UNITED STATES DEPARTMENT OF COMMERCE
HARRY L. HOPKINS, Secretary
NATIONAL BUREAU OF STANDARDS
LYMAN J. BRIGGS, Director

WOVEN DRESS FABRICS

TESTING AND REPORTING

(SECOND EDITION)

COMMERCIAL STANDARD CS59–39

(Supersedes CS59–36)

Effective as a Basis for Testing and Reporting From June 24, 1939

A RECORDED STANDARD OF THE INDUSTRY

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U. S. DEPARTMENT OF COMMERCE NATIONAL BUREAU OF STANDARDS

PROMULGATION

of

COMMERCIAL STANDARD CS59–39

for

WOVEN DRESS FABRICS—TESTING AND REPORTING

(SECOND EDITION)

On September 27, 1935, at the instance of the National Retail Dry Goods Association, a general conference of representatives of commercial testing laboratories, manufacturers, distributors, and users of woven dress fabrics adopted a recommended commercial standard covering methods of testing and reporting these commodities, which was subsequently accepted by the industry and promulgated as Commercial Standard CS59–36.

A revision of the standard recommended by the standing committee to include a new method of test for colorfastness to crocking (rubbing), methods of testing and reporting for colorfastness to perspiration and wet pressing, new standard samples for colorfastness to light, and several editorial changes, has since been accepted by the industry for promulgation by the United States Department of Commerce through the National Bureau of Standards.

The standard is effective as a basis for testing and reporting from June 24, 1939.

Promulgation recommended.

I. J. Fairchild,
Chief, Division of Trade Standards.

Promulgated.

Lyman J. Briggs,
Director, National Bureau of Standards.

Promulgation approved.

Harry L. Hopkins,
Secretary of Commerce.

WOVEN DRESS FABRICS—TESTING AND REPORTING

(Second Edition)

COMMERCIAL STANDARD CS59-39

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I. PURPOSE

1. The purposes are to provide standard methods of testing woven dress fabrics from the standpoint of serviceability and a uniform basis for reporting results of tests, for the guidance of testing laboratories in order to eliminate confusion resulting from a diversity of testing methods. It is expected that comparability and reproducibility of test results will be attained thereby for the benefit of producers, distributors, and users.

II. SCOPE

2. This standard provides methods of testing and reporting upon the breaking strength and yarn slippage of any fabric, as well as methods of testing and reporting the degree to which fabrics represented as colorfast to cleaning (dry or wet), crocking (rubbing), laundering, light, perspiration, pressing (dry or wet), or treated against shrinking in laundering or cleaning (dry or wet) do, in fact,

possess such qualities. These tests also apply in cases where a determination is desired, even though no such representations are made. However, since the test methods relate to qualities not found or needed in all types of fabrics, they are primarily intended for fabrics represented as having such qualities.

III. GENERAL REQUIREMENTS

3. *Sampling.*—Normally, tests will be conducted and reports issued for the samples submitted, without reference to the method of sampling or size of lot represented. When samples are to represent given lots, the method of sampling and sizes of the lots represented shall be as agreed upon between the client and the testing laboratory.

4. *Size of sample.*—The sample selected from piece goods for test purposes shall be of sufficient size for the tests required. It is estimated that 2 square yards are required to make all of the tests prescribed herein.

5. *Kinds of tests required.*—Unless otherwise required by the client, the testing laboratory will conduct and report on all tests covered herein, in accordance with the following procedures.

IV. BREAKING STRENGTH

6. *Test specimens.*

6a. Ten specimens in the warp direction and 10 specimens in the filling direction shall be cut in such a manner that 2, but not more than 2, test specimens of each set contain the same yarns (warp or filling), and that no specimen is taken nearer the selvage than one-tenth the width of the material. Each test specimen shall be 4 inches wide and not less than 6 inches long in the direction in which the strength is to be determined.

6b. Five specimens in the warp direction and five specimens in the filling direction, of which no two specimens contain the same yarns, shall be used for determining the breaking strength of the material under standard atmospheric conditions and the remaining specimens for determining the breaking strength of the material in a wet state.

7. *Testing machine.*

7a. A motor-driven pendulum machine or a constant rate-of-load machine shall be used.

7b. The faces of the front members of the jaws shall measure 1 by 1 inch, and the faces of the back members shall measure 1 inch in the direction of the application of the load and 2 inches or more perpendicular to the direction of the application of the load. The jaws shall have smooth, flat faces with edges very slightly rounded to prevent cutting, and they shall be pivoted to take the direction of the load force easily and smoothly.

7c. If a pendulum machine is used, it shall be of such capacity that when the specimen breaks, the angle between the pendulum and the vertical is between 9° and 45°. The jaws through which the load is applied shall move at a uniform rate of $12 \pm \frac{1}{2}$ inches per minute.

8. *Procedure.*

8a. *Standard conditions.*—One set of test specimens, as described in paragraph 6b, is placed in an atmosphere having a relative humidity of 65 percent at 70° F (21° C) for at least 4 hours. A tolerance of ± 2 percent is permitted in relative humidity and ± 2° F (1.1° C) in

temperature. In cases of dispute, tests shall be conducted on test specimens which are in equilibrium with the foregoing standard atmosphere. Material is considered to be in equilibrium when it shows no progressive change in weight.

8b. *Breaking strength—standard conditions.*—The first set of test specimens prepared in accordance with paragraph 8a is tested for breaking strength as outlined in paragraph 8c.

8c. With the distance between the two pairs of jaws of the testing machine adjusted to 3 inches, the test specimen is placed symmetrically in the jaws with the long dimension parallel to and the short dimension at right angles to the direction of the application of the load. Caution shall be exercised to see that the same yarns are clamped by both pairs of jaws. If a specimen slips in the jaws, breaks in the jaws, breaks at the edges of the jaws, or for any reason attributable to faulty operation, the results vary markedly from the average for the set, the result is disregarded, another specimen is taken and the result of its break included in the average.

8d. *Wet breaking strength.*—The second set of test specimens, as described in paragraph 6b, is immersed in water at room temperature for 2 hours. The specimens are removed, one at a time, and tested immediately for breaking strength in accordance with the method outlined in paragraph 8c. The testing of the specimen shall be completed within 1 minute after its removal from the water.

8e. The breaking strength, standard conditions or wet, in the warp or filling direction is the average of the loads required to break the five specimens cut in that direction.

9. *Reporting breaking strength.*—The warp and filling breaking strengths, standard conditions and wet, shall be reported separately in pounds to the nearest whole number.

V. COLORFASTNESS TO CLEANING, DRY AND WET

[For colorfastness to laundering see sections VII and VIII]

10. *Test specimens.*—Two test specimens, each 2 by 4 inches, are required for this test. To each of these two test specimens are sewed 1-inch square pieces of white wool, desized cotton, silk, viscose rayon, and acetate rayon fabrics, or a 1-inch square piece of composite test cloth.[1]

11. *Apparatus.*—A Launder-Ometer, or similar machine, in which 1-pint preserve jars are held with their bases toward a horizontal shaft 2 inches from the center of rotation and the shaft rotated at a speed of 40 to 45 revolutions per minute, shall be used.

12. *Cleaning procedures.*

12a. *Cleaning, dry, procedure.*—Each specimen is placed in a 1-pint preserve jar containing 100 milliliters of cleaning solution prepared by mixing together 1,000 parts by volume of Stoddard solvent,[2] 67 parts of dry-cleaning soap,[3] 4 parts of water, and 4 parts of tertiary

[1] This cloth consists of a light weight worsted fabric into which are woven wool, cotton, silk, viscose rayon and acetate rayon yarns, in the order named. These yarns are woven close together in such a way as to form floats on one side of the fabric approximately ¼ inch long and 1/16 inch wide, and each set of yarns is spaced approximately 1¼ inches apart (center to center). This type of cloth may be obtained from the American Woolen Company, Andover, Massachusetts (Style DD-8370; Price, January 1939—$2.37½ per yard, 60-inch width).

[2] The dry-cleaning fluid shall conform to all of the requirements of "Stoddard Solvent, Commercial Standard CS3-38."

[3] The soap shall be made by dissolving 56 grams of caustic potash (KOH) in 100 milliliters of water. The potassium hydroxide solution shall be poured slowly with constant stirring into a mixture of 340 grams of oleic acid and 500 milliliters of Stoddard solvent, continuing the stirring for 15 to 20 minutes.

butyl alcohol. The jars are closed, placed in the machine, and the machine operated for 25 minutes. The solution in the jars is then poured out, any discoloration resulting from the bleeding of the specimen being noted, and 100 milliliters of fresh Stoddard solvent without soap, alcohol, or water is placed in each jar. The jars are returned to the machine which is then operated for an additional 10 minutes. The specimens are then removed from the jars and, without squeezing, are laid out on a horizontal surface, such as a muslin-covered frame or screen, and allowed to dry at room temperature. One specimen is pressed according to the method of paragraph 13a or 13b, or, if a velvet, steamed in accordance with paragraph 13c. The other specimen is treated further according to the following paragraph.

12b. *Cleaning, wet, procedure.*[4]—The unpressed specimen from the preceding paragraph is placed on a porcelain slab, or piece of slate, and wet with sufficient distilled water at a temperature of 90° to 100° F, containing 1 gram of neutral soap per liter, to keep the fabric wetted thoroughly for 15 minutes. The fabric is then rinsed by immersing it in a liter of distilled water at a temperature of 90° to 100° F for 5 minutes, removed without squeezing, laid out on a horizontal surface, such as a muslin-covered frame or screen, and allowed to dry at room temperature. This specimen is pressed according to the method of paragraph 13a or 13b or, if a velvet, steamed in accordance with paragraph 13c.

13. *Pressing.*—Either of the two methods outlined below may be used in the pressing of the specimen.

13a. *Hand pressing.*—When most of the solvent has evaporated, the specimen is laid on a padded ironing board. The specimen is covered with a damp muslin press cloth, weighing 4 to 4½ ounces per square yard, previously saturated with water and wrung out so as to retain moisture equal to approximately 75 percent of its dry weight. It is then pressed with a flatiron having a temperature between 275° and 300° F[5] until dry. The specimen is allowed to lie on a smooth, horizontal surface for 1 hour thereafter at room temperature.

