

JMB:cmh
7.2

U. S. DEPARTMENT OF COMMERCE
NATIONAL BUREAU OF STANDARDS
WASHINGTON 25, D. C.

January 3, 1952

Letter
Circular
L 1508

(Superseding
LC907)

TEXTILE TESTING EQUIPMENT

By Josephine M. Blandford

CONTENTS

<u>TEXTILE TESTING EQUIPMENT</u>	<u>PAGE</u>
I. INTRODUCTION	1
II. EQUIPMENT LIST	2
III. SUPPLIERS	8
IV. LITERATURE REFERENCES	14

I. INTRODUCTION

This letter circular lists equipment used in textile testing laboratories in the United States, the names and addresses of manufacturers or dealers from whom the equipment can be purchased, and literature about the equipment or its utilization, other than the descriptive literature obtainable from the suppliers. It has been prepared for use in answering requests for information about equipment and sources of supply. The list of equipment is by no means complete as laboratories are continually developing new equipment, and suppliers are offering new and improved equipment for purchase.

The listing of a testing device or source of supply does not constitute endorsement by the National Bureau of Standards. Inquiries regarding the purchase of equipment should be addressed to the supplier and not to the National Bureau of Standards.

References are given to representative literature describing the equipment and its uses. The suppliers may be able to provide additional references to the literature.

Government publications, unless otherwise stated, may be purchased, for the prices indicated, from the Superintendent of Documents, Government Printing Office, Washington 25, D. C.

Remittance should be made by coupons (obtainable from the Superintendent of Documents in sets of 20 for \$1.00 and good until used), or by check or money order payable to the "Superintendent of Documents", transmitted with the order. Stamps are not acceptable.

Government publications may be consulted in many Government, technical, college, and public libraries throughout the States. Whether or not a given library has a copy of any particular publication can only be determined by inquiring at the library.

Non-Government publications usually may be consulted in libraries. They are not obtainable from the National Bureau of Standards but often may be obtained from the publishers.

II. EQUIPMENT LIST

The names of equipment and of the characteristics for which tests are performed are given in alphabetical order. After each is the key name of the supplier, the full name and address of each being given in Section III. "Ref.", followed by a number, indicates the literature reference cited in Section IV.

ABRASION RESISTANCE, CARPET

CARPET TESTING MACHINE, SAWYER: Stewart. Ref. 1

CARPET WEAR TESTING MACHINE, NBS: Brazier; U.S. Testing.
Ref. 1

ABRASION RESISTANCE, CLOTH

ABRADER, SCHOPFER: Testing Machines. Ref. 2

ABRASER, TATUM: Tabor. Ref. 3, 4

ABRASION MACHINE, FAVEN: Hamblett. Ref. 5

ABRASION TESTING MACHINE, SCHLEIFER: Brazier. Ref. 6, 7, 8

FLEX AND FOLD TESTING APPARATUS: Custom. Ref. 9, 10, 11

WEAR TESTER, FAWCETT: Wyzenbeek. Ref. 11, 12

WEAR TESTER, UNIVERSAL: Custom. Ref. 13, 14, 15

ABRASION RESISTANCE, MARB

MARB ABRADER, WALKER: U. S. Testing.

AIR PERMEABILITY - See PERMEABILITY, AIR

ARELOMETER - See FIRMNESS OF RUBBER

ATMOSPHERIC GAS FADING - See COLORFASTNESS TO ATMOSPHERIC FADING

BALANCES - See WEIGHT

BALL BURST TESTER - See STRENGTH, BURSTING

CHEMICAL LABORATORY EQUIPMENT:

American Instrument; Andrew; Baker; Boder; Burrell; Central;
Coleman; Elmer; Emerson; Fisher; Mallinckrodt; Perck;
Precision; Suter; Thomas, Arthur H.; Western; Will.

COLOR MEASURING EQUIPMENT (Photometers, colorimeters, spectrophotometers) - Also see LAMPS, DAYLIGHT

A.A.T.C.C.; American Instrument; Boder; Coleman; Gardner;
General Electric; Loitz; Macbeth Corp.; Perkin; Photo-
volt; U. S. Testing.

