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CANCELLATION
17 June 1960

CANADIAN GOVERNMENT SPECIFICATIONS BOARD

Specification
for

NONSOAP TYPE CLEANER FOR USE ON ASPHALT TILE FLOORS

Provisional Specification 2-GP-41P dated 29 January 1954 is cancelled as of 17 June 1960. There is no replacement specification. For the selection of suitable materials for the cleaning of asphalt tile floors, refer to 2-GP-34.

2-GP-41P*
29 January 1954

CANADIAN GOVERNMENT SPECIFICATIONS BOARD

*Provisional Specification
for

NON-SOAP TYPE CLEANERS FOR USE ON ASPHALT TILE FLOORS

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1. DEFINITION

1.1 This specification applies to an asphalt tile cleaner of the inorganic, alkaline reacting salts type in flake or powder form.

2. GENERAL REQUIREMENTS

2.1 The cleaner shall contain no soap.

2.2 It shall contain no oils, organic solvents, or other materials that have an injurious effect on asphalt tile.

2.3 The cleaner shall not be irritating to the skin and shall meet the following requirements.

2.4 The cleaner shall be free from offensive odors and shall contain no highly toxic materials.

2.5 Condition in Container - The cleaner shall not cake and shall be easily removed from the container.

2.6 Stability in Storage - The cleaner shall be stable and not lose effectiveness or otherwise deteriorate when stored in a closed container at normal temperatures.

2.7 Rinsing Properties - The cleaner shall be free-rinsing and shall leave no deposits of dirt, grease or sediment on the tile.

2.8 Directions for Use - The manufacturer shall provide with each package a complete set of clear and concise instructions for use of the cleaner.

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*This provisional specification has been issued for interim procurement. It has not been formally approved by the Committee on Specifications for Soaps and Detergents nor the Canadian Government Specifications Board. The specification has been based on the latest recommendations of the Asphalt Tile Institute.

3. DETAIL REQUIREMENTS

3.1 Soap Content - The soap content of the cleaner shall be so small that a solution of the cleaner shall not show a cloud or layer of fatty acids on the surface when tested in accordance with Section 4.3.1.

3.2 Hydrogen Ion Concentration - The pH value of a 0.5 per cent solution of the cleaner shall be not less than 8.5 or more than 11.6 when tested in accordance with Section 4.3.2.

3.3 Total Alkalinity - The total alkalinity to methyl orange, calculated as Na_2O shall be not less than 16.0 per cent or more than 19.0 per cent when tested in accordance with Section 4.3.3.

3.4 Free Ammonia - Free ammonia, calculated as NH_3, shall not exceed 0.5 per cent by weight of the solution of the maximum concentration recommended for use, when tested in accordance with Section 4.3.4.

3.5 Volatile Matter - The cleaner shall contain not more than 10 per cent volatile matter when tested in accordance with Section 4.3.5.

3.6 Organic Matter - The cleaner, when ignited on a Bunsen flame, shall show no charring.

3.7 Solubility - The cleaner shall be free from abrasives and shall be completely soluble in distilled water when tested in accordance with Section 4.3.6.

3.8 Deleterious Action on Tile

3.8.1 Softening of Tile - The cleaner, when applied to asphalt tile and tested in accordance with Section 4.3.7 shall not cause an increase in scratch width of more than 40 per cent.

3.8.2 Color Spreading and Change in Color - During application, the cleaner shall show no tendency to remove the color from asphalt tile or to spread the color from one tile to another. After thorough rinsing and drying, the tile shall show no objectionable change in color.

4. SAMPLING AND TESTING

4.1 Sampling - For routine laboratory examination for the acceptability of a shipment the cleaner shall be sampled as follows:

4.1.1 Powder and Flake Cleaner - (When packed in cans or cartons) one can or carton shall be taken at random from not less than 1 per cent of the shipping containers, provided

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such containers contain not less than 50 pounds. In case of small containers, a can or carton shall be taken at random from each lot of containers, totalling not more than 5,000 pounds or fraction thereof. The gross sample shall in all cases consist of not less than 3 cans or cartons taken at random from separate containers.

4.1.2 The sample cans or cartons shall be wrapped, sealed, marked, and send to the laboratory for test.

4.2 Preparation of Samples for Testing - The samples of cleaner taken above shall be prepared for test in the following manner.

4.2.1 Powder and Flake Cleaner - Rapidly disintegrate and mix the sample; if desired, quarter down to about 1 pound. Weigh out all portions for analysis promptly, and preserve remainder in a cool place.