13b. *Steam pressing (for all fabrics except velvets).*—When most of the solvent has evaporated, the specimen is laid on a bed of a flat-bed press. The press shall be of a hot-bed or polished metal-top type for flat fabrics, or a cloth-top press for rough crepes. The steam pressure shall be between 65 and 70 pounds. The head of the machine is lowered and held in contact with the fabric. During this period steam is admitted from the buck of the press for a period of from 5 to 10 seconds. The specimen is allowed to lie on a horizontal surface for 1 hour thereafter at room temperature.

13c. *Steaming (for velvets).*—When most of the solvent has evaporated from a velvet test specimen, cleaned according to paragraph 12,

[4] This refers to the cleaning, wet, procedure sometimes necessary in dry cleaning. It does not refer to laundering.

[5] A 5- to 6-pound iron with a 1,000-watt heating unit is recommended in order to avoid large fluctuations in temperature. The temperature of the iron can be determined conveniently with the aid of a calibrated thermocouple, a thermometer inserted in a well in the iron, or alloys melting at approximately 275° and 300° F. It must be remembered in using the second method that there may be considerable lag between the temperature indicated by the thermometer and the actual surface temperature of the iron; and in using the second and third methods, that the iron may be cooled by contact with the cloth. Alloys of tin, lead and bismuth in the proportions 16:25:16 and 9:8:4 melt at approximately 277° and 298° F, respectively. If small particles of these alloys are placed on the iron, the one alloy will melt and the other will not if the iron temperature is within the required range. Temperature indicators furnished as an integral part of some irons should be calibrated for accuracy.

the specimen is spread out on a steam board or table [6] on a damp muslin press cloth weighing 4 to 4½ ounces per square yard previously saturated with water and wrung out so as to retain moisture equal to approximately 75 percent of its weight. Steam is then turned on and allowed to pass through the velvet for 2 minutes. The test piece is then cooled to room temperature and allowed to lie in a smooth horizontal position for 1 hour thereafter.

14. *Reporting colorfastness to cleaning, dry and wet.*

14a. *Cleaning, dry.*—A fabric shall be reported as "fast to cleaning, dry" if when tested according to the procedure in paragraph 12a, there is no change in color of the tested specimen in comparison with the original fabric or staining of any of the white materials affixed to the test specimen. Any change in appearance aside from color shall be reported.

14b. *Cleaning, wet.*—A fabric shall be reported as "fast to cleaning, wet" if when tested according to the procedure in paragraph 12b, there is no change in color of the tested specimen in comparison with the original fabric or staining of any of the white materials affixed to the test specimen. Any change in appearance aside from color shall be reported.

VI. COLORFASTNESS TO CROCKING (RUBBING)

15. *Test specimens.*—Two test specimens each at least 2 by 5 inches, are required for this test.

16. *Apparatus.*—A Crock Meter [7] or similar machine shall be used, in which a square of bleached, unstarched, 80/80 print cloth,[8] held firmly by means of a spiral clip over a so-called finger ⅝-inch (15 millimeters) diameter, is slid back and forth over the test specimen, under a constant pressure of 32 ounces.

17. *Procedure.*

17a. *Dry-cloth test.*—One of the test specimens is attached to the top of the board on which the "finger" rests. The square of bleached, unstarched, 80/80 print cloth is fastened to the "finger" by means of the spiral clip; the "finger" is rested on the test specimen and slid back and forth 10 times by means of the crank; that is, 10 revolutions of the crank, timed at the approximate rate of 1 revolution per second.

17b. *Wet-cloth test.*— The preceding test is repeated on the other specimen with a dampened [9] piece of the same print cloth.

18. *Colorfastness.*—The white cotton cloth is examined for staining. The degree of staining may be determined by visual comparison with the fastness of the standard dyeings tested in the same way and preferably simultaneously.

19. *Reporting colorfastness to crocking (rubbing).*—A fabric from which there is no transfer of color to white cloth either while dry or wet shall be reported as "fast to crocking" (comparable to standard sample R3). Three degrees of crocking are recognized according to

[6] A steam board or table is a board or table of perforated metal, well padded with cotton or other absorbent material. The perforations are of suitable size and so spaced as to allow an even dispersion of steam through the padding.

[7] Obtainable from the W. C. Durfee Co., 114 Federal Street, Boston, Mass., or from L. A. Olney, Chairman, Research Committee, AATCC, Lowell Textile Institute, Lowell, Mass.

[8] Squares of this cloth cut to size for use in the Crock Meter may be purchased in packages of 100 from L. A. Olney, Lowell Textile Institute, Lowell, Mass.

[9] Specimen wet out thoroughly, squeezed, and then passed through a wringer between two sheets of filter paper.

standard samples R1 to R3. (See paragraph 71.) The colorfastness to crocking of any degree less than R3 shall be reported as "comparable to standard sample R ____, a standard dyeing of the American Association of Textile Chemists and Colorists."

VII. COLORFASTNESS TO LAUNDERING OF COTTON AND LINEN DRESS FABRICS

20. *Test specimens.*—Three test specimens, each 2 by 4 inches are required for this test. To each of these three specimens are sewed 1-inch square pieces of white wool, desized cotton, silk, viscose rayon, and acetate rayon fabrics, as required to determine staining, or a 1-inch square piece of composite test cloth.[10] Each of the three test specimens shall be subjected to a different one of the three tests outlined below.

21. *Washing machine.*—A Launder-Ometer, or similar machine, in which 1-pint preserve jars are held with their bases toward a horizontal shaft 2 inches from the center of rotation and the shaft rotated at a speed of 40 to 45 revolutions per minute, shall be used. Provision shall be made for maintaining the initial temperature of the jars by rotating them in a water bath which can be heated.

22. *Test No. 1. Washing with neutral soap.*

22a. This test is much milder than either test No. 2 or 3. The specimen to be tested is placed in a 1-pint glass jar containing 100 milliliters of soap solution heated to 105° F (40.5° C) and ten ⅜-inch rubber balls. The soap solution shall consist of 1 gram of a good grade of 88-percent neutral chip-soda soap, such as Ivory Flakes or Lux, per liter. An equivalent amount of soap having a higher or lower strength may be used.

22b. The jar is then closed and placed in the washing machine (paragraph 21) which is half-filled with water at 105° F (40.5° C). The machine is operated for 15 minutes. The contents of the jar are then emptied and an equal amount of fresh soap solution, at the same temperature, is added, and the above treatment repeated for another 15 minutes; the jar is emptied again and the specimen rinsed with 200 milliliters of water at 105° F (40.5° C) for 10 minutes. The jar is then emptied and the specimen treated with 200 milliliters of water at 80° F (27° C), containing 0.05 percent of acetic acid. The jar is shaken by hand and then permitted to stand for 10 minutes. The contents are then emptied and the specimen rinsed with 200 milliliters of cold water, hydroextracted or wrung and dried by pressing with a flatiron having a temperature between 275° and 300° F.[11]

23. *Test No. 2. Washing without aid of bleaching agent.*

23a. The specimen to be tested is placed in a 1-pint glass jar containing 100 milliliters of soda-soap solution heated to 160° F (71° C) and ten ⅜-inch rubber balls. The soap solution shall consist of 5 grams of a good grade of 88-percent neutral chip-soda soap and 2 grams of 58-percent soda ash per liter. The soap solution is made up on a basis of 88 percent of soap, although an equivalent amount of soap having a higher or lower strength may be used.

[10] See footnote 1, p. 3.
[11] See footnote 5, p. 4.

23b. The jar is then closed and placed in the washing machine (paragraph 21), which is half-filled with water at 160° F (71° C). The machine is operated for 30 minutes. The contents of the jar are then emptied and the specimen rinsed with 200 milliliters of water at 160° F (71° C) for 10 minutes. The jar is emptied again and the specimen treated with 200 milliliters of water at 80° F (27° C), containing 0.05 percent of acetic acid. The jar is shaken by hand and then permitted to stand for 10 minutes. The jar is then emptied and the specimen rinsed with 200 milliliters of cold water, hydroextracted or wrung, and dried by pressing with a flatiron having a temperature between 275° and 300° F.[12]

24. *Test No. 3. Washing with aid of bleaching agent.*

24a. The specimen to be tested is placed in a 1-pint glass jar containing 100 milliliters of soda-soap solution heated to 160° F (71° C), 1 milliliter of hypochlorite of soda solution containing 1 percent of available chlorine, and ten ⅜-inch rubber balls.[13] The soap solution shall consist of 5 grams of a good grade of 88-percent neutral chip-soda soap and 2 grams of 58-percent soda ash per liter. The soap solution is made up on the basis of 88 percent of soap, although an equivalent amount of soap having a higher or lower strength may be used. It is essential to know by chemical analysis the strength of the hypochlorite of soda solution used at time of using. The commercial product testing 10 percent of available chlorine, as sold for laundry use, is a convenient product for this test.

24b. The jar is then closed and placed in the washing machine (paragraph 21), which is half-filled with water at 160° F (71° C). The machine is operated for 15 minutes. The contents of the jar are then emptied, and an equal amount of fresh solution of soap, soda, and hypochlorite at the same temperature is added, and the above treatment repeated for another 15 minutes; the jar is emptied again and the specimen rinsed with 200 milliliters of water at 160° F (71° C) for 10 minutes. The jar is emptied again and the specimen treated with 200 milliliters of water at 80° F (27° C), containing 0.05 percent of acetic acid. The jar is shaken by hand, and then permitted to stand for 10 minutes. The jar is then emptied, and the specimen rinsed with 200 milliliters of cold water, hydroextracted or wrung, and dried by pressing with a flatiron having a temperature between 275° and 300° F.[14]

25. *Colorfastness.* The color of the washed specimen is compared with that of the original fabric and the white swatches are examined for staining. The colorfastness may be determined by a visual comparison with the fastness of the standard dyeings tested in the same way and preferably simultaneously.

26. *Reporting colorfastness to laundering of cotton and linen dress fabrics.* A fabric which shows a degree of fastness under test No. 1 equal to standard sample CW1 shall be reported as "fast to laundering with neutral soap"; when equal under test No. 2 to standard sample CW2, it shall be reported as "fast to laundering without the aid of a bleaching agent"; and when equal under test No. 3 to standard

[12] See footnote 5, p. 4.

