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**DEPARTMENT OF COMMERCE.**

**BUREAU OF STANDARDS.**

S. W. STRATTON, Director.

**CIRCULAR OF THE BUREAU OF STANDARDS.**

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**UNITED STATES GOVERNMENT SPECIFICATION FOR SCOURING COMPOUNDS (a) AND (b) FOR FLOORS AND SOAP SCOURING COMPOUND (c).<sup>1</sup>**

**FEDERAL SPECIFICATIONS BOARD.**

STANDARD SPECIFICATION No. 34.

This Specification was officially adopted by the Federal Specifications Board on June 20, 1922, for the use of the Departments and Independent Establishments of the Government in the purchase of materials covered by it.

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**1. GENERAL.**

(a) SCOURING COMPOUND FOR FINE MARBLE FLOORS.—The material desired under this specification is a uniform powder containing about nine-tenths of its weight of clean, finely divided, siliceous material, the remainder being sodium carbonate or soap, or both. It must not scratch nor discolor the surfaces on which it is to be used; to be unscented and of a light gray or white color. Bidder shall state size and weight of package.

<sup>1</sup> For Specification for Grit Cake Soap see B. S. Circular No. 130; for Specification for Hand Grit Soap see B. S. Circular No. 132.

Failure to meet any of the following requirements will be cause for rejection:

Matter volatile at 105° C. shall not exceed 10 per cent.

The sum of sodium carbonate and anhydrous soap shall not exceed 7 per cent nor be less than 2 per cent.

Free alkali, calculated as sodium hydroxide (NaOH), shall not exceed 0.1 per cent.

Insoluble siliceous material shall be not less than 85 per cent nor more than 95 per cent. It all must pass a No. 100 screen and at least 95 per cent must pass a No. 200 screen. It must not scratch marble.

Material will be purchased by net weight.

(b) SCOURING COMPOUND FOR TILE OR CERAMIC AND TERRAZZO FLOORS.—The material desired under this specification is a uniform powder containing about nine-tenths of its weight of clean, finely divided siliceous material, the remainder being sodium carbonate or soap, or both; to be unscented and of a light gray or white color. Bidder shall state size and weight of package.

Failure to meet any of the following requirements will be cause for rejection:

Matter volatile at 105° C. shall not exceed 10 per cent.

The sum of sodium carbonate ( $\text{Na}_2\text{CO}_3$ ) and anhydrous soap shall not exceed 10 per cent nor be less than 2 per cent.

Insoluble siliceous material shall be not less than 85 per cent nor more than 95 per cent. Ninety per cent must pass a No. 80 screen and at least 99 per cent must pass a No. 60 screen.

Free alkali, calculated as sodium hydroxide (NaOH), shall not exceed 0.1 per cent.

Material will be purchased by net weight.

(c) SOAP SCOURING COMPOUND.—The material desired under this specification is a mixture of finely powdered, light colored siliceous material, sodium carbonate, and powdered soap. It must be free from caustic alkali and be unscented. Bidder shall state size and weight of package.

Failure to meet any of the following requirements will be cause for rejection:

Matter volatile at 105° C. shall not exceed 10 per cent.

Carbonated alkali, calculated as sodium carbonate ( $\text{Na}_2\text{CO}_3$ ), shall be not less than 15 per cent nor more than 20 per cent.

Free alkali, calculated as sodium hydroxide (NaOH), shall not exceed 0.1 per cent.

Anhydrous soap shall be not less than 5 per cent nor more than 10 per cent.

Insoluble siliceous material shall be not less than 60 per cent nor more than 80 per cent. Ninety per cent must pass a No. 80 screen and at least 99 per cent shall pass a No. 60 screen.

## 2. SAMPLING.

(a) WHEN PACKED IN CANS OR CARTONS.—One can or carton shall be taken at random from not less than 1 per cent of the vendors' shipping containers, provided such containers contain not less than 50 pounds each. In the case of smaller containers a can or carton shall be taken at random from each lot of containers totaling not to exceed 5,000 pounds. The total sample shall in all cases consist of not less than three cans or cartons taken at random from separate containers. With very large lots, where the sample drawn as above will amount to more than 20 pounds, the percentage of packages sampled shall be reduced, so that the amount drawn shall not exceed 20 pounds. Wrap the individual cans or cartons tightly in paraffined paper at once and seal by rubbing the edges with a heated iron. The inspector should accurately weigh each wrapped can or carton, record its weight and the date of weighing on the wrapper, place the wrapped cans or cartons in an air-tight container, which should be nearly filled, seal, mark, and send to the laboratory for test. Samples should be kept cool until tested. The seller shall have the option of being represented at the time of sampling and when he so requests shall be furnished with a duplicate sample.