COLOR AND COLOR DIFFERENCE METER, HUNTER: Gardner. Ref.
16, 17, 18

COLOR-EYE: Instrument Development. Ref. 19

COLORIMETER, SPENCER: American Optical

COTTON COLORIMETER, NICKERSON-HUNTER: Gardner. Ref. 20,
21, 22

GLOSS RECORDER, HUNTER: Gardner

MULTIPURPOSE REFLECTOMETER, HUNTER: Gardner. Ref. 23, 24

COLORFASTNESS TO ATMOSPHERIC FADING

G.S.-FADING APPARATUS (A.A.T.C.C. - U. S. Testing Co., Inc.):
U. S. Testing. Ref. 25, 26, 118

COLORFASTNESS TO LAUNDERING

LAUNDER-OMETER: Atlas. Ref. 27, 28, 29, 30, 118

COLORFASTNESS TO LIGHT

FADE-OMETER: Atlas. Ref. 31, 32, 33, 34, 35, 118

COLORFASTNESS TO PERSPIRATION

PERSPIROMETER: Orange. Ref. 36, 37

COLORFASTNESS TO RUBBING (CROCKING)

CROCKMETER: A.A.T.C.C.; U. S. Testing. Ref. 38, 39, 118

COLORFASTNESS TO WEATHERING

NATIONAL WEATHERING UNIT: Atlas. Ref. 40

WEATHER-OMETER: Atlas. Ref. 41

COMPRESSIONAL CHARACTERISTICS - Also see THICKNESS

Dillon; Federal

COMPRESSION METER, DREY: Frazier. Ref. 42, 43

COMPRESSOMETER (Schlefer): American Instrument; Frazier
Ref. 44, 45, 49, 67

CREASE RESISTANCE AND CREASE RECOVERY

FLEXOMETER - See FLEXURAL CHARACTERISTICS

ROLLER PRESSURE CREASE RECOVERY TESTER: American Cy. Ref. 46, 47

WRINKLE RECOVERY TESTER, MONSANTO: Monsanto. Ref. 48, 49

CROCKMETER - See COLORFASTNESS TO RUBBING (CROCKING)

DENSOMETER - See PERMEABILITY, AIR

DETERGENCY COMPARATOR: Riggs. Ref. 50

DIAMETROL - See FINENESS OF FIBER

DIES (for cutting specimens): Fremont; Independent; Lonorgan;
United Shoe.

DRAPING CHARACTERISTICS - See FLEXURAL CHARACTERISTICS

DRAPEOMETER - See FLEXURAL CHARACTERISTICS

ELONGATION - See STRENGTH, BREAKING AND ELONGATION, TEARING

EVENNESS OF HOSIERY

HOSIERY EVENNESS GRADING CABINET: Sutor.

EVENNESS OF YARNS

ELECTRON MICROMETER, SERC: Standard Electronics.

EVENNESS TESTER, PACIFIC: Anderson. Ref. 51.

YARN EVENNESS TESTER, USTER: Uster.

YARN KNOT AND SLUB COUNTER: Berkeley.

EXTENSOMETER - See STRENGTH OF FIBERS AND YARNS

F.A.D.E.-OMETER - See COLOREFASTNESS TO LIGHT

FIBER IDENTIFICATION (Ref. 119, 120, 121) - See MICROSCOPIC AND
PHOTOMICROGRAPHIC EQUIPMENT

MICROTOME (Hardy-Type) - See FINENESS OF FIBER

FIBER SORTERS (length) - Also see LENGTH OF FIBER

COTTON SORTER, CAMBRIDGE: Cambridge.

DUPLEX COTTON FIBER SORTER, SUTER-WEBB: Sutor. Ref. 52, 73

FIBROGRAPH - See LENGTH OF FIBER

FINENESS OF FIBER

AREALOMETER: Special Instruments. Ref. 53

DIAMETROL: Harrington.

MICRONAIRE, SHEFFIELD: Sheffield.