[13] Fresh or new rubber balls may react with chlorine, thereby vitiating the results of the test. Such balls shall be washed in a separate solution as outlined in paragraph 24a before being used for testing purposes.

[14] See footnote 5, p. 4.

sample CW3, it shall be reported as "fast to laundering with the aid of a bleaching agent." (See paragraph 72.) Staining of each of the white materials shall be reported.

VIII. COLORFASTNESS TO LAUNDERING OF DRESS FABRICS OTHER THAN COTTON AND LINEN

27. *Test specimen.*—One test specimen, 2 by 4 inches, is required for this test. To it are sewed 1-inch square pieces of white wool, desized cotton, silk, viscose rayon, and acetate rayon fabrics, or a 1-inch square piece of composite test cloth.[15]

28. *Washing machine.*—A Launder-Ometer, or similar machine, in which 1-pint preserve jars are held with their bases toward a horizontal shaft 2 inches from the center of rotation and the shaft rotated at a speed of 40 to 45 revolutions per minute, shall be used. Provision shall be made for maintaining the initial temperature of the jars by rotating them in a water bath which can be heated.

29. *Washing procedure.*—The specimen to be tested is placed in a 1-pint preserve jar to which is added 300 milliliters of a solution containing 0.5 percent of neutral soap in soft water heated to 100°±2° F. The jar is then closed and placed in the machine, which is half-filled with water at 100°±2° F. The machine is operated for 30 minutes. It shall be heated to maintain a constant temperature of 100°±2° F. The specimen is then removed from the jar, rinsed in three changes of water at 100°±2° F, rolled in a dry towel or absorbent cotton cloth to remove excess moisture, spread on a padded ironing board, and pressed until dry with a flatiron having a temperature between 275° and 300° F.[16] The specimen is allowed to lie on a smooth, horizontal surface for 1 hour at room temperature.

30. *Colorfastness.*—The color of the washed specimen is compared with that of the original fabric and the white swatches are examined for staining. The colorfastness may be determined by a visual comparison with the fastness of the standard dyeings tested in the same way and preferably simultaneously.

31. *Reporting colorfastness to laundering of dress fabrics other than cotton and linen.*

31a. Fabrics predominately silk or rayon, which show a degree of colorfastness equal to that of standard sample SW2 (see paragraph 73a) shall be reported as "fast to laundering." Staining of each of the white materials shall be reported.

31b. Fabrics predominately wool, which show a degree of color fastness equal to that of standard sample WW3 (see paragraph 73b) shall be reported as "fast to laundering." Staining of each of the white materials shall be reported.

IX. COLORFASTNESS TO LIGHT

32. *Test specimens.*—One or preferably two specimens, each approximately 2½ by 3 inches, shall be taken for this test.

33. *Apparatus.*—The apparatus for this test shall be a type F D A Fade-Ometer [17] or its equivalent. This apparatus consists of a carbon arc enclosed in Pyrex glass, operated on a direct current of

[15] See footnote 1, p. 3.
[16] See footnote 5, p. 4.
[17] Manufactured by the Atlas Electric Devices Co., Chicago, Ill.

approximately 13 amperes or 60-cycle alternating current of approximately 17 amperes, with 140 volts across the arc. The voltage of the power line to the apparatus is 208 to 250 volts. The distance from arc to samples is 10 inches. The air about the samples during exposure is humidified and its temperature is automatically controlled. The temperature of the air in the vicinity of the samples, measured with a mercury thermometer, shall not exceed 105° F during this test.

34. *Procedure.*

34a. An area of the specimen measuring approximately 1½ by 1¾ inches is exposed in the apparatus described above for a sufficient length of time to establish the fastness of the specimen relative to that of the standard dyeings referred to in the next section. It is advisable to expose two areas, and to expose the standards with which the test material is to be compared simultaneously and in the same way. When either the test specimen or standard has faded slightly, one of the two specimens of each is set aside and the exposure of the others continued for an equal period of time. If only one specimen of each material is used, half of each exposed area is covered with an opaque material and the other half exposed for a total time twice that of the first. After exposure, the specimen is allowed to lie in the dark at room temperature for at least 2 hours. The amount of fading is then judged by comparing the exposed and adjacent unexposed areas of the specimen.

34b. *Colorfastness.*—The colorfastness is determined by a visual comparison of the fading of the specimen with that of the standard dyeings tested in the same apparatus and preferably simultaneously.

35. *Reporting colorfastness to light.*—The colorfastness of a fabric shall be reported as "comparable to standard sample L ____, a standard dyeing of the American Association of Textile Chemists and Colorists." [18] (See paragraph 74.)

X. COLORFASTNESS TO PERSPIRATION

36. *Test specimens.*—Two specimens of the fabric, each about 2 inches wide and of sufficient length that when rolled lengthwise and inserted in the glass tube, as described below, the roll will fit the bore of the tube, are required for this test.

37. *Reagents.*—Two solutions are required as follows:

Acid Solution

10 grams of sodium chloride.
1 gram of lactic acid, USP 85 percent.
1 gram of disodium orthophosphate anhydrous.
Make up to 1 liter with distilled water.

Alkaline Solution

10 grams of sodium chloride.
4 grams of ammonium carbonate, USP.
1 gram of disodium orthophosphate anhydrous.
Make up to 1 liter with distilled water.

[18] Standard samples for colorfastness to light are listed in the order of increasing fastness. The first (Standard Sample L1) shows very slight change in color when exposed for 2½ hours in the Fade-Ometer. When the intermediate standard samples are available, each one will be approximately twice as fast to light as the one immediately preceding it.

38. *Procedure.*

38a. One of the test specimens and a similar size piece of composite test cloth [19] are thoroughly wet with the acid solution. The amount of solution left in the specimens should be in such a ratio that when the roll weighs dry 2½ grams, the total weight will be 8 grams. The two pieces are then rolled together, with the fabric to be tested on the inside. The other test specimen is prepared in a similar manner, with the exception that the pieces are wet thoroughly with the alkaline solution.

38b. Each roll is then placed in a glass tube, one end of which is closed leaving one-third of each roll projecting. The tube should be 15 to 20 millimeters (approximately $^{19}/_{32}$ to $^{25}/_{32}$ inch) in diameter; a length of 60 to 75 millimeters (approximately 2⅜ to $2^{15}/_{16}$ inches) is convenient. Each tube is then placed in an oven maintained at a temperature of 100° ± 2° F. The specimens are allowed to remain in the oven until dry, which drying should take place in about 48 hours.

39. *Colorfastness.*—The dried specimens are examined. Staining of the undyed material and change in color through the migration of the dye from one part of the specimen to another are taken into consideration in reporting fastness.

40. *Reporting colorfastness to perspiration.*—A fabric which shows no change of color or staining of the undyed fabric shall be reported as "fast to perspiration."

XI. COLORFASTNESS TO PRESSING, DRY AND WET

41. *Test specimens.*—Two test specimens are required for these tests. To one of these specimens are sewed pieces of white wool, desized cotton, silk, viscose rayon, and acetate rayon fabrics, or a piece of composite test cloth.[20]

42. *Procedure.*

42a. *Dry pressing.*—The test specimen without the sewed-on white fabrics is pressed for 10 seconds with a flatiron having a temperature between 275° and 300° F [21] at the point and allowed to rest for 2 hours. The specimen so pressed is compared with a piece of the fabric not pressed.

42b. *Wet pressing.*—The other test specimen is thoroughly wetted (in the case of woolens and worsteds, the dry fabric is covered with a damp muslin press cloth) and pressed dry on a pad permeable to steam with a flatiron having a temperature between 275° and 300° F [22] at the point and allowed to rest for 2 hours. The specimen so pressed is compared with a piece of the fabric not pressed and the white fabrics are examined for staining.

43. *Reporting colorfastness to pressing, dry and wet.*

43a. *Pressing, dry.*—A fabric which shows no change in color shall be reported as "fast to pressing, dry."

43b. *Pressing, wet.*—A fabric which shows no change in color or staining of the white fabrics shall be reported as "fast to pressing, wet."

[19] See footnote 1, p. 3.
[20] See footnote 1, p. 3.
[21] See footnote 5, p. 4.
[22] See footnote 5, p. 4.

XII. SHRINKAGE IN CLEANING, DRY AND WET

[For shrinkage in laundering, see sections XIII and XIV]

44. *Test specimens.*—Two specimens are required, one for shrinkage in cleaning, dry, the other for cleaning, wet. The specimens shall be taken no nearer the selvage than one-tenth the width of the fabric. Each shall measure at least 12 by 12 inches. A 10-inch square whose sides are placed parallel with the warp and filling, respectively, of the specimen is outlined on it preferably with the aid of a rigid templet. The corners and midpoints of each side of the square are marked either with indelible ink applied with a fine pen, with a fine thread sewed into the fabric, or by 1/16-inch holes punched into the fabric.

45. *Apparatus.*—The apparatus used shall consist of a cylinder, preferably of metal approximately 13 inches high, having a diameter of about 8¾ inches (capacity 3 gallons). The cylinder shall be mounted in a vertical position on an axis, which is inclined 50° to the axis of the cylinder, and rotated about this axis at a speed of 45 to 50 revolutions per minute.

46. *Cleaning procedures.*

46a. *Cleaning, dry, procedure.*—The machine is filled approximately one-third full of a cleaning solution prepared by mixing together 1000 parts by volume of Stoddard solvent,[23] 67 parts of drycleaning soap,[24] 4 parts of water, and 4 parts of tertiary butyl alcohol. The two specimens and sufficient suitable worsted cloth [25] in pieces approximately 12 by 12 inches to make a total dry load of 1 pound are placed in the machine. It is operated for 25 minutes, the solution poured out and the machine refilled approximately one-third full of fresh Stoddard solvent without soap, alcohol, or water. The machine is then operated for an additional 10 minutes. The specimens are then removed, and without squeezing, laid out on a horizontal surface, such as a muslin-covered frame or screen. Wrinkles are removed by gently pressing the specimens with the palm of the hand. One specimen is pressed according to the method of paragraph 47a or 47b, or, if velvet, steamed in accordance with paragraph 47c. The other specimen is treated further according to paragraph 46b.

