

DEPARTMENT OF COMMERCE

BUREAU OF STANDARDS

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UNITED STATES GOVERNMENT MASTER SPECIFICATION FOR  
POWDER, SCOURING, FOR FLOORS

FEDERAL SPECIFICATIONS BOARD SPECIFICATION No. 34a

[Revision Promulgated May 22, 1928. Supersedes F. S. B. Spec. No. 34]

This specification was officially promulgated by the Federal Specifications Board on July 3, 1922, for the use of the departments and independent establishments of the Government in the purchase of scouring powder for floors.

[The technical requirements of this revision of this specification shall become mandatory for all departments and independent establishments of the Government not later than August 22, 1928. They may be put into effect, however, at any earlier date after promulgation.]

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I. GENERAL SPECIFICATIONS

There are no general specifications applicable to this specification.

II. TYPES

Scouring powders for floors shall be furnished in three types, as follows:

Type A, for fine marble floors.

Type B, for tile or ceramic and terrazzo floors.

Type C, soap scouring compound.

### III. MATERIAL AND WORKMANSHIP

Scouring powders for floors shall be uniform powders and shall be satisfactory for the purpose intended.

### IV. GENERAL REQUIREMENTS

See detail requirements, Section V.

### V. DETAIL REQUIREMENTS

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

#### 1. TYPE A

1. Matter volatile at 105 to 110° C. shall not exceed 10 per cent. Deliveries which yield more than 10 per cent of volatile matter shall be rejected without further test.

2. The sum of sodium carbonate ( $\text{Na}_2\text{CO}_3$ ) and anhydrous soap shall not exceed 7 per cent nor be less than 2 per cent.

3. Free alkali, calculated as sodium hydroxide ( $\text{NaOH}$ ), shall not exceed 0.1 per cent.

4. Insoluble siliceous material shall be not less than 85 per cent nor more than 95 per cent.

5. All of the insoluble siliceous material shall pass through a No. 100 sieve, and the residue retained on a No. 200 sieve shall not exceed 5 per cent.

6. The material shall not scratch or discolor marble.

7. The material shall be a uniform powder, shall be unscented, and shall be of a light gray or white color.

#### 2. TYPE B

1. Matter volatile at 105 to 110° C. shall not exceed 10 per cent. Deliveries which yield more than 10 per cent of volatile matter shall be rejected without further test.

2. The sum of sodium carbonate ( $\text{Na}_2\text{CO}_3$ ) and anhydrous soap shall not be less than 2 per cent.

3. Free alkali, calculated as sodium hydroxide ( $\text{NaOH}$ ), shall not exceed 0.1 per cent.

4. Insoluble siliceous material shall be not less than 80 per cent nor more than 95 per cent.

5. The insoluble siliceous material shall not yield more than 1 per cent of residue retained on a No. 60 sieve and not more than 10 per cent of residue retained on a No. 80 sieve.

6. The material shall be a uniform powder, shall be unscented, and shall be of a light gray or white color.

### 3. TYPE C

1. Matter volatile at 105 to 110° C. shall not exceed 6 per cent. Deliveries which yield more than 6 per cent of volatile matter shall be rejected without further test.

2. Carbonated alkali, calculated as sodium carbonate ( $\text{Na}_2\text{CO}_3$ ), shall not be less than 6 per cent nor more than 20 per cent.

3. Free alkali, calculated as sodium hydroxide ( $\text{NaOH}$ ), shall not exceed 0.1 per cent.

4. Anhydrous soap shall be not less than 3 per cent nor more than 10 per cent.

5. Insoluble siliceous material shall be not less than 60 per cent nor more than 90 per cent.

6. The insoluble siliceous material shall not yield more than 1 per cent of residue retained on a No. 60 sieve and not more than 10 per cent of residue retained on a No. 80 sieve.

7. The material shall be a uniform powder, shall be unscented, and shall be light gray or white in color.

## VI. METHODS OF SAMPLING, TESTS, AND BASIS OF PURCHASE

### 1. SAMPLING

(a) No samples shall be submitted with bids.

(b) **WHEN PACKED IN CANS OR CARTONS.**—One can or carton shall be taken at random from not less than 1 per cent of the sellers' 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.

(c) **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 sellers' 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.

## 2. METHODS OF TESTING

(a) PRELIMINARY TESTS.—Note the color, odor, and condition of the sample. If the sample is received in original cans or cartons, note the weight of the contents of each can or carton. With type A, only, determine whether the material scratches or discolors marble, rubbing the material onto a moistened cloth and then rubbing the marble surface with the cloth, keeping the scouring compound in contact with the marble.