MICROTOME (Hardy-Type): de la Rue; Mico. Ref. 54, 55, 56

FLAMMABILITY

FIRE RESISTANCE OF INDUSTRIAL FABRICS, AATCC TEST APPARATUS
FOR: A.A.T.C.C. Ref. 57

FLAMMABILITY TESTER, AATCC: U. S. Testing. Ref. 58

HORIZONTAL RATE-OF-BURNING TESTER, NBS: Industrial Tool.
Ref. 59, 60

VERTICAL FIELD TESTER, NBS: Ref. 61, 62

FLEX AND FOLD TESTING APPARATUS - See ABRASION RESISTANCE, CLOTH

FLEXOMETER - See FLEXURAL CHARACTERISTICS

FLEXURAL CHARACTERISTICS (Ref. 63, 124) - Also see STIFFNESS

DRAPEOMETER: Mico. Ref. 64

EXTENSOMETER, CAMBRIDGE FIBRE: Cambridge. Ref. 65

FLEX AND FOLD TESTING APPARATUS: See ABRASION RESISTANCE, CLOTH

FLEXOMETER: American Instrument. Ref. 66, 67

FOLDING TESTER, SCHOPPER: Testing Machines. Ref. 2

PLANOFLEX: Prazier. Ref. 63, 68

FLUORESCENCE - See LUMINESCENCE

FRICTION, COEFFICIENT OF

FRICTION METER, DREBY: Frazier. Ref. 43, 69

GLOSS - See COLOR MEASURING EQUIPMENT

HAND - See COMPRESSIONAL CHARACTERISTICS; FLEXURAL CHARACTERISTICS;
FRICTION

HOSIERY TESTERS - See EVENNESS OF HOSIERY; SHRINKAGE IN LAUNDERING

HOSIERY LENGTH TESTER: Speizman.

HOSIERY TESTING MACHINE, NBS: Frazier. Ref. 70

SNAG TESTER, SHADPAPER. Ref. 71, 72

SNAG TESTER, HAHN: U. S. Testing. Ref. 70

HUMIDIFICATION EQUIPMENT:

Abbeon; American Instrument; Baldwin; Carrier; Western.

HYDROSTATIC PRESSURE - See WATER RESISTANCE

HYGROMETERS:

Eimer; Friez; Parks-Cramer; Western.

INCLINE PLANE TESTING MACHINE - See STRENGTH, BREAKING AND ELONGATION,
TEARING

LAMPS, DAYLIGHT:

American Optical; Bausch; Burrell; Jacobeth Daylight.

LAUNDERING EQUIPMENT

CENTRIFUGES: American Laundry; Ewing; General Electric;
Hurley; Smith.

PRESSES, FLAT BED: Franklyn; General Electric; U. S. Testing.

WASHING MACHINES, REVERSING WASH MACHINES: Akron; American
Laundry; Electric Household; Ewing.

LAUNDER-OMETER - See COLORFASTNESS TO LAUNDERING

TERG-O-METER: U. S. Testing.

LAUNDER-OMETER - See COLORFASTNESS TO LAUNDERING

LENGTH OF FIBER - Also see FIBER SORTERS: LENGTHS OF FIBER

FIBROGRAPH: Special Instruments. Ref. 73

USTER STAPLE APPARATUS: Uster.

LENGTH OF YARN - See YARN REELS

LOW TEMPERATURE RESISTANCE (Ref. 122, 123) (Some deep-freeze units
sometimes used.)

COLD CABINETS: American Instrument; Tonney.

LUMINESCENCE (Ref. 74)

Bausch; Burrell; Switzer; Ultra-Violet.

PHOTOMETER FOR LUMINESCENT MATERIALS (NBS). Ref. 75

LUNOMETER - See THREAD COUNT

MICRO-LINE COUNTER - See THREAD COUNT

MICROSCOPIC AND PHOTOGRAPHIC EQUIPMENT:

American Optical; Andrew; Bausch; Boder; Burrell; Elmer;
Fisher; Gardner; Hoffmann; Instrument Development; Leitz;
Phipps; Schorr; Suter.

