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CANCELLATION
30 May 1958

CANADIAN GOVERNMENT SPECIFICATIONS BOARD

Provisional Specification
for

PAINT; FIRE RETARDANT, FOR INTERIOR USE

CGSB Specification 1-GP-51P, dated 31 December 1951, is cancelled as of
30 May 1958.

31 December 1951

1-GP-51P*

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*Provisional Specification
for

PAINT; FIRE RETARDANT, FOR INTERIOR USE

1. Definition

This specification applies to fire retardant paints suitable for interior use on wood, plywood and fibreboard.**

2. General

(a) The paint may be supplied ready mixed, or in the form of a paste or powder requiring the addition of water, or other suitable liquid as supplied by the manufacturer.

(b) When mixed and applied according to the manufacturer's instructions it shall be of good brushing or spraying consistency as required, and on application shall produce a uniform adherent coating.

(c) The paint shall not produce nauseating odors either during application or any time thereafter.

(d) References to other CGSB specifications in this specification shall be the issue in effect on the date of invitation for bids.

NOTE: The requirements in clauses 3 to 13, inclusive, apply to the paint or paint system when prepared for use according to the manufacturer's instructions which shall be supplied with every separate package.

* This provisional specification has been issued for interim procurement use of government departments and the Department of National Defence. It has not been formally approved by the Committee on Specifications for Paints, Pigments and Related Commodities nor the Canadian Government Specifications Board.

** Paints complying with this specification should not be expected to provide complete protection against fire. However, they will delay ignition and check the spread of flame on surfaces to which they have been applied. It is essential that the manufacturer's instructions for mixing and application be strictly observed.

3. Drying Time

The paint shall dry satisfactorily in not more than 8 hours.

Method 5.1

4. Color

The colors appearing in Schedule No. 1-GP-12 are applicable to paints purchased under this specification.

5. Gloss

The gloss of the paint shall be as required by the purchaser.*

Method 13.1

6. Hiding Power

The paint shall hide a contrasting surface entirely when applied at the manufacturer's recommended coverage for fire retardance.

Method 14.1

7. Coarse Particles

The paint shall not contain more than 0.2 per cent of material retained on a 74 micron sieve.

Method 15.1

8. Volatile Matter

The content of volatile matter shall not exceed 50 per cent of the paint.

Method 17.1

9. Lead Content

The extracted pigment shall not contain more than 0.5 per cent lead (Pb).

Method 50.6

10. Water Resistance

The fire retardant paint or paint system, when applied according to the manufacturer's instructions, shall withstand immersion in water at 20 to 25°C (68 to 77°F) for four hours, and after subsequent drying for two hours shall show no softening, blistering, or peeling.

Method 110.1

* Gloss greater than egg-shell cannot ordinarily be obtained in this type of paint.

11. Fire Retardant Properties

The fire retardant value of the paint, when applied according to the manufacturer's instructions, and conditioned for a period of 10 days, shall not be less than 75.

Method attached

12. Flexibility

The dried paint film shall not crack or peel when subjected to the bending test at 25°C (77°F), using a $\frac{1}{8}$ inch mandrel. It shall withstand the same test after the panel has aged for seven days at 100°F.

Method 119.5

13. Color Retention

The paint shall not show any appreciable change in color on exposure to sunlight. It shall not darken or turn yellow on being kept in the dark.

Method 120.1

14. Storage Stability

The paint shall meet the requirements of this specification at any time during storage up to 1 year. It shall withstand storage for 7 days at 0°F without change in properties.

15. Methods of Sampling and Testing

(a) Sampling shall be carried out in accordance with Section 1.3 of Schedule No. 1-GP-71: Methods of Testing Paints and Pigments, not less than one pint, or 2 pounds in the case of dry powder, to be supplied.

(b) The methods of testing shall in all cases be those specified in the same Schedule (or appended hereto), using the sections indicated by the numbers following each requirement.

Correspondence regarding this specification should be addressed to the Secretary, Canadian Government Specifications Board, National Research Council, OTTAWA, Canada.

METHOD OF TEST FOR FLAME RESISTANCEIgnition Apparatus (See Figures 1 and 2)

A Bunsen Burner is adjusted (constant pressure) to give an 8 inch non-luminous flame with a 2 inch inner cone.* A four-armed-holder E is made to fit over the stem of the burner and may be positioned by means of a set screw. A 45° elbow A is made to fit on the burner. Shields C and D to aid in directing the flame are so fitted that it also holds the baffle B in position 1/2 inch above the top of the elbow. The holder is adjusted so that the bottom of the specimen will be 2 inches below the bottom of baffle B. Two guide pins are placed in the holder arms for ease of positioning the specimen.

The wood used to make up the test specimen shall be white pine having a density between the limits of 22.25 pounds per cubic foot and 25.5 pounds per cubic foot at an equilibrium moisture content of 10 to 12 percent. The panels shall be free from knots.

Test Specimens (See Figures 3 and 4)

The test specimen is made up of four panels of which only one is painted. The ignition panel A and the test panel C are dressed to 4 inches by 12 inches by 1/2 inch, and the carrier panels B and D are dressed to 3 inches by 12 inches by 1/2 inch. These panels are clamped together so as to form a flue with a three inch by three inch cross section, panels A and C being opposite to each other.

Procedure

1. All panels are conditioned to an equilibrium moisture content of 10 to 12 percent in a controlled temperature and humidity room or cabinet.
2. Three test specimens shall be used for each coating, i.e., the test is run in triplicate. The test panel C is weighed and the weight W_1 grams, noted.

*A convenient method of obtaining a constant flame is to adjust the pressure by means of a manometer so that the non-luminous flame is 8 inches high and then adjust the air supply to give a 2 inch inner cone. The air adjustment on the burner is then fixed in this position by soldering. At this pressure, a constant flame will be produced.

3. The coating to be tested is applied at the stipulated spreading rate to one face of each of the test panels C. The panels are again conditioned in the constant temperature and humidity room or chamber until removal for the fire retardant test, for the specified length of time to an equilibrium moisture content of 10 to 12 percent.
4. The dry painted weight, W_2 grams, of the test panel is taken.
5. The panels are clamped together to form a test specimen in the manner illustrated in Figure 4.
6. The ignition apparatus is lighted and adjusted to give the desired flame.
7. The assembled test specimen is placed on the holder so that the ignition flame will play against the ignition panel A. (The guide pins on the holder arms make it easy to properly locate the specimen.) A stop-watch is started immediately and at the end of 60 seconds the gas flame is shut off. At the end of 4 1/2 minutes the fire is smothered by means of a transite or other suitable cap placed over the flue opening.
8. The test specimen is removed from the holder and dismantled. Any paint in the fire area which has not burned off shall be gently removed taking care not to remove any of the charred wood. The test panel C is re-weighed, W_3 grams, and the charred area, a , of the substrate measured in square centimeters.

The relative fire retardant value, R , is calculated from the equation:

$$R = 100 - ((W_2 - W_3) - 0.55 (W_2 - W_1)) ak$$

where:

- R = fire retardant value
- W_1 = unpainted weight in grams
- W_2 = dry painted weight in grams
- W_3 = weight after test in grams
- a = area of charred substrate in square centimeters.
- k = a constant which is obtained for unpainted white pine from the equation $R = 100 - (W_1 - W_3)$. $ak = 0$ since unpainted white pine has been given an arbitrary fire retardant value of 0. The average of ten tests using unpainted white pine as the test panel C should be sufficient to give a reasonably accurate value for k . This value should be checked periodically by testing an unpainted white pine panel.