46b. *Cleaning, wet, procedure.*[26]—The unpressed specimen from paragraph 46a is placed on a porcelain slab, or piece of slate, and wet with sufficient distilled water at a temperature of 90° to 100° F, containing 1 gram of neutral soap per liter, to keep the fabric wetted thoroughly for 15 minutes. The fabric is then rinsed by immersing it in a liter of distilled water for 5 minutes, removed without squeezing, laid out on a horizontal surface, such as a muslin-covered frame or screen, and allowed to dry at room temperature. This specimen is pressed according to the method of paragraph 47a or 47b, or, if a velvet, steamed in accordance with paragraph 47c.

47. *Pressing.*—Either of the two methods outlined below may be used in the pressing of the specimen.

[23] See footnote 2, p. 3.
[24] See footnote 3, p. 3.
[25] Worsted cloth of plain weave, 8 to 8.5 ounces, per linear yard, 58 inches wide is suitable for this purpose and may be obtained from the Arlington Mills, Lawrence, Mass.
[26] See footnote 4, p. 4.

47a. *Hand pressing.*[27]—When most of the solvent has evaporated, the specimen is laid on a padded ironing board, care being taken to avoid any strain during handling. The specimen is covered with a damp muslin press cloth, weighing 4 to 4½ ounces per square yard, previously saturated with water and wrung out so as to retain moisture equal to approximately 75 percent of its dry weight. It is then pressed with a flatiron having a temperature between 275° and 300° F [28] at the point until dry. The specimen is allowed to lie on a smooth horizontal surface for 1 hour thereafter at room temperature.

47b. *Steam pressing (for all fabrics except velvets).*[29]—When most of the solvent has evaporated, the specimen is laid on a bed of a flat-bed press, care being taken to avoid any strain during handling. The press shall be of a hot-bed or a polished metal top type for flat fabrics or a cloth-type press for rough crepes. The steam pressure shall be between 65 and 70 pounds. The head of the machine is lowered and held in contact with the fabric. During this period, the steam is admitted from the buck of the press for a period of from 5 to 10 seconds. The specimen is allowed to lie on a horizontal surface for 1 hour thereafter at room temperature.

47c. *Steaming (for velvets).*—When most of the solvent has evaporated from a velvet test specimen cleaned according to paragraph 46 the specimen is spread out on a steam board or table [30] on a damp muslin press cloth, weighing 4 to 4½ ounces per square yard, previously saturated with water and wrung out so as to retain moisture equal to approximately 75 percent of its weight. Steam is then turned on and allowed to pass through the velvet for 2 minutes. The test piece is then cooled to room temperature and allowed to lie in a smooth, horizontal position for 1 hour thereafter.

48. *Shrinkage.*—The three distances marked in each direction on the specimens are then measured. The average changes in dimensions in the warp and in the filling directions for each specimen are calculated. These are designated the warp and filling shrinkages, respectively, of the specimens.

49. *Reporting shrinkage in cleaning, dry and wet.*

49a. The warp and filling shrinkages in "cleaning, dry" shall be reported separately, in percent, to the nearest whole number.

49b. The warp and filling shrinkages in "cleaning, wet" shall be reported separately, in percent, to the nearest whole number.

XIII. SHRINKAGE IN LAUNDERING OF COTTON AND LINEN DRESS FABRICS

50. *Test specimen.*—One test specimen at least 20 inches square or at least 20 inches in length by the full width of the material is required for this test. There are marked off accurately on the specimen, in both the warp and filling directions, three 18-inch lengths, or longer when the size of the specimen permits, spaced at least 6 inches apart, at least 1 inch from all edges of the specimen, and not nearer the selvage than one-tenth the width of the fabric. Suitable marks are obtained with indelible ink applied with a fine pen or

[27] It has been disclosed that as far as handling the fabric during pressing is concerned, this method is not generally accepted for woolens and worsteds. When an acceptable test procedure for holding woolen and worsted fabrics during pressing is developed, it will be offered for inclusion in this standard.

[28] See footnote 5, p. 4.

[29] See footnote 27, p. 12.

[30] See footnote 6, p. 5.

stamp, or fine threads sewed into the fabric. Care shall be taken to see that the distances are parallel with the yarns.

51. *Washing machine.*—The washing shall be carried out preferably in a reversing wash wheel of the cylindrical type. A suitable type of machine for this test is one having a 20- or 24-inch wheel and taking a load of about 3 pounds of dry wash. Provision shall be made for adding water to the wheel at the designated temperature and for heating directly in the wheel preferably by means of live steam.

52. *Washing procedure.*

52a. *Standard load.*—A load which is normal for the machine used is washed at one time. The load may be made up of test specimens and additional cloth as required. The amount of wash solution or rinse water shall be normal for the machine and in any event sufficient to cover the samples. Usually, an amount weighing about 50 times the weight of dry cloth will be sufficient.

52b. *Soap solution.*—Sufficient laundry soap of good grade to give a good running suds, shall be used. As a convenience, the soap may be dissolved in water prior to adding it to the wheel. A stock solution may be prepared by dissolving 1 pound of chip soap in 1 gallon of hot water. When cool, this forms a thick homogeneous jelly which may be added to the wheel as required.

52c. *Washing.*—The wash wheel is kept running continuously for 60 minutes from the start of this test. The wet cloth samples will thus be tumbled in the machine while the latter is being drained and filled. This is essential. Each operation should be carried out without delay.

52d. The specimen to be tested and such additional cloth as is necessary to make up the load are placed in the wash wheel, which is then started running and the time noted. The required amount of water at a temperature not exceeding 100° F (38° C) and of soap are then added. The temperature is then raised to 212° F (100° C), preferably by injecting live steam into the wheel, and the heat then turned off. When the wheel has run for 40 minutes from the time it was started, the soap solution is drained off, the wheel filled to the proper level with water, and the temperature of the water raised to 140° F (60° C). At the end of 45 minutes from the start of the test, the water is again drawn off. The wheel is filled again to the proper level with water and its temperature raised to 140° F (60° C). At the end of 55 minutes from the start of the test, the water is drawn off and the wheel allowed to run without further additions to complete the full 60 minutes of operation, tumbling the wet samples in the wheel while the water drains. The specimens are removed from the wheel and the excess water squeezed from them by hand. Do not wring the specimens by hand or by means of squeeze rolls as either method may distort the material and give unsatisfactory results. The specimens are then placed horizontally on a screen or ventilated surface to dry. Do not hang the specimens vertically to dry. If a heated drying chamber is available, the specimens are dried therein, otherwise, in a current of air at room temperature from an electric fan. When the specimens are dry, they are laid out smoothly, without stretching, on a table, dampened, and allowed to lie for 5 minutes.

53. *Pressing.*—Either one of the two methods described below may be used in pressing the specimen. Whichever method of press-

ing is used, the specimen is allowed to cool before being measured again.

53a. *Hand pressing.*—The specimen is laid on a padded ironing table, all noticeable wrinkles carefully smoothed out and pressed by raising and lowering the iron. Do not slide the iron back and forth on the specimen as this may distort the cloth. The iron temperature shall be between 275° and 300° F [31] at the point.

53b. *Machine pressing.*—The specimen is laid on the bed of the press, all noticeable wrinkles carefully smoothed out, and pressed by lowering the head of the machine. The specimen is removed from the bed of the machine in such a manner as to cause no strain on the cloth.

54. *Shrinkage.*—The three distances marked in each direction on the specimens are then measured. The average changes in dimensions in the warp and in the filling directions for each specimen are calculated. These are designated the warp and filling shrinkages, respectively, of the specimens.

55. *Reporting shrinkage in laundering of cotton and linen dress fabrics.*—The warp and filling shrinkages shall be reported separately in percent, to the nearest whole number.

XIV. SHRINKAGE IN LAUNDERING OF DRESS FABRICS OTHER THAN COTTON AND LINEN

56. *Test specimen.*—One test specimen, not less than 12 by 12 inches, is required for this test. It shall be taken no nearer the selvage than one-tenth the width of the fabric. A 10-inch square whose sides are placed parallel with the warp and filling, respectively, of the specimen is outlined on it preferably with the help of a rigid templet. The corners and midpoints of each side of the square are marked either with indelible ink applied with a fine pen or with a fine thread sewed into the fabric.

57. *Washing machine.*—The apparatus used shall consist of a cylinder, preferably of metal, approximately 13 inches high, having a diameter of about 8¾ inches (capacity 3 gallons). The cylinder shall be mounted in a vertical position on an axis, which is inclined 50° to the axis of the cylinder and rotated about this axis at a speed of 45 to 50 revolutions per minute.

58. *Washing procedure.*—The machine is filled approximately one-third full of a solution containing 0.5 percent of neutral soap in soft water heated to 100°±2° F. A specimen, prepared as in paragraph 56, and sufficient suitable worsted cloth [32] in pieces approximately 12 by 12 inches to make a total dry load of 1 pound are placed in the machine. The machine is operated for 30 minutes. The specimen is then removed and rinsed in three changes of water at 100°±2° F.

59. *Pressing corresponding to household practice.*—The specimen is rolled in a dry towel or absorbent cotton cloth to remove excess moisture, spread on a padded ironing board, and pressed until dry with a flatiron having a temperature between 275° and 300° F [33] at the point. During pressing, the operator shall exert the tension usual in hand ironing, tending to reshape and restore the specimen

[31] See footnote 5, p. 4.
[32] See footnote 25, p. 11.
[33] See footnote 5, p. 4.

to its original size and shape, as is done in home pressing. The specimen is allowed to lie on a smooth, horizontal surface for 1 hour thereafter at room temperature.

60. *Shrinkage.*—The three distances marked in each direction on the specimens are then measured. The average changes in dimensions in the warp and in the filling directions for each specimen are calculated. These are designated the warp and filling shrinkages, respectively, of the specimens.

61. *Reporting shrinkage in laundering of dress fabrics other than cotton and linen.*—The warp and filling shrinkages shall be reported, in percent, to the nearest whole number.