4.3 Methods of Test

4.3.1 Soap Content - Dissolve a sample of the cleaner in distilled water. Acidify with dilute sulphuric acid and heat.

4.3.2 Hydrogen Ion Concentration - Dissolve 1.0 gram of the cleaner in 200 ml. of freshly boiled and cool (to room temperature) distilled water, and mix. Determine the pH value of this solution, or a portion of it, to the nearest 0.10 unit at 25°C. by means of a suitable pH meter which employs the glass electrode. No correction for sodium ion concentration shall be made.

4.3.3 Total Alkalinity - Transfer 2 grams of the sample to a 600 ml. beaker, dissolve in about 400 ml. of distilled water, add 3 drops of methyl orange solution and titrate to the end point with 0.5N H_2SO_4. Calculate the percentage of total alkalinity as Na_2O (1 ml. 0.5N H_2SO_4 = 0.0155 gram Na_2O).

4.3.4 Free Ammonia - Dilute the cleaner sample with distilled water to the maximum concentration recommended by the manufacturer. Transfer 10 grams of the diluted sample to a 500 ml. Kjeldahl Flask. Add 200 ml. of distilled water, a few pieces of anti-bump stones and a drop of Dow-Corning Anti-Foam A emulsion. Connect the flask through a spray trap to a vertical condenser. The condenser is set up with an adapter which just dips below the surface of a solution containing about 50 ml. of a 0.5N HCl (or H_2SO_4) acid solution. Distill about 100 ml. of the diluted sample. Remove the heat and lower the receiver. Wash out the condenser with distilled water and add it to the distillate and titrate the combined solution with 0.5N NaOH using methyl red as an indicator.

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Per cent free ammonia =

$$\frac{(50 \text{ ml. HCl} \times \text{Normality HCl}) - (\text{ml. NaOH} \times \text{Normality NaOH})}{\text{Weight of Sample}} \times 1.703$$

4.3.5 Volatile Matter - Heat a weighed sample of the cleaner for 4 hours at 105°C. Weigh the heated sample at the end of the period and determine the percentage loss in weight.

4.3.6 Solubility - Dilute about 5 grams of the cleaner with 100 ml. of distilled water. Stir vigorously for 5 minutes at room temperature. Centrifuge the solution in a clear glass tube and inspect for abrasive or other undissolved material either in the bottom of the tube or at the surface of the liquid.

4.3.7 Softening of Tile - A solution of the cleaning agent to be tested shall be prepared according to the manufacturer's instructions. Use distilled water and weigh the proportions to plus or minus 0.5 per cent.

Five samples of asphalt tile, each 4 inches square, shall be cut, one sample from each of five 9" x 9" tile complying with CSA A100-1949: Specification for Asphalt Floor Tile (A100-1949). The samples shall then be sawed, or otherwise cut in half, each half (or specimen) being marked for identification as follows: 1a, 1b; 2a, 2b; etc.

The five specimens marked 1a, 2a, etc., shall be placed in a bath containing 500 to 800 milliliters of the cleaning solution. The five specimens marked 1b, 2b, etc., shall be placed in a bath containing a similar amount of distilled water. Separation of at least 1/8" shall be provided between each specimen. The specimens shall be immersed for a period of 24 hours. The solution shall be agitated by means of a stirrer during immersion and shall be maintained at 70°F. to 75°F. during the entire period.

After 24 hours of immersion, remove each pair of specimens and blot with a paper towel. Place halves 1a (cleaner immersed) and 1b (water immersed) on the table of a Taber Abraser and make a three inch long scratch on each specimen with the Shear Tool under a load of 500 grams. The width of the three inch long scratch on each half shall immediately be read to 0.001 inch in three places, and the average recorded. The measurement should not be taken on the first part of the scratch where the tool may dig deeper at the start. Repeat the procedure for 2a and b, 3a and b, etc.

Preparation of scratch tool - The scratch tool used shall produce a scratch on the tile before immersion of 0.050 ± 0.005 inch when unexposed specimens are tested as described in the preceding paragraphs. If the width of scratch obtained by the tool on the

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unexposed specimens is greater than 0.055 inch, the tool shall be dulled to produce the required width by drawing it across unexposed tile. If after having dulled the tool as above, the tool is still shaving the material being tested, continue to dull the tool until it no longer cuts the surface of the unexposed tile. In any case, the mark shall not be less than 0.045 inches. This may happen especially in the predulling of a new tool. Care should be taken in handling and storing the tool so that the cutting edge will not be damaged.

The percentage increase in scratch width from the water immersed to the cleaner immersed specimens shall be calculated as follows:

$$\text{Per cent increase} = \frac{\text{Width (cleaner immersed)} - \text{Width (water immersed)}}{\text{Width (water immersed)}} \times 100$$

If the increase in scratch width, as determined above, falls between 30 per cent and 50 per cent, two more tests shall be run and the average of all three tests shall be taken as the final figure. If this average is more than that specified in the specification, the cleaner shall be rejected.

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