d	—	7	No. 5, Method C (Par. 6.2.2)	—
	Low-temperature cure, d	—	21	No. 5, Method C (Par. 6.2.3)	—
4.2	Hardness, Barcol	75	—	100.1 (Par. 6.2.4)	—
4.3	Finess of grind, Hegman	3	—	—	D 1210
4.4	Volatile matter, % by mass of the mixed material	—	25	17.1	—
4.5	60° gloss of 125.0 ± 10 µm, dry film	25	—	13.2	—
4.6	Volatile organic compound (VOC), g/L	—	350	—	D 3960 (Method 2)
4.7	Hiding Power — When applied by drawdown blade to a hiding power chart at a dry film thickness of 125 ± 10 µm, the coating shall completely hide the contrasting squares when tested in accordance with CGSB standard 1-GP-71, Method 14.1.				
4.8	Sag Resistance — When applied at a dry film thickness of 125 ±10 µm, the coating shall show no evidence of sagging or flowing back over the uncoated area when tested in accordance with par. 6.2.5.				
4.9	Applicability and Appearance — When applied as recommended by the manufacturer, the coating shall spray satisfactorily at a wet film thickness of 200 to 250 µm in one full coat and shall show no appreciable bubbling, cratering, sagging or crawling when tested in accordance with par. 6.2.6.				

- 4.10 **Adhesion** — When subjected to the tape adhesion test (Method A of ASTM D 3359 and par. 6.2.2), the cured film shall show good adhesion to inorganic zinc primer complying with CAN/CGSB-1.171.
- 4.11 **Impact Resistance** — When subjected to a direct impact of 5.3 J at room temperature, the cured film shall show no loosening, cracking, flaking or chipping when tested in accordance with par. 6.2.7.
- 4.12 **Salt Spray Corrosion Resistance** — When applied over inorganic zinc-primed steel panels, scored and unscored films shall show no loss of adhesion, no more than a few No. 8 blisters or other defects when exposed 50 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 more than 3 mm undercreepage in the score lines when tested in accordance with par. 6.2.8.
- 4.13 **Accelerated Weathering Resistance** — There shall not be more than No. 6 ASTM chalking when examined in accordance with CGSB standard 1-GP-71, Method 122.1 and par. 6.2.9. There shall be no checking, cracking or appreciable colour change when tested in accordance with par. 6.2.9.
- 4.14 **Fresh Water Immersion** — When applied over inorganic zinc-primed steel panels, the film shall show no evidence of blistering, loss of adhesion and no corrosion of the substrate when immersed 50 d in water at 40°C and tested in accordance with CGSB standard 1-GP-71, Method 110.1 and par. 6.2.2.
- 4.15 **Resistance to Salt Water and Aromatic Fuel** — When applied over inorganic zinc-primed steel panels, the film shall show no blistering, loss of adhesion or corrosion of the substrate when exposed 50 d in synthetic sea water followed by 15 d in aromatic fuel and tested in accordance with par. 6.2.10.

5. PREPARATION FOR DELIVERY

- 5.1 Unless otherwise specified (par. 7.1), normal commercial packing and marking shall be acceptable.
- 5.2 **Labelling** — In addition to complying with 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-1.193-99

NATO stock number (if applicable)

Manufacturer's name and address

Manufacturer's batch number

Manufacturer's code number (if applicable)

Date of manufacture

Instructions for use:

- Mixing: Specified by the manufacturer
- Induction Period: Specified by the manufacturer
- Pot Life: Specified by the manufacturer
- Thinning: According to the manufacturer's instructions
- Application Conditions: Temperature and humidity conditions to be specified by manufacturer in accordance with par. 7.4

Cautionary Notes:

- contact with skin should be avoided
- the material shall be applied under conditions of adequate ventilation
- the material shall be stored at temperatures between 5° and 30°C
- the liquid components are flammable if exposed to sparks and open flame.

- 5.3 The supplier is required to fill the containers so that the contents of one container of the curing agent, when mixed with the total contents of one container of the resin component, shall constitute one unit.

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** — Unless otherwise specified, conduct all tests on the type of panel called for in the applicable CGSB standard 1-GP-71 or ASTM method, except that the induction period shall be up to 1 h. Only one coat shall be applied, the dry film thickness shall be $125 \pm 10 \mu\text{m}$, and the film shall be cured 7 d at $23 \pm 2^\circ\text{C}$ before testing.
- 6.2.2 **Complete Cure** — Use CGSB standard 1-GP-71, No. 5, Method C, allowing the methyl isobutyl ketone (MIBK) to remain in contact with the film for 1 h.
- 6.2.3 **Low Temperature Cure** — Use CGSB standard 1-GP-71, No. 5, Method C, except mix the material at 23°C , apply and cure at 12°C , and expose the film at 12°C to the MIBK solvent for 1 h.
- 6.2.4 **Hardness, Barcol** — Apply the material in two coats to steel panels in accordance with CGSB standard 1-GP-71, Method 100.1, for a total dry film thickness of $225 \pm 25 \mu\text{m}$, allowing 24 h drying between coats. After drying for an additional 7 d, test the film for hardness with a Type GYZG-935 or GYZG-936 Barcol Impressor. In the event of dispute the Type GYZG-936 Impressor shall be the referee instrument.
- 6.2.5 **Sag Resistance** — Press a strip of 25 mm wide masking tape across the full width of a solvent-cleaned 75×150 mm cold-rolled steel panel, parallel to, and centred on, the shorter axis of the panel. Spray the mixed material on to the panel to a wet film thickness of $225 \pm 25 \mu\text{m}$, measured in accordance with ASTM D 1212. Immediately after applying the material, carefully remove the masking tape and stand the panel in a vertical position with the bare strip horizontal in a conditioned room in accordance with CGSB standard 1-GP-71, Method 103.1. After 4 h, examine the panel for sagging or running of the coating into the bare uncoated area. Sagging or running of the coating shall constitute a failure.
- 6.2.6 **Applicability and Appearance** — Using a 0.6×0.9 m cleaned steel panel complying with CGSB standard 1-GP-71, Method 100.2, spray with Type 1 inorganic zinc primer in accordance with CAN/CGSB-1.171 to a dry film thickness of approximately $65 \mu\text{m}$. After allowing the inorganic zinc primer to cure for at least 7 d under humid conditions (over 60% or in fog room), and a temperature of $23 \pm 2^\circ\text{C}$, apply by spray a mist coat of the material under test, thinned if necessary, then a full coat 5 to 10 min later in accordance with the manufacturer's instructions. Immediately, measure the wet film thickness in accordance with ASTM D 1212 of the applied coat. After curing, examine for bubbling, sagging, pinholing or other defects.
- 6.2.7 **Impact Resistance** — Prepare panels as described in par. 6.2.6 using blast-cleaned 100×150 mm cold-rolled steel panels, SAE 1010 conforming to CGSB standard 1-GP-71, Method 100.2. Determine the impact resistance in accordance with CGSB standard 1-GP-71, Method 147.1. After the film in the impact area has been subjected to the specified minimum impact, examine the impact area under $10\times$ magnification.
- 6.2.8 **Salt Spray Corrosion Resistance** — Prepare grit-blasted 100×150 mm panels complying with CGSB standard 1-GP-71, Method 100.2 in accordance with par. 6.2.6 and expose to the salt spray test in accordance with CGSB standard 1-GP-71, Method 129.1.
- 6.2.9 **Accelerated Weathering Resistance** — Prepare grit-blasted 75×100 mm panels in accordance with par. 6.2.6. Protect the back and edges with a suitable corrosion-resistant coating. Apply two coats of the coating to each of two primed (see CGSB 1-GP-71, Method 122.4.) Seven days after the application of the high-build epoxy, test in accordance with ASTM D 4587 using UVA 340 lamps. The operating cycle shall be 4 h UV at 60°C followed by 4 h of condensation at 50°C for a duration of 30 d.
- 6.2.10 **Resistance to Salt Water and Aromatic Fuel** — Prepare panels as described in par. 6.2.9. Seven days after the application of the high-build epoxy, totally immerse the coated panels in aerated synthetic sea water in accordance with CGSB standard 1-GP-71, Method 113.1 for 50 d. Immediately after the panels that were subjected to salt water immersion have been examined, totally immerse them for 15 d in standard hydrocarbon test fluid¹ contained in a

¹ Composition of hydrocarbon test fluid (% by volume): iso-octane — 60, toluene — 25, xylene — 15.

covered beaker at a temperature of $23 \pm 2^{\circ}\text{C}$. After the immersion period, examine the panels for compliance with the requirement specified in par. 4.15.

7. NOTES

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

- a. Colour (par. 3.3)
- b. Packing and marking details, if normal commercial practice is not suitable (par. 5.1).

7.2 **Surface Preparation (Concrete)** — Concrete block, concrete and brick should have all loose material removed and any large holes or cracks filled with material conforming to CAN/CGSB-1.215.

7.3 **Types of Primers** — Metal surfaces should first be primed with one of the following primers conforming to CGSB standards as recommended by the manufacturer:

- a. Low Temperature Conditions: CAN/CGSB-1.171 and CAN/CGSB-1.207
- b. Normal Conditions: CAN/CGSB-1.165, CAN/CGSB-1.171, CAN/CGSB-1.183 and CAN/CGSB-1.207.

7.4 Recommended Practice

- 7.4.1 This coating is suitable for low-temperature curing conditions and for spray application of film with a wet film thickness of 200 to 250 μm . When applied over inorganic zinc conforming to CAN/CGSB-1.171, it will provide excellent protection in environments involving fresh water, sea water, tidal and splash zones exposure to high humidity and condensation, and exposure to brine, alkalies and chemical fumes.
- 7.4.2 Epoxy coatings complying with this standard should be used as directed by the manufacturer. Regardless of stated pot life, fresh material should not be mixed with previously mixed material.
- 7.4.3 Coatings should be applied to a dry film thickness of 100 to 150 μm per coat. No paint shall be applied when the substrate temperature is less than 3°C above the dew point as atmospheric conditions affect the curing time, pot life and appearance. If the relative humidity at the time of application is above 85%, blushing may occur.
- 7.4.4 With these coatings, a slick² may sometimes appear. This should be washed off with a solution of one part methyl alcohol in nine parts of water, but care should be taken to prevent staining of adjacent areas. Washing to remove the slick does not impair surface properties of the coating. Removal of the slick is especially important before recoating.
- 7.4.5 To protect the worker's skin and health, the epoxy coating should be applied under conditions of adequate ventilation and hygienic measures strictly according to the manufacturer's instructions.
- 7.4.6 These materials contain volatile flammable solvents. Proper precautions should therefore be taken to eliminate the possibility of sparks or open flame being present during application and while the material is drying. Good ventilation is essential.
- 7.4.7 Roll or brush application of epoxy coatings is somewhat difficult, and the final finish will be less uniform than when applied by spray. Rolling or brushing should be restricted to small areas (touch up) when application by spray is not practical. When applying this coating by brush or roller, care must be taken to avoid air entrapment.
- 7.5 **Storage** — The epoxy coating components should be stored between 5° and 30°C . Under no circumstances should they be subjected to temperatures above 50°C .
- 7.6 **Equipment and Cleaning**
 - 7.6.1 This material is normally applied with natural bristle brushes conforming with CGSB specification 22.1, rollers conforming with CGSB specification 22.42, Type 1, or spray equipment as recommended by the manufacturer. Selection of equipment is important as some synthetic materials are attacked by the solvents used in epoxy coatings.

² A slick is an oilness or stickiness of the surface of the film.

7.6.2 Caution should be taken to clean equipment thoroughly at regular intervals and immediately after use with thinner conforming to CAN/CGSB-1.110 or CAN/CGSB-1.197. Cleaning with solvents must be followed by a soap and water rinse to remove residual material since the coating will cure even though immersed in solvents.

7.7 For further information on the proper methods of preparing and applying marine coating, see CAN/CGSB-85.10.

7.8 **Related Publications**

7.8.1 Canadian General Standards Board (CGSB)

CAN/CGSB-1.110 — Thinner, General Purpose, for Lacquers

CAN/CGSB-1.165 — Primer, Epoxy, Cold-Curing

CAN/CGSB-1.183 — Coating, Zinc-Rich, Epoxy

CAN/CGSB-1.197 — Thinner for Epoxy Coatings

CAN/CGSB-1.207 — Low-Temperature Curing Epoxy Coating

CAN/CGSB-1.215 — Two-Package Epoxy Blockfiller

22.1 — Flat Hog-Bristle Brushes for Paint, Varnish, Enamel and Lacquer

22.42 — Paint Rollers and Accessories

CAN/CGSB-85.10 — Protective Coatings for Metals.

7.9 **Sources of Referenced Publications**

7.9.1 The publications referred to in par. 2.1.1 and 7.8.1 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.

7.9.2 The publication referred to in par. 2.1.2 may be obtained from Health Canada, Product Safety Bureau, Jeanne Mance Building, 12th floor, Tunney's Pasture, Ottawa, Canada, K1A 0K9. Telephone (613) 957-4467. Fax (613) 952-3039.

7.9.3 The publications referred to in par. 2.1.3 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 1-800-854-7179.

7.9.4 The publication referred to in par. 2.1.4 may be obtained from the Global Info Centre Canada, 240 Catherine Street, Suite 305, Ottawa, Ontario K2P 2G8. Telephone (613) 237-4250 or 1-800-854-7179.