XV. RESISTANCE TO YARN SLIPPAGE

62. *Test specimens.*—Three test specimens, each 4 inches wide by at least 14 inches long, shall be cut from a sample in its original condition and also from a sample which has been laundered (see paragraph 58), or cleaned, dry or wet (see paragraph 46), or both depending upon the intended use of the materials, with the long dimension in the direction of the yarns upon which the slippage is to be determined. If less force is required to slip the filling yarns on the warp yarns, the 14-inch dimension shall be across the filling. However, if less force is required to slip the warp yarns on the filling yarns, then the 14-inch dimension shall be across the warp. Generally the direction of pull for least resistance to yarn slippage is determinable by the thumb and finger method. However, where that method does not suffice, the direction of pull shall be determined from the results of tests of two preliminary specimens (one cut in each direction).

63. *Preparation of specimens.*

63a. Each specimen is folded back upon itself so that the distance from the fold to one end measures at least 4 inches and to the other end, at least 10 inches, care being taken to have the fold parallel to the crosswise yarns. About ½ inch from the fold, a seam is sewed parallel with the crosswise yarns. The fold is cut either before or after making the seam.

63b. (A satisfactory procedure to obtain a correct seam when the fabric is such that a yarn can be drawn, is to draw out a crosswise yarn 4 inches from one end to mark the fold and then cut the specimen along the drawn yarn. The cloth guide attachment on the sewing machine is set for ½ inch and the fold or cut edges alined with it for sewing the seam.)

63c. The seam is sewed with a plain stitch (Stitch type 301, Federal Specification DDD–S–751) with 00 white, mercerized, cotton thread, 14 stitches to the inch, under uniform tension and as near perpendicular to the filling or warp yarns as possible. The approximate needle diameter shall be 0.030 inch.

64. *Testing machine.*

64a. A motor-driven pendulum machine shall be used.

64b. The faces of the front members of the jaws shall measure 1 by 1 inch, and the faces of the back members shall be 1 inch in the direction of the application of the load and 2 inches or more perpendicular to the direction of the application of the load. If the resistance to yarn slippage is less than 10 pounds, the faces of the front members of the jaws shall be 1 by 2 inches. The jaws shall have smooth, flat

faces with edges very slightly rounded to prevent cutting, and they should be pivoted to take the direction of loading force easily and smoothly.

64c. The maximum capacity of the machine shall not exceed 25 kilograms (55 pounds). The jaws through which the load is applied shall move at a uniform speed of $12 \pm \frac{1}{2}$ inches per minute.

64d. The machine shall be provided with an autographic recording device to trace a load-elongation curve.

64e. In order to obtain proper alinement, it has been found helpful, after gripping the specimen in the upper jaw, to attach to the lower end of the specimen an auxiliary 6-ounce clamp having jaws at least 4 inches wide.

65. *Conditioning.*—The test specimen is placed in an atmosphere having a relative humidity of 65 percent at 70° F (21° C) for at least 4 hours. A tolerance of ± 2 percent is permitted in relative humidity and ± 2° F (1.1° C) in temperature. In cases of dispute, tests shall be conducted on test specimens which are in equilibrium with the foregoing standard atmosphere. Material is considered to be in equilibrium when it shows no progressive change in weight.

66. *Fabric elongation.*

66a. With the distance between the two pairs of jaws of the testing machine adjusted to 3 inches, the prepared test specimen, with the long portion uppermost, is placed symmetrically in the upper jaws so that the long dimension of the 10-inch part of the specimen is parallel to the direction of application of the load, and clamped so that the seam is at least 3 inches below the lower edge of the lower jaw. The 6-ounce clamp, when used, is attached to the specimen at a point beneath the lower jaw so that a uniform tension of that amount will be applied when the lower jaw is clamped tight.

66b. The load-elongation curve is obtained up to the breaking load, or up to 55 pounds if the specimen breaks at a higher load. This is the load-elongation curve for the fabric.

67. *Seam elongation.*—The test specimen is inserted symmetrically in the machine so that the seam is in a position parallel to the jaws and midway between the upper and lower jaws in a similar manner to the procedure under paragraph 66a. The seam-elongation curve is recorded on the same record sheet used for recording the load-elongation curve.

68. *Resistance to yarn slippage.*

68a. The load per inch of width at which the elongations of the fabric and the seam differ by ¼ inch more than the difference in the elongations at a load of 1 pound is designated the resistance to yarn slippage.

68b. The resistance to yarn slippage of the cloth in either direction is the average of tests on three specimens. (When using the 2-inch front jaws, the results obtained are divided by 2 to obtain the resistance to yarn slippage.) If a specimen slips in the jaws, breaks in the jaws, breaks at the edges of the jaws, or for any reason attributable to faulty operation a result differs markedly from the average for the set, that result is disregarded, another specimen taken, and the result of this test included in the average. If the fabric or the seam breaks before ¼-inch slippage occurs, the reported slippage is that at the breaking load.

68c. The resistance to yarn slippage may be obtained from the load-elongation curves by placing the points of a pair of dividers on the two curves at the points corresponding to a load of 1 pound. Increase the distance between the ends of the dividers by an amount corresponding to ¼-inch elongation and find the load at which the curves are separated by this distance.

69. *Reporting resistance to yarn slippage.*—The resistance to yarn slippage shall be reported in pounds to the nearest whole number, and the report shall state whether the results are based on fabrics in their original condition; after being cleaned, dry or wet; or after being laundered.

XVI. STANDARD DYEINGS FOR REPORTING COLORFASTNESS (STANDARD SAMPLES)

70. *Standard samples.*—The standard samples prescribed for judging the colorfastness of dress fabrics were chosen from among the standard dyeings of the American Association of Textile Chemists and Colorists. They can be obtained from Louis A. Olney, chairman, Research Committee, AATCC, Lowell Textile Institute, Lowell, Mass., at a nominal cost.

NOTE.—The standard samples of each group, listed below, are arranged in order of increasing fastness.

71. *Colorfastness to crocking (rubbing).*
Standard sample R1.—1.0 percent Victoria Blue B Conc.; E. I. du Pont de Nemours and Co. and Heller and Merz Co.; Colour Index No. 729; dyed on wool. (See 1938 Year Book, AATCC, page 179.)
Standard sample R2.—2.0 percent Alphazurine A; National Aniline and Chemical Company; Colour Index No. 714; dyed on wool. (See 1938 Year Book, AATCC, page 179.)
Standard sample R3.—2.5 percent Alizarine Rubinole 3G; General Dyestuff Corporation; Colour Index No. 1091; dyed on wool. (See 1938 Year Book, AATCC, page 179.)

72. *Colorfastness to laundering of cotton and linen fabrics.*
Standard sample CW1.—(For test No. 1.) 1 percent Chrysophenine, Conc.; Colour Index No. 365; dyed direct with Glauber's salt on cotton. (See 1938 Year Book, AATCC, page 144.)
Standard sample CW2.—(For test No. 2.) 1 percent Diazo Fast Violet BL developed with beta naphthol; General Dyestuff Corporation; dyed on cotton. (See 1938 Year Book, AATCC, page 144.)
Standard sample CW3.—(For test No. 3). 10 percent Indanthrene Violet BN ex. Paste; Colour Index No. 1163; dyed on cotton. (See 1938 Year Book, AATCC, page 144).

73. *Colorfastness to laundering of dress fabrics other than cotton and linen.*

73a. *Fabrics predominantly silk and rayon.*
Standard sample SW2.—2 percent Formyl Violet S4B; Colour Index No. 698; dyed on silk. (See 1938 Year Book, AATCC, page 153).

73b. *Fabrics predominantly wool.*
Standard sample WW3.—2.5 percent Brilliant Milling Blue B; General Dyestuff Corporation; dyed on wool with Glauber's salt and acetic acid. (See 1938 Year Book, AATCC, page 161).

74. *Colorfastness to light.*
Standard sample L1.—0.8 percent Brilliant Wool Blue FFR Extra; dyed on wool. (See 1938 Year Book, AATCC, page 170.)
Standard sample L3.—1.2 percent Brilliant Indocyanine 6B; dyed on wool. (See 1938 Year Book, AATCC, page 170.)
Standard sample L5.—1.0 percent Cyananthrol RX; dyed on wool. (See 1938 Year Book, AATCC, page 170.)
Standard sample L8.—3.0 percent Indigosol Blue AGG; dyed on wool. (See 1938 Year Book, AATCC, page 170.)

75. *Colorfastness to cleaning, dry and wet.*—No standards available.

76. *Colorfastness to perspiration.*—No standards available.

77. *Colorfastness to pressing, dry and wet.*—No standards available.

XVII. WARRANTY

78. The following illustrates the manner in which a laboratory may certify complete compliance with the commercial standard. Laboratories complying with the methods of testing and reporting as recorded in the standard may be readily identified by the following statement on their reports:

> The ---------- warrants that the results given in this report were obtained in accordance with Woven Dress Fabrics—Testing and Reporting, Commercial Standard CS59–39, as issued by the National Bureau of Standards of the United States Department of Commerce.
>
> or
>
> This test report is based on Woven Dress Fabrics—Testing and Reporting, Commercial Standard CS59–39, as issued by the National Bureau of Standards of the United States Department of Commerce.

XVIII. NOTES

79. *Breaking strength, standard conditions.*—The test method outlined herein for breaking strength under standard atmospheric conditions is in agreement with all essential requirements of Standard General Methods for Testing Woven Textile Fabrics as issued by the American Society for Testing Materials (ASTM Designation D39–38), and approved as American Standard L5–1938 by the American Standards Association; and Textiles, General Specifications, Test Methods, Federal Specification CCC–T–191a, April 23, 1937.

80. *Breaking strength, wet.*—The test method outlined herein for the breaking strength of a fabric in the wet state is in agreement with all essential requirements of Standard Method of Test for Strength of Rayon Woven Fabric When Wet, as issued by the American Society for Testing Materials (ASTM Designation D415–38).

81. *Colorfastness to crocking (rubbing).*—The method outlined herein for colorfastness to crocking (rubbing) complies in all essential requirements with Fastness to Crocking as given in the 1938 Year Book of the American Association of Textile Chemists and Colorists; and Textiles, General Specifications, Test Methods, Federal Specification CCC–T–191a, April 23, 1937.

82. *Colorfastness to laundering of cotton and linen dress fabrics.*—The method for determining colorfastness to laundering of cotton and linen dress fabrics outlined herein complies in all essential requirements with Fastness to Laundering and Domestic Washing of Dyed or Printed Cotton as given in the 1938 Year Book of the American Association of Textile Chemists and Colorists; and Textiles, General Specifications, Test Methods, Federal Specification CCC–T–191a, April 23, 1937.

