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31 December 1951

CANCELLATION

27 April 1960

CANADIAN GOVERNMENT SPECIFICATIONS BOARD

Provisional Specification
for

COMPOUND; PROTECTIVE, FOR UNDERSIDE OF VEHICLES

This provisional specification has been cancelled as of 27 April 1960.

CANADIAN GOVERNMENT SPECIFICATIONS BOARD

Provisional Specification
for

COMPOUND; PROTECTIVE, FOR UNDERSIDE OF VEHICLES

5. Drying Time

Delete and substitute the following:

- "(a) The material shall dry to touch in 4 hours.
- (b) The material shall be tack-free and firm in not more than 18 hours."

19. Methods of Sampling and Testing

- (a) First sentence; change to read "1 gallon" instead of "two quarts" for sample size.

Appended Test Methods

B. Drying Time:

Delete last sentence and substitute the following: "The film is considered to have dried to touch when gentle pressure of the finger shows a tacky condition but none of the material adheres to the finger".

D. Sag Resistance:

Amend to read as follows: "A coat of the material is applied 1/8 inch thick on a panel 12 inches by 12 inches at a room temperature of $73^{\circ} \pm 3.5^{\circ}\text{F}$. ($23^{\circ} \pm 2^{\circ}\text{C}$). The panel is immediately placed in a vertical position and observed for evidence of sagging or flowing.

L. Low Temperature Impact Resistance:

Delete and substitute the following:

"Three 12 inch by 12 inch panels of mild steel approximately 20 gauge are prepared as in Method 100.1 and then coated with a film 1/16 inch thick. They are allowed to dry (Section 103.1) for 24 hours and baked (Section 103.2) for 18 hours at 77°C . (170°F)."

The panels are allowed to cool for 2 hours at $23^{\circ}\text{C.} + 2^{\circ}\text{C.}$ ($73^{\circ} + 3.5^{\circ}\text{F.}$) and then conditioned at minus 29°C. (minus 20°F.) for one hour. Each steel panel shall then be fixed in a horizontal plane, with the coated side facing downward, so that the middle eight inches of the plate are unsupported. While still maintained at minus 29°C. (minus 20°F.) a 750 gram steel ball 2-1/4 inches in diameter is allowed to drop freely onto the panel from a height of 7 feet so that it strikes the unsupported section of the panel. The test is carried out on the uncoated side of the panel only. The film shall be examined for damage."

31 December 1951

1-GP-37P*

CANADIAN GOVERNMENT SPECIFICATIONS BOARD

*Provisional Specification
for

COMPOUND; PROTECTIVE, FOR UNDERSIDE OF VEHICLES

1. DEFINITION

This specification applies to a coating material to be used for the protection of underbodies of vehicles against corrosion, and abrasion, and to act as a sound deadener.

2. GENERAL

- (a) The compound shall consist of asbestos and other suitable fillers and extenders adequately dispersed in a bituminous or rubber-based vehicle.
- (b) The material in a freshly opened container shall show no evidence of undue settling or caking, and there shall be no skins, livering or thickening.
- (c) It shall spray easily to give a continuous adherent film free from pin holes.
- (d) The compound shall be free of toxic or noxious fumes.

3. CONSISTENCY

The penetration shall be between 30 and 40 mm., using a standard penetrometer cone under a 150 gram load.

Appendix A.

4. FLASH POINT

The Pensky-Martens flash point of the compound shall be not less than 30°C (86°F).

Method 3.1

*This provisional has been issued for immediate procurement needs of the Army. It has not been formally approved by the Committee on Specifications for Paints, Pigments and Related Commodities nor by the Canadian Government Specifications Board.

5. DRYING TIME

The compound shall be tack free and dry in not more than 4 hours.

Appendix B

6. VOLATILE MATTER

The content of volatile matter at 105°C shall not exceed 45 percent of the compound by weight.

Method 17.1

7. FILLER AND EXTENDER CONTENT

The content of filler and extender shall be not less than 20 percent and not more than 30 percent of the compound by weight.

Appendix C

8. SAG RESISTANCE

The film of the material prepared in accordance with the prescribed method shall show no sagging, wrinkling, or flowing when allowed to dry in a vertical position.

Appendix D

9. RESISTANCE TO FLOW AT ELEVATED TEMPERATURES

The film prepared in accordance with the prescribed test method and exposed for 24 hours at 325°F in a vertical position shall not show evidence of flowing or sagging.