(b) 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.

(c) MATTER VOLATILE AT 105° TO 110° 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 an inert atmosphere at a temperature not exceeding 105° to 110° C. Report loss in weight as matter volatile at 105° to 110° C.

(d) FREE ALKALI OR FREE ACID.—Digest hot a 5 g sample with 100 ml of hot 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 dry paper or in the crucible with hot neutral alcohol until free from soap. Titrate the filtrate, using phenolphthalein as indicator, with standard acid or alkali solution, and calculate the alkalinity to sodium hydroxide or acidity to oleic acid.

(e) **MATTER INSOLUBLE IN WATER.**—After filtering and thoroughly washing the residue from (d), extract and wash it thoroughly with hot distilled water. Dry the filter and residue at 105° to 110° 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.

(f) **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 ( $\text{Na}_2\text{CO}_3$ ).

(g) **TOTAL ANHYDROUS SOAP.**—Evaporate the alcoholic solution obtained after filtering off and washing the matter insoluble in alcohol (Section VI, 2 (d)) to dryness, dry at 105° to 110° C. to constant weight. Report the result as total anhydrous soap.

(h) **SIEVE TEST.**—Dry for one hour in an oven at 105° to 110° C. the sieves covering the type of scouring powder under examination (Section V), cool, and weigh accurately. Weigh an amount of scouring powder containing 10 g of insoluble siliceous material (Section VI, 2, (e)), transfer to a beaker, add about 200 ml of water and digest on a steam bath about one hour to dissolve the soluble matter. Pour the solution through the coarser sieve, wash the insoluble matter from the beaker onto the sieve with hot water and wash with water, catching all of the liquid and solid matter passing through the sieve in clean beakers or dishes. The washing with water shall be continued until 200 ml of the liquid passing through the sieve into a clean 400 ml beaker fails to show any particles collected about the middle of the bottom of the beaker after the liquid has been vigorously stirred and the beaker placed on a black surface. Dry the sieve and residue for one hour at 105° to 110° C., cool, and weigh. Calculate the percentage of residue retained on the coarser sieve, based on the insoluble siliceous material. (If the material forms lumps or aggregates on washing with water, a camel's-hair brush may be used on the sieve.)

In a similar manner transfer *all* of the material (liquid and solid) that has passed through the coarser sieve to the finer sieve and wash with water until 200 ml of the liquid passing through the sieve into a clean 400 ml beaker fails to show any particles collected about the middle of the bottom of the beaker after the liquid has been vigorously stirred and the beaker placed on a black surface. Dry the sieve for one hour at 105° to 110° C., cool, and weigh. Add the weight of the residue retained on the coarser sieve to the weight of the residue found on the finer sieve and calculate the sum to percentage of residue retained on the finer sieve, based on the insoluble siliceous material.

NOTE.—For convenience in weighing, a 3-inch sieve is recommended.

## 3. REAGENTS

(a) STANDARD SODIUM HYDROXIDE.—0.25 *N*, or about 10 g, sodium hydroxide dissolved in distilled water and diluted to 1 liter. Standardize against Bureau of Standards standard acid potassium phthalate.

(b) STANDARD SULPHURIC ACID SOLUTION.—0.5 *N*, or about 25.8 g, strong sulphuric acid (specific gravity, 1.84) diluted to 1 liter. Standardize against standard sodium hydroxide solution (Section VI, 3, (a)).

(c) METHYL ORANGE INDICATOR.—Dissolve 1 g of methyl orange in 1 liter of distilled water.

(d) PHENOLPHTHALEIN INDICATOR.—Dissolve 1 g of pure phenolphthalein in 100 ml of 85 to 95 per cent ethyl alcohol.

## 4. BASIS OF PURCHASE

Material under each type shall be purchased by net weight.

## VII. PACKING AND MARKING OF SHIPMENTS

Shall be in accordance with the best commercial practice unless otherwise specified.

## VIII. NOTES

1. In ordering material under this specification, purchasers should use due care to specify the type desired. All three types contain considerable abrasive material. Type A is for use in scouring marble floors or other surfaces requiring a mild abrasive and a moderate amount of alkaline salts. Type B is for general use as a scouring powder for tile or ceramic floors, terrazzo floors, or other surfaces not requiring special treatment. Type C is a special powder for use on oily and greasy floors.

2. For specification for grit cake soap, see Federal Specifications Board specification No. 33a; for specification for hand grit soap, see Federal Specifications Board specification No. 35.

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