MILDEW RESISTANCE (Ref. 119, 120, 121)

AUTOCLAVES - See CHEMICAL LABORATORY EQUIPMENT

INCUBATORS: American Instrument; Tenney.

MULLEN TESTER - See STRENGTH, BURSTING

NAAM SNA.G TESTER - See HOSIERY TESTERS

Ovens, LABORATORY DRYING:

American Instrument; Andrew; Baird; Boder; Brabender; Central;
Emerson; Fisher; Precision; Saxl; Suter; Testing
Machines; U. S. Testing.

PARABOLIC RAIN BURST TESTER - See STRENGTH, BURSTING

PERMEABILITY, AIR

AIR PERMEABILITY APPARATUS, NBS: American Instrument; Frazier.
Ref. 76, 77

DENSOMETER: Gurley. Ref. 78

PERMEABILITY, GAS

FABRIC PERMEAMETER, CAMBRIDGE: Cambridge. Ref. 79

PERSPIROMETER - See COLORFASTNESS TO PERSPIRATION

pH METERS:

American Instrument; Analytical; Boder; Central; Coleman;
Fisher; Leeds; Minneapolis; National; Photovolt; Thwing.

PHOSPHORESCENCE - See LUMINESCENCE

PICK-O-METER - See THREAD COUNT

PLEIOFLEX - See FLEXURAL CHARACTERISTICS

PULSE PROPAGATION METER: Magnetic

PRESS, FLAT BED - See LAUNDERING EQUIPMENT

PRECISION WEAR TESTER - See ABRASION RESISTANCE, CLOTH

PRESSLEY FIBER STRENGTH TESTER - See STRENGTH OF FIBERS AND YARNS

RAIN TESTERS - See WATER RESISTANCE

REFLECTOMETER - See COLOR MEASURING EQUIPMENT

REFRACTION, INDEX OF

REFRACTOMETER, SPENCER: American Optical.

RESILIENCE, COMPRESSIONAL - See COMPRESSIONAL CHARACTERISTICS

RESILIENCE, FLEXURAL - See FLEXURAL CHARACTERISTICS

ROLLER PRESSURE CREASE RECOVERY TESTER - See CREASE RESISTANCE
AND RECOVERY

RUBBING RESISTANCE - See COLORFASTNESS TO CROCKING (RUBBING)

- SHRINKAGE IN LAUNDERING (Ref. 80, 81, 82, 118) - See LAUNDERING EQUIPMENT
- SHRINKAGE TESTER (Knit goods): U. S. Testing.
- SHRINK-O-METER: Eastman.
- SOCK MEASURING DEVICE, SCHIEFER: Frazier. Ref. 83, 84
- SHRINKAGE TESTER - See SHRINKAGE IN LAUNDERING
- SHRINK-O-METER - See SHRINKAGE IN LAUNDERING
- SNAG RESISTANCE - See HOSIERY TESTERS
- SPRAY RESISTANCE - See WATER RESISTANCE
- STIFFNESS (Ref. 85, 86, 87, 88) - Also see FLEXURAL CHARACTERISTICS
American Instrument; Frazier; Gurley; Mico; Olsen; Penderson;
Saxl; Testing Machines; Thwing.
- STRENGTH, BREAKING AND ELONGATION, TEARING (Ref. 89, 118, 119, 120)
American Textile; Baldwin; Dillon; Instron; Olsen; Perkins;
Saxl; Scott; Suter; Testing Machines; Thwing; U. S.
Testing.
- INCLINE PLATE TESTING MACHINE: Scott. Ref. 90, 91
- TEARING TESTER, EISENDORF: Thwing. Ref. 92
- STRENGTH, BURSTING (Ref. 118, 119, 120)
- BALL BURST TESTER: Scott. Ref. 93
- MULLER TESTER: Perkins; Suter. Ref. 94
- PARABOLIC RING BURST TESTER: Perkins.
- STRENGTH OF FIBERS AND YARNS
American Textile; Dillon; Saxl; Scott; Suter.
- EXTENSOMETER, CAMBRIDGE FIBRE: See FLEXURAL CHARACTERISTICS
- FIBER STRENGTH TESTER, PRESSLEY: Doobrich. Ref. 73
- STRENGTH, TEARING - See STRENGTH, BREAKING AND ELONGATION, TEARING TENSION
- Boulin; Dillon; Federal; Saxl; Uster.
- TENSION METER, SAXL: Saxl. Ref. 95
- THREAD TENSION GAGE, USTER: Uster.
- TERG-O-TOMETER - See LAUNDERING EQUIPMENT
- THERMAL TRANSMISSION
- THERMAL TRANSMISSION APPARATUS, NBS. Ref. 96
- THICKNESS - Also see COMPRESSIONAL CHARACTERISTICS
American Instrument; Ames; Federal; Glogau; Precision;
Randall; Standard Gage; Suter; Testing Machines.
- THREAD COUNT (Yarns per unit distance in fabrics) (Ref. 97, 98)
Glogau; Precision; Sjostron; Suter; Testing Machine; U. S. Testing.
- LUNOMETER: Eberly.
- MICRO-LINE COUNTER: Micro.
- PICK-O-METER: Sjostron.
- TUFT LENGTH MEASURING DEVICE (for pile yarns in carpets and other pile fabrics): Frazier. Ref. 1

