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1-GP-58
CANCELLATION
31 August 1956

CANADIAN GOVERNMENT SPECIFICATIONS BOARD

Specification
for

INTERIOR FLOOR ENAMEL

CGSB Specification 1-GP-58, dated 18 December 1956 is cancelled as of 31 August 1956. Superseded by:

1-GP-73a 10 August 1956

1-GP-58
18 December 1946
AMENDMENT No.1
30 June 1952

CANADIAN GOVERNMENT SPECIFICATIONS BOARD

Specification
for

INTERIOR FLOOR ENAMEL

4. CONSISTENCY

Change this requirement to read as follows:

"The consistency of the enamel shall be not less than 60 Krebs Units and not more than 85 Krebs Units, as determined with the Stormer Viscosimeter.

Method 4.5"

REFERENCE COPY

No. 1-GP-58-1946.

Issued 18 December 1946*
Superseding Issue of 4 November 1944.

CANADIAN GOVERNMENT PURCHASING STANDARDS COMMITTEE

Specification for
INTERIOR FLOOR ENAMEL**

1. Definition

The material required by this specification shall be a durable water-resistant enamel suitable for interior use on wood floors already painted with a suitable primer.

2. General

(a) The enamel shall consist of suitable pigments ground in a quick-drying vehicle. It shall be of brushing consistency and shall dry with a smooth glossy finish which shall have good resistance to abrasion and washing.

(b) The enamel shall not settle or thicken to any appreciable extent in the original unopened containers.

(c) A limited proportion of lead pigments may be incorporated for tinting purposes only (see clause 11 below).

3. Colour

Any of the colours defined in Schedule No. 1-GP-12 are applicable to paints purchased under this specification.

Method 12.1

4. Consistency

The consistency of the enamel shall be not more than 40 seconds at 25°C. (77°F.) as determined by the Gardner Mobilometer.

Method 4.4

* Issued in present form with no change in the requirements.

** See also Specifications: No. 1-GP-66, Concrete Floor Enamel.
No. 1-GP-73, Exterior Floor Enamel.

2.

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5. Hiding Power

The enamel shall hide a contrasting surface entirely when applied at a coverage of 400 square feet per gallon. Method 14.1

6. Flash Point

The Pensky-Martens flash point of the enamel shall be not lower than 35°C. (95°F.). Method 3.1

7. Drying Time and Hardness

(a) the enamel shall dry sufficiently for the satisfactory application of another coat in not more than 10 hours. Method 5.3

(b) After a total drying time of 48 hours the hardness shall be not less than 20 units when tested with the Sward Hardness Rocker. Method 116.1

8. Coarse Particles

The enamel shall not contain more than 0.5 per cent of material retained on a 44 micron sieve. Method 15.1

9. Skinning Properties

The enamel shall be "non-skinning". Method 10.1

10. Volatile Matter

The content of volatile matter shall not exceed 30 per cent of the enamel. Method 17.1

11. Non-Volatile Portion of Vehicle

The non-volatile portion of the vehicle shall be not less than 30 per cent of the enamel. Method 19.1

12. Pigment Content

The content of pigment shall be not less than 30 per cent by weight of the enamel. Method 21.1

13. Pigment Composition (Lead Restriction)

The extracted pigment shall not contain more than 2.0 per cent by weight of lead (Pb). Method 50.6

14. Water Resistance

The dried enamel film shall withstand immersion in water at 20-25°C. (68-77°F.) for 18 hours, and in boiling water for 15 minutes, without whitening or dulling.

Method 110.1

15. Flexibility

The dried enamel film shall not crack or peel when subjected to the bending test at 25°C. (77°F.) using a 1/2 inch diameter mandrel.

Method 119.1

16. Resistance to Washing

The dried enamel film shall withstand scrubbing in the presence of an alkaline soap solution.

Method 125.1

17. Resistance to Abrasion

When requested by the purchaser, the enamel shall pass an abrasion test made by a suitable method approved by the purchaser and the testing authority. The vendor shall be notified of this requirement and of the test procedure to be used.

18. Methods of Sampling and Testing

(a) Sampling shall be carried out in accordance with section 1.1 of Schedule No. 1-GP-71: "Methods of Testing Paints and Pigments".

(b) The methods of testing shall in all cases be those described in the same Schedule, using the methods specified in each requirement.

REFERENCE COPY

No. 1-GP-58-1944.

Issued 30 June, 1941.
Amended 4 November, 1944.

CANADIAN GOVERNMENT PURCHASING STANDARDS COMMITTEE

Specification for
Interior Floor Enamel**

Changes made in the present revision are indicated
by a single asterisk (*).

1. Definition

The material required by this specification shall be a durable, water-resistant enamel suitable for interior use on wood floors already painted with a suitable primer.

2. General

The enamel shall consist of suitable pigments ground in a quick-drying vehicle. It shall be of brushing consistency and shall dry with a smooth glossy finish which shall have good resistance to abrasion and washing.