83. *Colorfastness to light.*—The method outlined herein for colorfastness to light complies in all essential requirements with Fastness to Light of Dyed Textiles, Procedure for Testing Lightfastness, as given in the 1938 Year Book of the American Association of Textile Chemists and Colorists; and Textiles, General Specifications, Test Methods, Federal Specification CCC–T–191a, April 23, 1937.

84. *Colorfastness to perspiration.*—The method outlined herein for colorfastness to perspiration complies in all essential requirements with Fastness to Perspiration of Dyed Textiles as given in the 1938 Year Book of the American Association of Textile Chemists and

Colorists; and Textiles, General Specifications, Test Methods, Federal Specification CCC–T–191a, April 23, 1937.

85. *Shrinkage in laundering of cotton and linen dress fabrics.*—The method outlined herein for the shrinkage in laundering of cotton and linen dress fabrics complies in all essential requirements with the method for Determining Shrinkage in Washable Woven Cotton Fabrics as given in the 1938 Year Book of the American Association of Textile Chemists and Colorists; Standard Method of Test for Shrinkage in Laundering of Woven Cotton Cloth as issued by the American Society for Testing Materials (ASTM Designation D437–36) and approved as American Standard L10–1936 by the American Standards Association; and Textiles, General Specifications, Test Methods, Federal Specification CCC–T–191a, April 23, 1937.

86. *Resistance to yarn slippage.*—The method outlined herein for resistance to yarn slippage complies in all essential requirements with Tentative Method of Test for Resistance to Yarn Slippage in Silk, Rayon, and Silk-Rayon Broad Goods (ASTM Designation 434–36T) as issued by the American Society for Testing Materials.

EFFECTIVE DATE

The standard is effective as a basis for testing and reporting from June 24, 1939.

STANDING COMMITTEE

The following comprises the membership of the standing committee, which is to review, prior to circulation for acceptance, revisions proposed to keep the standard abreast of progress. Each association nominated its own representatives. Comment concerning the standard and suggestions for revision may be addressed to any member of the committee or to the Division of Trade Standards, National Bureau of Standards, which acts as secretary for the committee.

T. L. Blanke (chairman), National Retail Dry Goods Association, 101 West 31st Street, New York, N. Y.

C. W. Dorn, J. C. Penney Co., 330 West 34th Street, New York, N. Y. Representing National Retail Dry Goods Association.

Miss Nannene Gowdy, Montgomery Ward & Co., Chicago, Ill.

Miss Elizabeth Weirick, Sears, Roebuck & Co., Chicago, Ill.

A. H. Skinner, Carson Pirie Scott & Co., 366 West Adams Street, Chicago, Ill. Representing Wholesale Dry Goods Institute.

D. E. Douty, U. S. Testing Co., Inc., 1415 Park Avenue, Hoboken, N. J.

Frank Stutz, Better Fabrics Testing Bureau, 101 West 31st Street, New York, N. Y.

Charles L. Simon, Industrial By-Products & Research Corporation, Gimbel Bldg., 8th and Market Sts., Philadelphia, Pa.

Harry Levine, Textile Testing & Research Laboratories, 24 West 26th Street, New York, N. Y. Representing American Association of Textile Technologists.

H. H. Hatch, Hatch Textile Research, Inc., 25 E. 26th Street, New York, N. Y.

Charles K. Everett, The Cotton Textile Institute, 320 Broadway, New York, N. Y.

H. G. Zervas, Lewiston Bleachery & Dye Works, 40 Worth Street, New York, N. Y. Representing National Association of Finishers of Textile Fabrics.

Hugh Christison, Arlington Mills, 500 Broadway, Lawrence, Mass. Representing National Association of Wool Manufacturers.

Mortimer Lanzit, National Dress Manufacturers Association, 1450 Broadway, New York, N. Y.

Fred Mueller, Stunzi Sons Silk Co., 1400 Broadway, New York, N. Y. Representing National Federation of Textiles, Inc.

Miss RUTH O'BRIEN, Bureau of Home Economics, U. S. Department of Agriculture, Washington, D. C. Representing American Home Economics Association.

DR. JOSEPHINE L. PIERCE, General Federation of Women's Clubs, 1006 Cook Tower, Lima, Ohio.

Mrs. CARL L. (MAUDE W.) SCHRADER, Committee on Consumer Interest, National Council of Women of United States, 334 Commonwealth Avenue, Boston, Mass.

Dr. PAULINE BEERY MACK, Pennsylvania State College, State College, Pa.

Miss ETHEL L. PHELPS, University of Minnesota, University Farm, St. Paul, Minn.

SAMUEL J. WALKER, National Association Institute of Dyeing & Cleaning, Inc., 7901 Georgia Avenue, Silver Spring, Md.

Dr. EPHRAIM FREEDMAN, R. H. Macy & Co., 34th and Broadway, New York, N. Y. Representing Committee D–13, American Society for Testing Materials.

American Association of Textile Chemists & Colorists.
Invited to appoint representative.

HISTORY OF PROJECT

During 1934 the difficulties in adjusting differences of opinion between dress-fabric manufacturers, converters, finishers, dress manufacturers, and distributors, as to the causes of consumer complaints, led the National Retail Dry Goods Association under date of February 28, 1935, to request the cooperation of the National Bureau of Standards in establishing a commercial standard on methods of testing and reporting woven dress fabrics.

With the cooperation of the Fabric Serviceability Committee of the Dress Code Authority, a committee representing three textile testing laboratories—namely, the Better Fabrics Testing Bureau, Inc., Hatch & Reutlinger (Hatch Textile Research, Inc.), and the United States Testing Co., Inc.—prepared a preliminary draft as a basis for discussion under the chairmanship of W. D. Appel, of the National Bureau of Standards.

The proposed standard, as drafted by the above committee, was considered at two public conferences, one in Washington on June 22, 1935, and the other in New York on September 27, 1935. With changes and additions to suit the composite recommendations of manufacturers, testing laboratories, distributors, and consumers of woven dress fabrics, the proposed standard was adopted at the latter conference. The draft as adopted was submitted on October 31, 1935, to those concerned for written acceptance, and announcement of the success of the project was issued on April 15, 1936. The standard became effective on that day and was designated as CS59–36.

FIRST REVISION

A revision of the standard to include methods of testing and reporting colorfastness to perspiration, colorfastness to wet pressing, and several changes in methods of test in order to keep the standard abreast of progress, was approved by the standing committee and circulated to all interested on November 30, 1938. Some supplemental changes in the recommended revision, largely minor in character, were subsequently offered by industry, approved by the standing committee, and distributed on March 22 to March 24 for approval.

Following written acceptance by a preponderant majority of the independent textile testing volume, announcement of the success of the project was issued on May 25, 1939.

CS59–39

ACCEPTANCE OF COMMERCIAL STANDARD

If acceptance has not previously been filed, this sheet properly filled in, signed, and returned will provide for the recording of your organization as an acceptor of this commercial standard.

Date_____

Division of Trade Standards,
National Bureau of Standards,
Washington, D. C.

Gentlemen:

Having considered the statements on the reverse side of this sheet, we accept the Commercial Standard CS59–39 as our standard of practice for the testing and reporting of *Woven Dress Fabrics*, with which we are directly concerned as a

Fabric manufacturer [1] Dress manufacturer [1] Testing laboratory [1] Distributor [1] Consumer [1]

We will assist in securing its general recognition and use, and will cooperate with the standing committee to effect revisions of the standard when necessary.

Signature of individual officer_____
(in ink)

(Kindly typewrite or print the following lines)

Name and title of above officer_____

Company_____
(Fill in exactly as it should be listed)

Street address_____

City and State_____

(Cut on this line)

[1] Please designate which group you represent by drawing lines through the other four. Please file separate acceptances for all subsidiary companies and affiliates which should be listed separately as acceptors. In the case of related interests, trade papers, colleges, etc., desiring to record their general approval, the words "in principle" should be added after the signature.

TO THE ACCEPTOR

The following statements answer the usual questions arising in connection with the acceptance and its significance:

1. *Enforcement.*—Commercial standards are commodity specifications voluntarily established by mutual consent of the industry. They present a common basis of understanding between the producer, distributor, and consumer and should not be confused with any plan of governmental regulation or control. The United States Department of Commerce has no regulatory power in the enforcement of their provisions, but since they represent the will of the industry as a whole, their provisions through usage soon become established as trade customs, and are made effective through incorporation into sales contracts by means of labels, invoices, and the like.

2. *The acceptor's responsibility.*—The purpose of commercial standards is to establish for specific commodities, nationally recognized grades or consumer criteria, and the benefits therefrom will be measurable in direct proportion to their general recognition and actual use. Instances will occur when it may be necessary to deviate from the standard and the signing of an acceptance does not preclude such departures; however, such signature indicates an intention to follow the commercial standard where practicable, in the production, distribution, or consumption of the article in question.

3. *The Department's responsibility.*—The major function performed by the Department of Commerce in the voluntary establishment of commercial standards on a Nation-wide basis is fourfold: First, to act as an unbiased coordinator to bring all branches of the industry together for the mutually satisfactory adjustment of trade standards; second, to supply such assistance and advice as past experience with similar programs may suggest; third, to canvass and record the extent of acceptance and adherence to the standard on the part of producers, distributors, and users; and fourth, after acceptance, to publish and promulgate the standard for the information and guidance of buyers and sellers of the commodity.

4. *Announcement and promulgation.*—When the standard has been endorsed by companies representing a satisfactory majority of production, the success of the project is announced. If, however, in the opinion of the standing committee of the industry or the Department of Commerce, the support of any standard is inadequate, the right is reserved to withhold promulgation and publication.

ACCEPTORS

The organizations and individuals listed below have accepted this specification as their standard of practice in the testing and reporting of woven dress fabrics. Such endorsement does not signify that they may not find it necessary to deviate from the standard, nor does it signify that the testing laboratories so listed guarantee all of their test reports to conform with the requirements of this standard. Therefore specific evidence of conformity should be obtained where required.

ASSOCIATIONS

Bradford Dyeing Association, Westerly, R. I.
Cotton-Textile Institute, Inc., New York, N. Y.
Greater New York Retail Furnishing & Dry Goods Association, Inc., New York, N. Y. (In principle.)
International Silk Guild, New York, N. Y. (In principle.)
National Association of Dyers & Cleaners, Silver Spring, Md.
National Association of Finishers & Textile Fabrics, New York, N. Y. (In principle.)
National Association of Wool Manufacturers, New York, N. Y. (In principle.)
National Council of Women, Boston, Mass.
National Retail Dry Goods Association, New York, N. Y. (In principle.)
National Association of Institutional Laundry Managers, Philadelphia, Pa. (In principle.)
National Federation of Textiles, Inc., New York, N. Y.
National Pajama Guild, Inc., New York, N. Y.
National Research Council of Canada, Ottawa, Ontario, Canada.
New York, Associated Dry Goods Corporation of, New York, N. Y.
North Dakota Retail Merchants Association, Fargo, N. Dak.
Ohio State Association of Dyers & Cleaners, Columbus, Ohio. (In principle.)
Pennsylvania Association of Dyers & Cleaners, Sharon, Pa. (In principle.)
Pennsylvania Laundry Owners Association, Philadelphia, Pa.
Philadelphia Retail Clothing Merchants Association, Philadelphia, Pa.

FIRMS

"A" Cleaners & Dyers, Inc., Houston, Tex. (In principle.)
Abraham & Straus, Inc., Brooklyn, N. Y.
Acme Laundry & Dry Cleaners, El Paso, Tex. (In principle.)
Alaska, University of, College, Alaska. (In principle.)
Alexandria Steam Laundry, Inc., Alexandria, La.
Allied Textile Printers, Inc., Paterson, N. J.
American Dry Cleaner, Chicago, Ill. (In principle.)
American Woolen Co., Inc., New York, N. Y.
Angus Park Woolen Co., The, Inc., Hanover, Conn.
Apponaug Company, The, Apponaug, R. I.
Arizona, University of, Tucson, Ariz. (In principle.)
Arlington Mills, Boston, Mass.
Armour Institute of Technology, Chicago, Ill.
Atlas Electric Devices Co., Chicago, Ill. (In principle.)
Baker Cleaning Co., Tarrant, Ala. (In principle.)
Balfour Mills, Inc., Balfour, N. C.
Balloon Dye Works, San Diego, Calif.
Barber, Ernest, Paterson, N. J.
Bell Co., The, Riverside, Calif. (In principle.)
Bernat & Sons Co., Emile, Boston, Mass.
Better Fabrics Testing Bureau, New York, N. Y.
Bishop Laundry Co., Rocky Mount, N. C. (In principle.)
Bob's Laundry & Dry Cleaning Co., Concord, N. C.
Bon Marche, The, Seattle, Wash.
Boor's Cleanatorium, Martinsburg, W. Va.
Borger Laundry, Borger Tex. (In principle.)
Boston Store, Milwaukee, Wis.
Botany Worsted Mills, Passaic, N. J.
Bowen & Co., C. O., Pomona, Calif.
Bradley & Co., W. W., Delavan, Wis.

Brehm & Stehle, Philadelphia, Pa.
Broadway Department Store, Inc., Los Angeles, Calif.
Broleen Cleaning Co., Bloomington, Ill.
Brooks Co., Betty, Huntington Park, Calif.
Brown Co., John A., Oklahoma City, Okla.
Brown Dunkin Co., The, Tulsa, Okla.
Brown's Sons, Inc., George, Mount Jay, Pa.
Buffalo Testing Laboratories, Inc., Buffalo, N. Y.
Burger-Phillips Co., Birmingham, Ala.
Burkhart's Laundry & Dye Works, Houston, Tex. (In principle.)
Burlington Corporation, The, Greensboro, N. C.
Burns Co., W. H., Frankford, Philadelphia, Pa.
Butte Laundry Co., Steubenville, Ohio.
Cain Cleaners, Mount Hope, Kans.
Callaway Mills, LaGrange, Ga.
Capitol Barg Dry Cleaning Co., The, Cincinnati, Ohio.
Casper-Troy Laundry Co., Casper Wyo. (In principle.)
Cery Cleaners & Dyers, Gary, Ind.
Chehalis City Laundry, Chehalis, Wash.
Cherokee Spinning Co., Knoxville, Tenn.
Cheyenne Steam Laundry & Cleaning Co., Cheyenne, Wyo.
City Dye Works, Bozeman, Mont.
Clasgens Co., The J. & H., New Richmond, Ohio.
Cleveland Cloth Mills, Shelby, N. C.
Clifton Manufacturing Co., Clifton, S. C.
Connecticut State College, Storrs, Conn. (In principle.)
Consumers Testing Laboratories, Philadelphia, Pa.
Craighead Laundry, Hot Springs, Ark. (In principle.)
Crawford Laundry Co., The, Bridgeport, Conn.
Crisp Laundry & Dry Cleaning Co., Sault Ste. Marie, Mich.
Crown Laundry & Dry Cleaning Co., Indianapolis, Ind.
Cusack Capitol Laundry, Sioux City, Iowa.
Denville Silk Co., New York, N. Y.
Detroit, Board of Education of, Detroit, Mich. (In principle.)
Detroit Testing Laboratory, The, Detroit, Mich.
Deuser's, Inc., Dayton, Ohio.
DuPont de Nemours & Co., E. I., New York, N. Y.
Durfee Co., Inc., W. C., Boston, Mass.
Eggert Cleaning & Dyeing, E., Harrisburg, Pa.
Ekroth Laboratories, Inc., Brooklyn, N. Y.
El Paso Testing Laboratories, El Paso, Tex.
Electric Laundry Co., The, Ashtabula, Ohio. (In principle.)
Elite Cleaners & Dyers, Inc., Pasadena, Calif.
Emery-Bird-Thayer Co., Kansas City, Mo.
Emery-Brown Co., Waterville, Maine.
Empire Laundry & Dry Cleaners, The, Baltimore, Md.
Esselen, Inc., Gustavus J., Boston, Mass.
Fallis Bros., Ontario, Calif.
Fandel Co., St. Cloud, Minn.
Farley's, Kokomo, Ind.
Fauquier Laundry & Dry Cleaning Co., Inc., Warrenton, Va.
Feature Frocks, Inc., Steger, Ill.
Florence Thread Co., Inc., Riverside, N. J.
French Textile School, A., Atlanta, Ga.
Froehling & Robertson, Inc., Richmond, Va. (In principle.)
Fruit of the Loom, Inc., Providence, R. I.
Gable Co., The William F., Altoona, Pa.
Gardner Dry Cleaning Works, Gardner, Mass.
General Testing Laboratories, Inc., Detroit, Mich.
Geneva Fabrics, Inc., Paterson, N. J.
Gertz, Jamaica, N. Y.
Glenlyon Dye Works, Saylesville, R. I.
Globe Dye Works, Philadelphia, Pa.
Great Lakes Thread Co., Detroit, Mich. (In principle.)
Grosvenor Laboratories, Inc., W. M., New York, N. Y.
Hager & Bro. Inc., Lancaster, Pa.
Hanes Dye & Finishing Co., Winston-Salem, N. C. (In principle.)
Hanford Laundry & Dry Cleaning Co., Inc., Hanford, Calif. (In principle.)
Hatch Textile Research, Inc., New York, N. Y.
Hawkeye Laundry & Dry Cleaning Co., Boone, Iowa.
Hellwig Silk Dyeing Co., The, Philadelphia, Pa. (In principle.)
Herron Co., The James H., Cleveland, Ohio.
Hess, Goldsmith & Co., Inc., New York, N. Y.
Hochstadter Laboratories, Inc., New York, N. Y.
Holman Laundry & Cleaning, Jim, Moberly, Mo.
Holt Plaid Mills, E. M., Burlington, N. C.
Home Laundry, The, Port Arthur, Tex. (In principle.)
Houston, Better Business Bureau of, Houston, Tex. (In principle.)
Howards Cleaners Inc., Cranston, R. I. (In principle.)
Hubbard Textile Consulting Bureau, C. C., Silver Spring, Md.

Hunt Co., Robert W., Chicago, Ill.
Ideal Launderers & Dry Cleaners, McCook, Nebr. (In principle.)
Industrial By-Products & Research Corp., Philadelphia, Pa.
Juilliard & Co., A. D., Inc., New York, N. Y.
Keep-U-Neat Cleaners, Alliance, Nebr.
Kerr Bleaching & Finishing Works, Inc., Concord, N. C.
Kitterman's Cleaners, Cedar Rapids, Iowa.
Krout & Fite Mfg. Co., Philadelphia, Pa.
La Jolla Dry Cleaners, La Jolla, Calif.
Landes Analytical Laboratory, New York, N. Y.
Lane Bryant Department, Des Moines, Iowa.
Lane Cotton Mills Co., New Orleans, La.
Lansburgh & Bro., Washington, D. C.
Laucks Laboratories, Inc., Seattle, Wash.
Lawrence Cleaners, Houston, Tex.
Leeds College of Technology, Leeds, Yorks, England. (In principle.)
Leomar Processing Corp., Providence, R. I.
Lewis Cleaning Co., Hannibal, Mo.
Little, Inc., Arthur D., Cambridge, Mass. (In principle.)
Lockwood-Heath Cleaners, Inc., Elmira, N. Y. (In principle.)
Loeser & Co., Inc., Frederick, Brooklyn, N. Y.
Long Beach, Better Business Bureau of, Long Beach, Calif. (In principle.)
Loring, F. W., Sac City, Iowa.
Los Angeles Testing Laboratory, Los Angeles, Calif.
Lovemans, Inc., Chattanooga, Tenn.
Lungstras Dyeing & Cleaning Co., St. Louis, Mo.
Lux Laboratories, The, Cambridge, Mass. (In principle.)
Maas Chemical Laboratories, A. R., Los Angeles, Calif.
Maine Mills Laboratory, Lewiston, Maine.
Manhattan Co., Washington, D. C.
Manor Silk Mills, Inc., Lancaster, Pa.
Mansmann Co., Albert J., East Liberty, Pittsburgh, Pa.
Manville Jenckes Corp., Manville, R. I.
Marion Mfg. Co., Marion, N. C. (In principle.)
Mary Hardin Baylor College, Belton, Tex.
Mayfair Cleaning Co., Cleveland Heights, Ohio.
Merrimack Mfg. Co., Lowell, Mass.
Miami Laundry Co., Miami, Fla.
Michigan State College, East Lansing, Mich. (In principle.)
Middlesboro Steam Laundry, Middlesboro, Ky.
Midland Chemical Laboratories, Inc., Dubuque, Iowa. (In principle.)
Milady's Cleaners & Dyers, Tulsa, Okla. (In principle.)
Miller & Paine, Lincoln, Nebr.
Miner Laboratories, The, Chicago, Ill.
Model Cleaners & Dyers, Harrisburg, Pa.
Model Family Laundries, Inc., New Haven, Conn.
Model Laundry Co., Charlotte, N. C. (In principle.)
Model Laundry & Sanitone Cleaners, Hutchinson, Kans. (In principle.)
Mohawk Silk Corp., Utica, N. Y.
Montpelier Steam Laundry, Montpelier, Vt.
Moore Co., Harry C., Nevada, Mo.
Nashawena Mills, New Bedford, Mass. (In principle.)
Nashua Mfg. Co., Nashua, N. H.
National Retail Testing Bureau, New York, N. Y.
Neild Cleaners-Dyers, Baltimore, Md. (In principle.)
New Hampshire, University of, Durham, N. H. (In principle.)
New Laundry & Dry Cleaners, Ketchikan, Alaska.
New Method Cleaners, Eureka, Calif.
New Orleans, Inc., Better Business Bureau of, New Orleans, La. (In principle.)
New York Testing Laboratories, New York, N. Y.
Newburgh Bleachery, Newburgh, N. Y. (In principle.)
Nickey, Harry W., Springfield, Ill. (In principle.)
Norfolk Testing Laboratories, Inc., Norfolk, Va. (In principle.)
Nyanza Color & Chemical Co., Inc., New York, N. Y.
Ogden Troy Laundry & Dry Cleaning Co., Ogden, Utah.
Ohio-Curtis Co., Inc., The, Columbus, Ohio.
Oregon State College, Corvallis, Oreg.
Oriental Cleaners & Dyers, Joliet, Ill.
Ottawa University, Ottawa, Kans. (In principle.)
Pacific Mills, Lawrence, Mass.
Pantorium, The, Omaha, Nebr.
Parke Snow, Inc., Waltham, Mass.
Parker, Wilder & Co., New York, N. Y.
Pease Laboratories, Inc., New York, N. Y.
Peerless Cleaners, Carbondale, Ill.
Pennsylvania State College, State College, Pa. (In principle.)
Pepperell Mfg. Co., Biddeford, Maine.
Perfection Laundry Co., Springfield, Ohio. (In principle.)
Petri's Master Cleaners, North Adams, Mass.
Pittsburgh Testing Laboratory, Pittsburgh, Pa.
Powers Dry Goods Co., Inc., Minneapolis, Minn.

Prather's Laundry & Dry Cleaning, Fort Myers, Fla. (In principle.)
Pullar, Robert Taft, New York, N. Y.
Purdue University, W. Lafayette, Ind.
Quality Cleaners & Dyers, Colorado Springs, Colo.
Quality Dry Cleaners of Lakeland, Inc., Lakeland, Fla. (In principle.)
Red Springs Weaving Co., Inc., Red Springs, N. C.
Regal Cleaning & Dyeing Co., Inc., Salt Lake City, Utah.
Reliance Dyeing & Finishing Corp., Covington, Ky. (In principle.)
Renfrew Bleachery, Travelers Rest, S. C.
R. I. State College, Kingston, R. I. (In principle.)
Ridley Cleaners, Inc., Detroit, Mich. (In principle.)
Rike Kumler Co., The, Dayton, Ohio.
Rinso Laboratories, The, Cambridge, Mass. (In principle.)
Robinson Co., J. W., Los Angeles, Calif.
Rollins Cleaners & Dyers, Farmville, N C.
Russell Mfg. Co., The, Middletown, Conn.
Sacramento, Better Business Bureau of, Sacramento, Calif. (In principle.)
Sadtler & Son, Inc., Samuel P., Philadelphia, Pa.
St. Louis Sampling & Testing Works, St. Louis, Mo.
St. Paul Dye Works, Santa Barbara, Calif.
San Souci Co., J. O., Providence, R. I.
Sanger Bros., Inc., Dallas, Tex.
Sayles Bleacheries, Saylesville, R. I.
Sayles Finishing Plants, Inc., Saylesville, R. I.
Scarbrough & Sons, E. M., Austin, Tex.
Schneierson & Sons, Inc., I., New York, N. Y.
Schwarzenbach Huber Co., Inc., The, New York, N. Y.
Scranton Better Business Bureau, Scranton, Pa. (In principle.)
Sears, Roebuck & Co., Chicago, Ill.
Shepler's, Inc., Detroit, Mich. (In principle.)
Sibley, Lindsay & Curr Co., Rochester, N. Y.
Sigal & Sons, H. B., Bethlehem, Pa.
Silk Grading & Testing Laboratory, New York, N. Y.
Snell, Inc., Foster D., Brooklyn, N. Y.
South Acton Woolen Co., South Acton, Mass. (In principle.)
Standard Coosa Thatcher Co., Chattanooga, Tenn.
Star Laundry Co., Danville, Va. (In principle.)
Stearns Co., R. H., Boston, Mass.
Stein Hall & Co., Inc., New York, N. Y.
Stevens, Inc., Edgar A., Evanston, Ill.
Stillman & Van Siclen, Inc., New York, N. Y.
Stirn, Inc., L. & E., New York, N. Y.
Stoffel & Co., Inc., New York, N. Y.
Straka's Joliet Dyers & Cleaners, Joliet, Ill.
Strasburger & Siegel, Baltimore, Md. (In principle.)
Strouss-Hirshberg Co., The, Youngstown, Ohio.
Suncook Mills, Suncook, N. H.
Texas Technological College, Lubbock, Tex.
Textile-Chemical Research Laboratory, New York, N. Y.
Textile Testing & Research Laboratories, New York, N. Y.
Textile World, New York, N. Y. (In principle.)
Thames Dyeing & Bleaching Co., Niantic, Conn. (In principle.)
Thurkauf's Sons, Virgil, New York, N. Y. (In principle.)
Thurston Cutting Corp., New York, N. Y. (In principle.)
Tilton Silk Co., Phillipsburg, N. J.
Tip Top Cleaners, Springfield, Mass. (In principle.)
Troy Dry Cleaning Co., Fort Wayne, Ind. (In principle.)
Troy Laundry Co., Cedar Rapids, Iowa.
Troy Laundry Co., Port Huron, Mich.
Tufts College, Medford, Mass.
Twin City Dry Cleaning Co., Winston-Salem, N. C.
Twining Laboratories, The, Fresno, Calif.
United States Testing Co., Inc., Hoboken, N. J.
Valdese Mfg. Co., Valdese, N. C.
Vallet Cleaners & Dyers, Huron, S. Dak.
Vermont Cleansing Co., Burlington, Vt.
Veteran Piece Dyeing & Finishing Co., Inc., Paterson, N. J. (In principle.)
Virginia, State Dry Cleaners Board of, Richmond, Va.
Wardrobe, The, Ottumwa, Iowa.
Washington Laundry Co., Spokane, Wash. (In principle.)
Wausau Laundry & Cleaners Co. Wausau, Wis.
Wellington Sears Co., New York, N. Y.
Western Precipitation Corp., Los Angeles, Calif.
Wieboldt Stores, Inc., Chicago, Ill.
Winkler, Adolph J., The Standard Testing Bureau, New York, N. Y.
Winona Cleaning Works, Winona, Minn.
Woodward & Lothrop, Washington, D. C. (In principle.)
Yankee Cleaners, Pontiac, Ill.
Yorgey's Cleansers & Dyers, Reading, Pa.
Zenith-Casino, Inc., Dallas, Tex.

U. S. GOVERNMENT

War Department of, Washington, D. C.

COMMERCIAL STANDARDS

Item

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1-32. Clinical thermometers (second edition).
2-30. Mopsticks.
3-38. Stoddard solvent (second edition).
4-29. Staple porcelain (all clay) plumbing fixtures.
5-29. Steel pipe nipples.
6-31. Wrought-iron pipe nipples (second edition).
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10-29. Brass pipe nipples.
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25-30. Special screw threads.
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30-31. Colors for sanitary ware.
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35-31. Plywood (hardwood and eastern red cedar).
36-33. Fourdrinier wire cloth (second edition).
37-31. Steel bone plates and screws.
38-32. Hospital rubber sheeting.
39-37. Wool and part wool blankets (second edition).
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41-32. Surgeons' latex gloves.

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48-34. Domestic burners for Pennsylvania anthracite (underfeed type).
49-34. Chip board, laminated chip board, and miscellaneous boards for bookbinding purposes.
50-34. Binders' board for bookbinding and other purposes.
51-35. Marking articles made of silver in combination with gold.
52-35. Mohair pile fabrics (100-percent mohair plain velvet, 100-percent mohair plain frieze, and 50-percent mohair plain frieze).
53-35. Colors and finishes for cast stone.
54-35. Mattresses for hospitals.
55-35. Mattresses for institutions.
56-36. Oak flooring.
57-36. Book cloths, buckrams, and impregnated fabrics for bookbinding purposes except library bindings.
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59-39. Woven dress fabrics—testing and reporting (second edition).
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61-37. Wood-slat venetian blinds.
62-38. Colors for kitchen accessories.
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65-38. Wool and part-wool fabrics.
66-38. Marking of articles made wholly or in part of platinum.
67-38. Marking articles made of karat gold.
68-38. Liquid hypochlorite disinfectant.
69-38. Pine oil disinfectant.
70-38. Coal tar disinfectant (emulsifying type).
71-38. Cresylic disinfectants.
72-38. Household insecticide (liquid spray type).
73-38. Old growth Douglas fir standard stock doors.
74-39. Solid hardwood wall paneling.
75-39. Automatic mechanical draft oil burners.

NOTICE.—Those interested in commercial standards with a view toward accepting them as a basis of everyday practice in their industry, may secure copies of the above standards, while the supply lasts, by addressing the Division of Trade Standards, National Bureau of Standards, Washington, D. C.

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