(b) WHEN IN BULK.—A grab sample of not less than one-half pound shall be taken at random from not less than 1 per cent of the vendors' shipping containers, provided such containers contain not less than 100 pounds each. In case of smaller containers a grab sample of not less than one-half pound shall be taken at random from each lot of containers totaling not to exceed 10,000 pounds. The total sample shall in all cases consist of not less than three grab portions taken at random from separate containers. With very large lots, where the sample drawn as above will amount to more than 20 pounds, the percentage of packages sampled shall be reduced, so that the amount drawn shall not exceed 20 pounds. The inspector should rapidly mix the sample, place in an air-tight container, which shall be filled, seal, mark, accurately weigh, record its weight and date of weighing on the package, and



send to the laboratory for test. Samples should be kept cool until tested. The seller shall have the option of being represented at the time of sampling and when he so requests shall be furnished with a duplicate sample.

### 3. LABORATORY EXAMINATION.

(a) PREPARATION OF SAMPLE.—Rapidly disintegrate and mix the sample, if desired, quarter down to about 1 pound, and weigh out all portions for analysis at once. Unused portions of the sample used for analysis shall be preserved in an air-tight container in a cool place.

When a determination shows nonconformity with specification, a duplicate shall be run.

(b) MATTER VOLATILE AT 105° C.—Weigh 5 g of the sample in a porcelain or glass dish, about 6 to 7 cm in diameter and 4 cm deep, dry to constant weight in a vacuum oven or an inert atmosphere at a temperature not exceeding 105° C. Report loss in weight as matter volatile at 105° C.

(c) TOTAL MATTER INSOLUBLE IN ALCOHOL, FREE ALKALI, OR FREE ACID.—(1) *Matter Insoluble in Alcohol*.—Digest hot a 5 g sample with 100 cc of freshly boiled neutral ethyl alcohol (94 per cent or higher). Filter through a counterpoised filter paper neutral to phenolphthalein, or a weighed Gooch crucible with suction into a dry weighed beaker, protecting the solution during the operation from carbon dioxide and other acid fumes. Wash the residue on the paper or in the crucible with hot neutral alcohol until free from soap. Dry the filter paper or crucible and residue at 100 to 105° C. for three hours, cool, and weigh the total matter insoluble in alcohol. (Since the percentage of the matter insoluble in alcohol is not required under this specification, time may be saved by omitting the drying and weighing and proceeding directly with the moist residue to the determination of matter insoluble in water (3).

(2) *Free Alkali or Free Acid*.—Titrate the filtrate from the above, using phenolphthalein as indicator, with standard acid or alkali solution and calculate the alkalinity to sodium hydroxide (or potassium hydroxide) or acidity to oleic acid.

(3) *Matter Insoluble in Water*.—Proceed as in the determination of matter insoluble in alcohol. After filtering and thoroughly washing the residue extract it with water at 60° C. and wash the filter thoroughly. (When the matter insoluble in water is all inorganic, boiling water may be used for the extraction and washing.) Dry the filter and residue at 100 to 105° C. for three hours,

cool, and weigh matter insoluble in water. The nature of this may be determined by further examination. The insoluble matter should be siliceous.

(4) *Alkali as Alkaline Salts (Total Alkalinity of Matter Insoluble in Alcohol)*.—Titrate the filtrate from the determination of matter insoluble in water with standard acid, using methyl orange as indicator. Calculate alkalinity to sodium carbonate ( $\text{Na}_2\text{CO}_3$ ).

(d) SCREEN TEST.—Transfer a weighed sample of the insoluble siliceous material to a No. 100 or No. 60 screen and carefully brush through. Weigh the amount passing through and calculate percentage. After weighing transfer to a No. 200 or No. 80 screen and treat in the same manner. Weigh the amount passing through and calculate percentage.

(e) TOTAL ANHYDROUS SOAP.—Evaporate the alcoholic solution obtained after filtering off and washing the matter insoluble in alcohol—(c), (1) and (2)—to dryness, dry at  $105^\circ\text{C}$ . to constant weight. Report the result as total anhydrous soap.

#### 4. REAGENTS.

(a) STANDARD SODIUM HYDROXIDE SOLUTION.—0.25 N, or about 10 g sodium hydroxide dissolved in water and diluted to 1 liter. Standardized against Bureau of Standards benzoic acid.

(b) STANDARD SULPHURIC ACID SOLUTION.—0.5 N, or about 25.8 g strong sulphuric acid (specific gravity = 1.84) diluted to 1 liter. Standardized against standard sodium hydroxide solution (a).

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