The enamel shall not settle or thicken to any appreciable extent in the original unopened containers.

A limited proportion of lead pigments may be incorporated for tinting purposes only (see clause 11 below).

3. Colour

Any of the colours defined in Schedule No. 1-GP-12 are applicable to paints purchased under this specification.
(Appendix B)

4. Consistency

The consistency of the enamel shall not be more than 40 seconds at 25° C. (77°F.) as determined by the Gardner mobilometer.
(Appendix C)

5. Hiding Power

The enamel shall hide a contrasting surface entirely when applied at a coverage of 400 square feet per gallon.
(Appendix D)

**See also Specification 1-GP-66, Concrete Floor Enamel.

2.

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6. Flash Point

The flash point of the enamel shall not be lower than 35° C. (95° F.), closed cup test. (Appendix E)

7. Drying Time and Hardness

The enamel shall dry sufficiently for the satisfactory application of another coat in not more than 10 hours, and after a total drying time of 48 hours the hardness shall not be less than 20 units when tested with the Sward hardness rocker. (Appendix F)

8. Coarse Particles and Skins

The enamel shall not contain more than 0.5 per cent of material retained on a 44 micron sieve. It shall be "non-skinning". (Appendix G)

9. Volatile Portion

The content of volatile matter shall not exceed 30 per cent of the enamel.

10. Non-volatile Portion of Vehicle

The non-volatile portion of the vehicle shall not be less than 30 per cent of the enamel. (Appendix H)

11. Pigment

The content of pigment shall not be less than 30 per cent of the enamel. The extracted pigment shall not contain more than 2.0 per cent of lead (Pb). (Appendix M)

12. Water Resistance

The dried enamel film shall withstand cold water for 18 hours and boiling water for 15 minutes, without whitening or dulling. (Appendix J)

13. Flexibility

The dried enamel film shall not crack or peel when subjected to the bending test at 25° C. (77° F.) using a 1/2-inch mandrel. (Appendix K)

14. Resistance to Washing

The dried enamel film shall withstand scrubbing in the presence of an alkaline soap solution. (Appendix L)

15. Resistance to Abrasion.

If required by the purchaser the enamel shall show satisfactory resistance to abrasion when tested in accordance with a suitable method which shall be approved by the purchaser and the testing authority. The vendor shall be notified of this requirement and of the test procedure to be used.

A P P E N D I X

Methods of Sampling and Testing

*A. Sampling

A single unopened container selected at random from each lot of 1000 containers, or less, shall be supplied for test. When containers are of less than 1 pint capacity a sufficient number shall be taken to provide not less than 1 pint from each lot. When the capacity of containers exceeds 1 gallon the sample may be procured by opening a container, thoroughly mixing its contents and withdrawing not less than 1 pint of material, which shall be placed immediately in an air-tight can, completely filling it. Particular attention shall be paid to the thorough mixing of the material in the container before the sample is withdrawn.

B. Colour

The colour shall be determined by means of the Lovibond tintometer, British Drug Houses pattern, the observations being made on dried films.

c. Consistency

The Gardner mobilometer shall be used with a disc perforated with 51 holes each 1/16 inch in diameter, the weight of the disc, plunger and weight pan being 100 gm.

The enamel is stirred thoroughly and strained through a 177 micron sieve. The mobilometer is levelled by means of the screws in the base and the cylinder is filled to a depth of 20 cm. with the enamel. The test is carried out at a temperature of $25 \pm 2^{\circ}\text{C}$. The plunger is timed by means of a stopwatch while it falls through a distance of 10 cm. The plunger is raised, the enamel is wiped from the stem and the test is

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repeated. The mean of 5 concordant readings is taken as a measure of the consistency.*

D. Hiding Power

This test shall be carried out on a hiding-power chart of checkerboard design one square foot in area. For enamels in the standard colours numbered 0, 1, 2, 2-S, 4-S, 10, 16, 30, 31, 32, 37, 52, 53, 56, 57, 61, and 64, a black-and-grey hiding-power chart shall be used, the black squares having a brightness not greater than 4 per cent, and the grey squares having a brightness of 24 ± 2 per cent, referred to a standard magnesia surface.

For all other colours a black and white chart shall be used. The brightness of the chart shall be not more than 4 per cent for black areas and not less than 75 per cent for white areas, referred to a standard magnesia surface.

The hiding-power chart is weighed to the nearest 0.1 gm. The weight of $1/400$ th (0.0025) of a gallon of the enamel is calculated to the nearest 0.1 gm. This quantity of enamel is poured on the chart and brushed out uniformly with a brush previously filled with the enamel. The enamelled chart is then weighed and if necessary more enamel is added and brushed out. The weighings and brushings are continued as rapidly as possible until the required weight of enamel has been applied uniformly. The surface is allowed to dry thoroughly.

When viewed in diffuse daylight in a direction normal to the surface there shall be no visible difference in the brightness of the black and white (or black and grey) areas.

*E. Flash Point

The flash point shall be determined by means of a Pensky-Martens tester in accordance with Procedure D93-42 of the American Society for Testing Materials (A.S.T.M.).

*F. Drying Time and Hardness

The enamel is applied to a thoroughly cleaned non-absorbent surface so as to form a dry film approximately 30-40 microns thick. The film is dried at a temperature of $25 \pm 2^\circ\text{C}.$, a relative humidity of 60 ± 5 per cent and an illumination of 30 ± 5 foot candles. It is tested at intervals with the finger at points not less than 2 cm. from the edges and is considered to have dried hard when the pressure that can be exerted between thumb and finger does not remove the film or leave a mark that remains noticeable after the spot is lightly polished. When

that condition is reached a second coat of the enamel is applied and the film so obtained is observed for evidence of wrinkling and other imperfections until it is thoroughly dry.

The enamel is applied to a panel of plate glass to give a dried film not less than 10 cm. by 5 cm. in area and between 30 and 40 microns in thickness. After drying for 48 hours under the above conditions, its hardness is determined by means of the Sward hardness rocker in accordance with the directions supplied with the instrument.

G. Coarse Particles and Skins

The content of coarse particles and skins shall be determined in accordance with A.S.T.M. Procedure D185-37.

The "skinning" properties shall be observed by the following procedure:-

A container is half filled with the enamel, covered with a tight-fitting lid and then inverted momentarily to seal the lid. The container is then allowed to stand for 48 hours, at the end of which time it is opened and the enamel examined. If not more than a very slight surface skin is visible the enamel shall be considered non-skinning.

H. Non-volatile Portion of Vehicle

The sum of the percentages of volatile matter and pigment is subtracted from 100 and the remainder is reported as non-volatile vehicle.

*J. Water Resistance

The enamel is applied by brushing on two panels of tin plate (approximately 3" x 5") to give a dried film 30 to 40 microns thick. The panels are allowed to dry at room temperature for 48 hours. One panel is placed vertically in distilled water at 25 $\pm$ 2°C. to a depth of 2.5 inches. The other panel is similarly placed in boiling water. After immersion for the specified time the panels are removed and allowed to dry for 2 hours at room temperature before their appearance is observed.

*K. Flexibility

The enamel is applied to a panel of tin plate approximately 0.3 mm. thick to give a dried film 30 to 40 microns thick. It is then allowed to dry for 18 hours at room temperature and finally baked at 100° C. for 5 hours. It is then

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maintained at a temperature of 25°C. and is bent rapidly through 180 degrees over the specified mandrel, the enamelled surface being outermost.

L. Washing Test

One coat of priming paint (No. 1-GP-38) is applied to a wood panel 6" x 10" in size. Two coats of the enamel are then applied at 24-hour intervals and the panel is allowed to dry for 7 days after application of the last coat. It is then scrubbed with a brush using a solution containing 2 per cent neutral soap (No. 2-GP-2) and 1 per cent soda ash (No. 15-GP-5). The brush shall be of the usual stiff-fibred floor brush type and shall have a fibre area not less than 2½ inches square containing not less than 20 tufts of fibre approximately 1 inch long, and 5/16 inch in diameter at the surface of the wood block. The panel is arranged in a horizontal position so that it may be scrubbed with the brush and the brush is weighted so that its total weight on the panel is one pound. The solution is dropped on to the panel at such a rate as to keep the surface under the brush wet with the solution throughout the test. The scrubbing test shall consist of 500 strokes each consisting of a complete forward and reverse movement through a distance of at least 3 inches. After treatment the panel is rinsed with water, wiped dry, and examined. There shall be not more than a very slight difference in appearance between the scrubbed and unscrubbed portions.

M. Other determinations required by this specification shall be made in accordance with A.S.T.M. Procedure D215-41.

Correspondence regarding specifications issued by the Committee should be addressed to The Secretary, Canadian Government Purchasing Standards Committee, National Research Council, OTTAWA, Canada.

29 March, 1944.

Canadian Industries Ltd.,
Foot of Laughton Ave.,
West Toronto 9, Ont.

Dear Sirs: Attention: Mr. J. W. Brock

I have your letter of 23 March, 1944, regarding specification 1-GP-58. The hot and cold-water tests required by this specification were discussed by the Technical Advisory Committee with reference to purchases by Wartime Housing Ltd., A concession was then made by Messrs. Wartime Housing Ltd., applying to material purchased for their use.

The specification itself has not been amended and there is no issue since June 30, 1941. If it is considered that enamels cannot be made to meet these tests, a recommendation for change could be made directly to the Government Purchasing Standards Committee.

Yours very truly,

(Sgd) C. Y. Hopkins,
Paint Research Laboratory.

CYH/JEE

11.4.44