TWIST (Ref. 99, 100, 119, 120):

Scott; Suter; Testing Machines; U. S. Testing.

WASHING MACHINES - See LAUNDERING EQUIPMENT

WATER RESISTANCE (Ref. 101, 120, 121)

HYDROSTATIC PRESSURE TESTER: Richmond; Suter; U. S. Testing
Ref. 102

HYDROSTATIC TEST SPECIMEN HOLDER, AATCC: A.A.T.C.C. Ref.
102, 103, 104, 105, 108

IMP. CT-PENETRATION SPRAY HEAD, AATCC: A.A.T.C.C. Ref. 103,
106, 107

SPRAY-WASHING UNIT: SPRAY NOZZLE, METAL HOOP, AND RATING
CHART, AATCC: A.A.T.C.C. Ref. 103, 108, 109, 110

RATE TESTER, AATCC: Mico. Ref. 103, 111, 112

WEAR - See ABRASION RESISTANCE, CARPET; CLOTH; YARN

WEATHER-O-METER - See WEATHER RESISTANCE

WEATHER RESISTANCE

NATIONAL WEATHERING UNIT: Atlas. Ref. 113, 114

WEATHER-O-METER: Atlas. Ref. 115

WEIGHT - Also see YARN NUMBER

Ainsworth; Andrew; Becker; Bodor; Fisher; Gurley; Suter; Thomas,
Arthur H.; Thomas Balance; Torsion; Troemner; Voland.

WRINKLING - See CREASE RESISTANCE AND CREASE RECOVERY

YARN NUMBER (Ref. 116, 120) - Also see WEIGHT; YARN REELS

YARN AND CLOTH ANALYZING SET: Suter.

YARN NUMBERING BALANCE, UNIVERSAL: Suter.

YARN REELS:

Ainsworth; Becker; Suter; Testing Machines.

III. SUPPLIERS

AATCC (American Association of
Textile Chemists and Colorists).
Lowell Textile Institute
Lowell, Mass.

Abbeon Supply Co.
58 - 10 41st Drive
Woodside, New York, N. Y.

Ainsworth, Wm., and Sons, Inc.
2151 Lawrence St.
Denver, Colo.

Akron Machinery and Engineering Co
914 Miami St.
Akron, Ohio

American Optical Co.
Stanford Research Laboratories
Stanford, Conn.

American Instrument Co., Inc.
8030 Georgia Ave.
Silver Spring, Md.

American Laundry Machine Co.
Cincinnati, Ohio

American Optical Co.
Scientific Instrument Division
Box A
Buffalo 15, N. Y.

American Textile Engineering Co.
Arlington, N. Y.

Ames, E. C., Co.
12 Ames St.
Waltham 54, Mass.

Analytical Measurements, Inc.
585 Main St.
Chatham, N. J.

Anderson Machine Shop, Inc.
Brook Rd.
Needham Heights 94, Mass.

Andrew Technical Service
3805 N. Clark St.
Chicago 13, Ill.

Atlas Electric Devices Co.
361 W. Superior St.
Chicago 10, Ill.

Laird Associates
University Rd.
Cambridge 38, Mass.

Baker, J. T., Chemical Co.
Phillipsburg, N. J.

Baldwin-Southwark Corp.
Paschall P. O.
Philadelphia, Pa.

Bausch & Lomb Optical Co.
635 St. Paul St.
Rochester 2, N. Y.

Becker, Christian
92 Roade St.
New York, N. Y.

Berkley Testing Service
1041 Winchester Ave.
Martinsburg, W. Va.

Boder Scientific Co.
719 Liberty Ave.
Pittsburgh 22, Pa.

Boulin Instrument Corp.
65 Madison Ave.
New York 16, N. Y.

Brabender Corp.
Rochelle Park, N. J.

Burrell Corp.
2223 Fifth Ave.
Pittsburgh 19, Pa.

Burrows Equipment Co.
Dept. 4B
1316 Sherman Ave.
Evanston, Ill.

Cambridge Instrument Co., Inc.
Grand Central Terminal
New York 17, N. Y.

Carrier Corp.
Syracuse, N. Y.

Central Scientific Co.
1702 Irving Park Rd.
Chicago 13, Ill.

Coleman Instruments, Inc.
318 Madison St.
Maywood, Ill.

Custom Scientific Instruments,
Inc.
541 - 543 Devon St.
Arlington, N. J.

de la Rue, Mrs. A. M.
3406 Lancer Drive
Hyattsville, Md.

Dillon, W. C., and Co., Inc.
5410 W. Harrison St.
Chicago 44, Ill.

Doeblich, Joseph M.
P. O. Box 2789
Tucson, Ariz.

Eastman-Lakobrook Textile Co.
P. O. Box 118
North Andover, Mass.

Eberly, John A.
Reading, Pa.

Eimer and Amend
635 Greenwich St.
New York 14, N. Y.

Electric Household Utilities
Corp.
Hurley Machine Division
Cermak Rd. and 54th Ave.
Chicago, Ill.

Emerson Apparatus Co.
171 Tremont St.
Melrose 76, Mass.

Ewing, Robert, and Sons, Inc.
Green Island, N. Y.

Federal Products Corp.
1144 Eddy St.
Providence 1, R. I.

Fisher Scientific Co.
717 Forbes St.
Pittsburgh 19, Pa.

Franklyn & Young Toolworks, Inc.
Syracuse, N. Y.

Frazier, Sherman W.
953 15th St., S. E.
Washington 3, D. C.

Fremont Tool and Die Co.
Fremont, Ohio

Friez Instrument Division
Bendix Aviation Corp.
1418 Taylor Ave.
Baltimore 4, Md.

Gardner Laboratory, Inc.
4723 Elm St.
Bethesda 14, Md.

General Electric Co.
Apparatus Dept.
Schenectady 5, N. Y.

Glogau and Co.
1910-14 Birchwood Ave.
Chicago 26, Ill.

Gurley, W. & L. E., Instruments
512 Fulton St.
Troy, N. Y.

Hamblett Machine Co.
Lawrence, Mass.

Harrington Engineering Co.
405 Lexington Ave.
New York 17, N. Y.

Hofmann, Alfred, and Co.
West New York, N. Y.

Hurley Machine Co.
Cermak Rd. and 54th Ave.
Chicago, Ill.

Independent Die and Supply Co.
St. Louis, Mo.

Industrial Tool and Engineering
Co.
3432 Ravenswood Ave.
Chicago, Ill.

Instron Engineering Corp.
2 Hancock St.
Quincy 71, Mass.

Instrument Development
Laboratories, Inc.
163 Highland Ave.,
Needham Heights 94, Mass.

Kearny Manufacturing Co., Inc.
Kearny, N. J.

Leeds and Northrup Co.
4908 Stenton Ave.
Philadelphia 44, Pa.

Leitz, E., Inc.
730 Fifth Ave.
New York, N. Y.

Lonergan Die Co.
Chicago, Ill.

Macbeth Corp.
Newburgh, N. Y.

Macbeth Daylight Corp.
227 W. 17th St.
New York, N. Y.

Magnetic Amplifier Corp., The
4 Condon St.
Waltham, Mass.

Mallinckrodt Chemical Works
Mallinckrodt St.
St. Louis 7, Mo.

Merck and Co.
Rahway, N. J.

Mico Instrument Co.
80 Trowbridge St.
Cambridge 38, Mass.

Micro-Electro Co., Inc.
44 W. 18th St.
New York 14, N. Y.

Minneapolis-Honeywell
Regulator Co.
Process Instruments Division
Wayne and Roberts Aves.
Philadelphia 44, Pa.

Moisture Regulator Co.
Dept. G
1510 W. Chestnut St.
Alhambra, Calif.

Monsanto Chemical Co.
Textile Chemicals Department
140 Federal St.
Boston 10, Mass.

National Technical Laboratories
814 Mission St.
South Pasadena, Calif.

Olsen, Tinius, Testing Machine Co.
Easton Rd.
Willow Grove, Pa.

Orange Machine & Manufacturing
Co.
354 - 6 S. Jefferson St.
Orange, N. J.

Parks-Cramer Co.
Fitchburg, Mass.; Boston, Mass.;
Charlotte, N. C.

Perkin-Elmer Corp.
Glenbrook, Conn.

Perkins, P. F., and Son
Chicopee St.
Holyoke, Mass.

Penderson, R. I., Co., Inc.
185 26th St.
Brooklyn 32, N. Y.

Phipps & Bird, Inc.
6th and Byrd Sts.
Richmond 5, Va.

Photovolt Corp.
95 Madison Ave.
New York 16, N. Y.

Precision Scientific Co.
3737 W. Cortland St.
Chicago 47, Ill.

Readex Microprint Corp.
26 W. 56th St.
New York, N. Y.

Randall, Frank E.
248 Ash St.
Waltham, Mass.

Richmond Machine Co.
3375 Richmond St.
Philadelphia, Pa.

Riggs and Lombard
Suffolk St.
Lowell, Mass.

Saxl Instrument Co.
Harvard, Mass.

Scott Testers, Inc.
105 Blackstone St.
Providence, R. I.

Shawmut Engineering Co.
195 Presport St.
Boston, Mass.

Sheffield Corp.
Dayton 1, Ohio

Sherr, George, Co., Inc.
200 Lafayette St.
New York, N. Y.

Sjostrom Machine Co.
Lawrence, Mass.

Smith Drum Co.
Philadelphia, Pa.

Special Instruments Laboratory
1003 Highlands Ave.
Knoxville, Tenn.

Speizman, Morris, Co.
508 W. 11th St.
Charlotte, N. C.

Standard Electronics Research
Corp.
2 E. End Ave.
New York 21, N. Y.

Standard Gage Co.
80 Parker Ave.
Poughkeepsie, N. Y.

Suter, Alfred
200 Fifth Ave.
New York, N. Y.

Switzer Bros., Inc.
1220 Huron Rd.
Cleveland 15, Ohio

Taber Instrument Corp.
111 Coudry St.
North Tonawanda, N. Y.

Tennay Engineering, Inc.
26 Avenue B
Newark 5, N. J.

Testing machines, Inc.
431 West 42nd St.
New York, N. Y.

Thomas, Arthur H.
West Washington Square
P. O. Box 669
Philadelphia, Pa.

Thomas Balance Co.
818 20th St.
Denver, Colo.

Thwing-Albert Instrument Co.
Penn St. and Pulaski Av.
Philadelphia 44, Pa.

Torsion Balance Co.
92 Reade St.
New York, N. