



CARICOM Regional Standard

Paints- Water-borne coatings – Specification

DCRS 47: 201X

CARICOM Regional Organisation for Standards and Quality, CROSQ

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Committee representation

This CARICOM Regional Standard was developed under the supervision of the Regional Project Team for Paints, (hosted by the CARICOM Member State, Trinidad and Tobago), which at the time comprised the following members:

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Foreword

This CARICOM Regional Standard *CRS 47:201X, Paints – Water-borne coatings – Specification* has been developed under the authority of the CARICOM Regional Organisation for Standards and Quality (CROSQ). It was approved as a CARICOM Regional Standard by the CARICOM Council for Trade and Economic Development (COTED) at its XX Meeting in MM YYYY.

This standard is a revision of and supersedes the CCS 19:1992, *Paint – Exterior and interior emulsion type- flat* which was prepared for the Caribbean Common Market Standards Council (CCMSC).

This standard sets the minimum requirements for water-borne paints for interior and exterior use that are manufactured or traded within the Caribbean Community. It specifies performance as well as physical and chemical requirements for paints.

The revision of CCS 19:1992 was undertaken by the Regional Project Team for Paints hosted by Trinidad and Tobago. This revision was undertaken to incorporate a reduction in the lead and volatile organic content of paint in alignment with global initiatives to protect the environment and the health and safety of the consumer. The major changes from the previous version of the standard include the following:

- a) addition of new definitions;
- b) reduction of the maximum content of lead;
- c) inclusion of a maximum limit for volatile organic compounds;
- d) the inclusion of referenced test methods;
- e) inclusion of an Annex that provides recommended gloss level ranges.

The labelling requirements outlined in this standard have been extracted from the relevant requirements in the regional labelling standard CRS 55-2: 2016, *Labelling of goods- Part 2: Specific requirements for pre-packaged goods*.

In preparing this standard considerable assistance was derived from the following document:

Trinidad and Tobago Bureau of Standards

TTS 166:2013, *Architectural coatings – Water-borne paints - Specification*

Both normative and informative annexes are included in this standard. The normative annexe is to be considered as a part of the requirements to be met, while the informative annexe provides pertinent information to aid in the clarification and understanding of the document. The annexes are as follows:

- a) Annex A which is informative and provides recommended gloss level ranges for paint;
- b) Annex B which is normative and outlines the test method for streaking.

1 Scope

This standard establishes requirements for water-borne, decorative paints intended for use on interior and exterior surfaces. It also includes requirements for characteristics, performance and labelling of paints; with primer and top coat applications.

It applies to liquid paints including emulsion, latex, water-soluble, water-dispersible or colloidal paints and textured paints.

This standard does not apply to untinted bases, stains, varnishes and putties and solvent-borne paints.

NOTE: This standard is intended for use on masonry surfaces including, but not limited to, concrete, brick, stucco, concrete block, wood, metal, off shutter concrete or bituminous substrates, plastic and glass.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ASTM International Standards

ASTM D562, *Standard test method for measuring Krebs Unit (KU) Viscosity using a Stormer-type viscometer*

ASTM D5895, *Evaluating drying or curing during film formation of organic coatings using mechanical methods*

ASTM D1210, *Standard test method for fineness of dispersion of pigment-vehicle systems by Hegman-Type Gage*

ASTM D2486, *Standard Test Methods for Scrub Resistance of Wall Paints*

ASTM D4587, *Standard practice for fluorescent UV condensation exposures of paint and related coatings*

ASTM 4214, *Standard test methods for evaluating the degree of chalking of exterior paint films*

ASTM D 5590, *Determining the resistance of paint films and related coatings to fungal defacement by accelerated four-week agar plate assay*

ASTM D 5589, *Standard test method for determining the resistance of paint films and related coatings to algal defacement*

ASTM D344, *Standard test method for relative hiding power of paints by the visual evaluation of brushouts*

ASTM D2805, *Standard test method for hiding power of paints by reflectometry*

ASTM D1308, *Standard test method for effect of household chemicals on clear and pigmented organic finishes*

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International organization for Standardization

ISO 11890-1, *Paints and varnishes- Determination of volatile organic compound (VOC) content – Part 1: Difference method*

ISO 787-9, *General methods of tests for pigments and extenders- Part 9: Determination of pH value of an aqueous suspension*

ISO 6503, *Paints and varnishes – Determination of total lead – Flame atomic absorption spectrometric method*

Standards Australia/Standards New Zealand

AS/NZS 1580.205.1:1997 (R2013), *Paints and related materials – Methods of test- Method 205.1: Application properties – Brushing*

AS/NZS 1580.205.2:1997 (R2013), *Paints and related materials – Methods of test- Method 205.2: Application properties – Conventional spraying*

AS/NZS 1580.205.3:1997 (R2013), *Paints and related materials – Methods of test- Method 205.3: Application properties – Roller coating*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1

alligating

cracking of paint producing a pattern of cracks similar to an alligator's hide

3.2

blistering

convex deformation in a film, arising from local detachment of one or more of the constituent coats

3.3

Chalking

Appearance of a loosely adherent powder on the surface of a film or coat arising from the degradation of one or more of its constituents

3.4

checking

form of cracking characterized by fine cracks distributed over the surface of a dry film or coat in a more or less regular pattern

3.5

coating

layer formed from a single or multiple application of a coating material to a substrate

3.6

coating material

product in liquid form, that when applied to a substrate forms a layer possessing decorative and other specific properties

3.7

colour

sensation resulting from the perception of light of a given spectral composition by the human eye

3.8

Cracking

rupturing of a dry film or coat

3.9

dry-hard time

the condition of the film when the pressure exerted by a plunger on the film does not remove the film, deform or leave a mark that remains noticeable after the film is lightly polished with a soft cloth

3.10

film

continuous layer of an applied coating material

3.11

Mottling

non-uniform appearance of a film caused by the presence of irregularly shaped, randomly distributed areas on the surface that vary in colour or gloss

3.12

mistinted paint

paint that does not match the colour specified by the manufacturer

3.13

paint

pigmented coating material which, when applied to a substrate, forms an opaque dried film having decorative or specific technical properties

3.14

Peeling

Detachment of large areas of the coating due to loss of adhesion

3.15

recoat time

time at which the film has solidified so completely that an additional coat can be applied without the development of any film irregularities

NOTE Film irregularities include lifting, removal or loss of adhesion of the first coat.

3.16

untinted bases

incomplete paint that requires addition of colourants to be considered a finished product

3.17

Wrinkling

Development of ripples in a film of coating material during drying

4 General requirements

4.1 Paint shall consist of a suitable mixture of pigment, resin and additives in a water-borne medium.

4.2 The paint shall be suitable for application via brush, roller, spray method or application by trowel in keeping with the manufacturer's instructions.

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4.3 When thinned with water in accordance with the manufacturer's directions, the paint shall mix readily to a smooth homogeneous state, with or without minimal foaming.

NOTE Isolated large bubbles may be ignored.

4.4 The container in which the paint is supplied shall be free from any visible signs of corrosion on its interior or exterior surface or any other defects that may compromise the integrity of its contents up until its expiry date.

4.5 The integrity of the product shall be maintained during handling, storage and transportation.

4.6 The paint shall not have a foul odour.

5 Specific requirements

5.1 Requirements for liquid properties

5.1.1 All types of paint shall comply with the requirements outlined in Table 1 when tested according to the stated test methods specified in Table 1.

NOTE Recommended gloss levels are outlined in Annex A.

5.1.2 Viscosity, dry-hard time and fineness of grind shall apply to all types of paints under the scope of this standard except textured paints.

NOTE Textured paint is a thick paint used for decorative applications.

Table 1 — Requirements for liquid properties of paints

Property	Top coat (Internal and external applications)		Primer		Test method
	Minimum	Maximum	Minimum	Maximum	
Viscosity (Kreb units)	70	-	75	-	ASTM D562
Fineness of grind in Hegman units or (µm)	3(62.5)		3(62.5)		ASTM D1210
Volatile organic compound (g/L)		Flat- 50 Non-flat - 150		200	ISO 11890-1
pH	7.5	10	7.5	10	ISO 787-9
Lead content in % by weight or (ppm)		0.009% (90)		0.009% (90)	ISO 6503

5.2 Requirements for properties of solid coating

5.2.1 Opacity

5.2.1.1 When tested according to ASTM D344, the black and white areas shall not be visible under the paint film prepared with a 200 µm wet film thickness drawdown for white paints.

5.2.1.2 When tested according to ASTM D2805, the minimum opacity shall be 80% for white paints using a wet film thickness of 200 µm.

5.2.2 Alkali resistance

When tested according to the covered spot test method outlined in ASTM D1308, using 0.5% aqueous sodium hydroxide solution, the paint film shall show no evidence of cracking, peeling, wrinkling, chalking and other visual defects upon visual inspection after being covered by a watch glass for 8 hr and subsequently after reviewing the test specimen after 24 hr.

5.2.3 Water resistance

When tested according to the covered spot test method outlined in ASTM D1308, the exterior paint film shall show no wrinkling, re-emulsification, or other changes after covering with a watch glass for 4 hr.

NOTE This property is only applicable to exterior paint.

5.2.4 Accelerated weathering resistance

When tested and exposed to cycle No. 2 of Table 1 for 1000 hr according to ASTM D4587, the solid coating shall show no more chalking than rating #6 using ASTM 4214 as it pertains to chalking of whites and tints.

5.2.5 Scrubbability

When tested in accordance with ASTM D2486, with the use of the shim and medium, the solid coating shall show no breakage or exposure of underlying substrate when exposed to a minimum of 100 scrub cycles.

NOTE This parameter only applies to the top coat.

5.2.6 Ease of stain removal

In cases where a specific claim is made regarding properties of the product relating to ease of stain removal, the manufacturer, importer or distributor shall provide evidence to the National Competent Authority that the product meets the requirements of the claim using an internationally recognized test method.

EXAMPLE When tested in accordance to ASTM D4828, *Standard test methods for practical washability of organic coatings*, the ease of stain removal should exceed a rating of 5.

5.2.7 Fungal and algal resistance

When tested in accordance with ASTM D5590 and ASTM D5589, the fungal and algal growth shall not exceed a rating of 1.

NOTE A rating of 1 is equivalent to <10% growth (traces of growth).

5.2.8 Recoat time

5.2.8.1 When a second coat is applied 4 h after the first coat, the second coat shall not soften the first coat and there shall be no lifting or delamination of the first coat during application.

5.2.8.2 When the dry film of the second coat is examined 24 h after application, there shall be no sagging, cissing, pitting or cracking and the paint film shall be smooth in appearance.

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NOTE The recoat time applies to both interior and exterior paint.

5.2.9 Dry-hard time

The dry-hard time shall be 2 h maximum for both top coat and primer when tested in accordance with ASTM D5895.

NOTE It is recommended that a 12 g weight be used for either method outlined in ASTM D5895.

5.2.10 Streaking

When tested in accordance with Annex B the paint shall show no evidence of streaking or separation of any of the paint components .

6 Applicability and appearance

6.1 General properties

6.1.1 The liquid coating shall have good flowing and application properties and shall dry to a uniform appearance without visible streaks or sags.

6.1.2 The solid coating shall not exhibit undesirable roughness or grittiness when dry, regardless of the method of application used.

6.1.3 The appearance of the applied coating via brushing, spraying or roller coating shall be uniform in texture, colour and gloss with no evidence of lifting, wrinkling, lack of uniformity or other defects.

NOTE Figure 1 outlines possible defects as a result of improper application of paint on different surfaces.

6.2 Detailed properties

6.2.1 Brushing

6.2.1.1 When paint is applied via brushing using the method outlined in AS/NZS 1580.205.1:1997, the liquid paint shall show easy brushing and good flowing and lapping properties and shall be free from sagging.

6.2.1.2 When dry, the applied coating shall show no evidence of sags, or coarse particles and not more than slight brush marks.



a) Mottling



b) Cracking

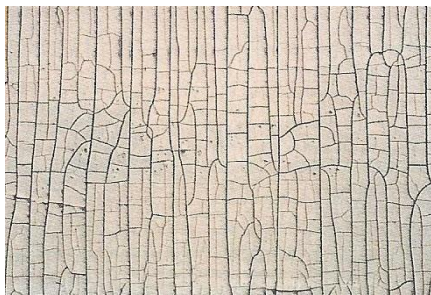


c) Peeling

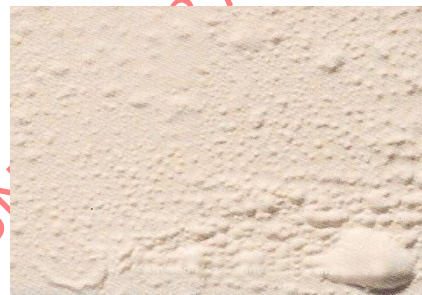


d) Chalking

Figure 1 (1 of 2) — Photographs illustrating paint application defects



e) Alligatoring



f) Blistering

Figure 1 (2 of 2) — Photographs illustrating paint application defects

6.2.2 Spraying

When paint is applied via spraying using the method outlined in AS/NZS 1580.205.2:1997, the liquid paint shall display good spraying and lapping properties and shall be free from sags.

6.2.3 Roller-coating

When paint is applied via spraying using the method outlined in AS/NZS 1580.205.3:1997, the liquid paint shall exhibit a minimum of foaming during application. If any foam is visibly evident, there shall be no signs of cratering or bubbles in a dry film, nor any evidence of colour difference between the brushed and roller-coated areas of the panel.

7 Packaging and labelling requirements

7.1 The label on each container in which the paint is packaged shall comply with the following information in the English language or the official language of the country in which it is being sold:

- a) manufacturer's name and address or distributor;
- b) brand name;
- c) the words "emulsion paint" or "latex paint" or "water-borne" paint or similar words;
- d) directions for use;

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- e) thinning instructions;
- f) intended use whether interior or exterior;
- g) VOC content;
- h) main ingredients;
- i) recoat time;
- j) spreading rate;
- k) instructions for surface preparation of coated and uncoated surfaces;
- l) first aid information;
- m) country of origin;
- n) lead content;
- o) net contents in volume;
- p) batch number or lot number;
- q) expiry date;
- r) storage conditions;

NOTE Recommended wording includes 'cool dry place, away from direct sunlight and heat sources'.

- s) cautionary notes as follows:

- 1) Keep out of reach of children (or similar statement);
- 2) this product may be harmful if swallowed (or similar statement);
- 3) Read label before using (or similar statement).

- t) colour identification of the dry film in terms of a reference colour card;

NOTE 1 The reference colour card may be from the manufacturer or an established colour standard.

NOTE 2 It is acknowledged that imported base paints are coloured at the point of sale and may not display a colour identification at the point of inspection by the relevant national competent authority. The colour identification should be given at the point of retail sale.

NOTE 3 The disposal of paint should be in alignment with the requirements of the national competent authority.

NOTE 4 The colour is normally agreed upon between the manufacturer, distributor or retailer and the purchaser at the point of sale.

7.2 Mistinted paints shall be clearly labelled using the word "mistinted" or any variation of the word.

Annex A (informative)

Recommended gloss level for paint

Table A.1 outlines the recommended gloss level (% at 60°) for interior and exterior water-borne paint when tested in accordance with ASTM D523, *Standard test method for specular gloss*.

Table A.1 — Recommended gloss level ranges

Gloss levels	Gloss units (% at 60°)	
	Minimum	Maximum
Flat	0	5
Low sheen	6	35
Semi-gloss	36	60
Gloss	>60	-

Annex B
(normative)

Test method to evaluate streaking

B.1 Scope

This is basic method of determining separation of paint components.

B.2 Principle

By allowing a thoroughly mixed paint to flow on a non-absorbing substrate in a nearly vertical position it is subjected to gravitational force with no additional shear. If the paint is allowed to dry for 18 h it can be assessed for separation of components.

B.3 Procedure

B.3.1 Allow the ready-mixed paint to flow on a 10 cm x 15 cm (4 in x 6 in) glass panel and allow the paint to dry for 18 h in nearly vertical position.

B.3.2 Conduct a visual inspection for separation of components.

B.3.3 Evidence of the flowed film showing separation of the paint components shall constitute failure of the test.

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