Appendix E

10. BENZOL

The material shall not contain benzol.

Method 65.1

11. CHLORINATED COMPOUNDS

The material shall not contain chlorinated solvents.

Appendix F

12. ABRASION

A film 1/16 inch thick prepared and tested as prescribed in the method shall withstand the abrasion of carborundum for 10 seconds.

Appendix G

13. FIRE RESISTANCE

When subjected to the fire resistance test the film shall not burn longer than 10 seconds after removal of the flame, and the flame shall not spread over the surface.

Appendix H

14. FLEXIBILITY

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

Appendix I

15. DURABILITY

The dried film shall withstand exposure of 15 cycles in an accelerated weathering machine without showing evidence of alligatoring, checking, cracking, flaking, or peeling.

Appendix J

16. SALT SPRAY RESISTANCE

A steel panel coated with a 1/16 inch film of the compound shall withstand the salt spray corrosion test for 21 days without lifting, peeling, or blistering of the film. The coated metal shall not show signs of corrosion.

Appendix K

17. LOW TEMPERATURE IMPACT RESISTANCE

A film 1/16 inch thick conditioned at minus 20°F (minus 29°C) for one hour shall withstand impact of a 750 gram steel ball dropped from a height of 7 feet without showing cracking, peeling, or flaking.

Appendix L

18. STORAGE STABILITY

The material as received and for 6 months thereafter shall be readily stirred to a homogeneous condition and shall spray satisfactorily.

19. METHODS OF SAMPLING AND TESTING

(a) At least two quarts of the compound shall be supplied for test purposes, the sampling to be carried out in accordance with Section 1.3 of Schedule 1-GP-71: Methods of Testing Petroleum and Associated Products.

(b) Methods of testing shall be those specified in the same schedule unless otherwise appended hereto, using the Section or Appendix indicated with each requirement.

Withdrawn/Retirée

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

APPENDIX OF TEST METHODSA. CONSISTENCY

Consistency shall be determined with the penetrometer using the procedure described in ASTM D 217. The moving weight shall consist of the cone and its attachments which total 150 grams. The container holding the compound being tested shall be a cup 3-1/2 inches in diameter and 3 inches deep, and this shall be filled entirely with the material under examination.

B. DRYING TIME

A film 1/16 inch thick is applied to a steel panel and allowed to dry (Section 103.1) in a horizontal position at 25°C plus or minus 2°C (77°F plus or minus 4°F). The film will be considered dry when moderate pressure between the thumb and forefinger will not deform or rupture the surface.

C. FILLER AND EXTENDER CONTENT

The filler and extender of the cutback type shall be separated in the usual manner as described in ASTM D 215 except that benzene shall be used as the extracting solvent and the final rinse shall consist of ether.

In the case of emulsion type of compound the first treatment shall be with acidified water with sufficient acidity to neutralize the alkalinity of the emulsion. This is intended to break the emulsion. After this step the extraction is continued with benzene and finally with ether as above.

D. SAG RESISTANCE

A coat of the material is applied 1/8 inch thick on a panel 12 inches by 12 inches, immediately placed in a vertical position and observed for evidence of sagging, or flowing.

E. RESISTANCE TO FLOW AT ELEVATED TEMPERATURES

A steel panel 2-3/4 inches by 5-1/2 inches prepared as in Method 100.1 shall be sprayed with a coat of the material 1/16 inch thick. It is allowed to dry (Section 103.1) for 24 hours and is then baked (Section 103.2) for 18 hours at 77°C (170°F). A number of straight scratch lines shall be drawn across the surface for purposes of reference. The panel is then placed in an oven at (325°F) in a vertical position for 24 hours. At the end of that period of time the film is observed for evidence of sagging or flowing.

163 ± 3°C

F. CHLORINATED COMPOUNDS

Steam distill 100 mls of the material using a receiver cooled in ice. Separate the lower layer, dry, and re-distil. Collect all of the fraction boiling up to 100°C, and make a qualitative test for the presence of chlorine. Additional tests may be employed at the discretion of the testing authority.

G. ABRASION RESISTANCE

A panel 2-3/4 inches by 5-1/2 inches is prepared as in Method 100.1 and then sprayed with a coat of the material 1/16 inch thick. This is allowed to dry (Section 103.1) for 24 hours and is then baked (Section 103.2) for 18 hours at 77°C (170°F). The coated panel is allowed to cool at room temperature for 2 hours after which time it is exposed to abrasive action of a sandblast using 30 mesh carborundum under the following set of conditions:

Internal diameter of nozzle - 1/4 inch
Air pressure - 90 pounds per square inch gauge pressure
Distance of panel from nozzle - 1-1/2 inches
Delivery of carborundum from nozzle - 20-25 grams per second

*A suction feed sandblasting machine is used. Feed hose is 37 inches long and 1/2 inch internal diameter.

The blast shall be maintained on one area and examinations made at intervals until it is observed that the film has been worn through completely to the metal panel. A number of representative spots shall be tested over the area of the panel. The number of seconds required for the film to be worn through shall be deemed as the value of the abrasion resistance of the film.

*A suitable machine for this test is a Reumelin Utility Type Sandblaster manufactured by the Reumelin Manufacturing Company, 3860 North Palmer Street, Milwaukee 12, Wisc.

H. FIRE RESISTANCE

A steel panel 3 inches by 6 inches is sprayed with a coat of the material 1/16 inch thick. It is allowed to dry (Section 103.1) for 24 hours and then baked (Section 103.2) for 18 hours at 77°C (170°F). The panel is supported vertically in a fume cupboard. A Bunsen burner is regulated to give a flame 2 inches in length with the air supply turned off. The burner is placed beneath the lower end of the panel so that the panel is immersed in the flame to a depth of one inch. It is allowed to remain in this position for 20 seconds after which time the panel is removed and observations are made on the continuity and spread of the flame.

I. FLEXIBILITY

Sufficient material is applied to a sheet of tin plate (Section 101.1) to give a film 1/16 inch thick. It is allowed to dry (Section 103.1) for 24 hours and then baked (Section 103.2) for 18 hours at 77°C (170°F). The panel is then allowed to stand for 2 hours at 25°C plus or minus 2°C, and is bent rapidly through 180° over the specified mandrel, the coated surface being outermost. The actual time of bending shall be not less than one second nor more than 1-1/2 seconds.

J. DURABILITY

Two steel panels 2-3/4 inches by 5-1/2 inches prepared as in Method 100.1 shall be sprayed with a coat of the material 1/16 inch thick. They are allowed to dry (Section 103.1) for 24 hours and baked (Section 103.2) for 18 hours at 77°C (170°F). One panel is placed in an accelerated weathering machine for the specified number of complete cycles. Details of the machine and the operation procedure are given in Section 122.1. After the specified exposure period the exposed panel is compared visually with the unexposed panel for evidence of alligating, checking, cracking, flaking, and peeling.

K. SALT SPRAY RESISTANCE

Three steel panels 2-3/4 inches by 5-1/2 inches prepared as in Method 100.1 shall be sprayed with a coat of the material 1/16 inch thick. They are allowed to dry (Section 103.1) for 24 hours and baked (Section 103.2) for 18 hours at 77°C (170°F). After the panels have been allowed to cool to room temperature the backs are protected with coats of bituminous paint and the edges are sealed with a high melting wax (melting point 90 - 95°C). The panels shall be exposed in a salt spray chamber, the operation of which conforms with ASTM B 117: Tentative Method of Salt Spray (Fog) Testing. The panels shall be suspended 15° from the vertical. After exposure for the specified length of time the films shall be observed for evidence of lifting, peeling, and blistering. Some of the coating of the material shall be removed from each of the panels and the metal observed for signs of corrosion. Edge effects are to be neglected. In the case of variance in results the behaviour of two of three panels shall be taken as the performance of the material being tested.

L. LOW TEMPERATURE IMPACT RESISTANCE

A 12 inch by 12 inch panel of mild steel approximately 20 gauge is prepared as in Method 100.1 and then coated with a film 1/16 inch thick. It is allowed to dry (Section 103.1) for 24 hours and baked (Section 103.2) for 18 hours at 77°C (170°F). The panel is allowed to cool for 2 hours at 25°C plus or minus 2°C and then conditioned at minus 29°C (minus 20°F) for one hour. The steel panel shall then be fixed in a horizontal plane so that the middle eight inches of the plate are unsupported. While still maintained at minus 29°C (minus 20°F) a 750 gram steel ball 2-1/4 inches in diameter is allowed to drop freely onto the panel from a height of 7 feet so that it strikes the unsupported section of the panel. The test is carried out on the front and back of the panel in a number of different places at least four inches from the edge of the panel. The film shall be examined for damage.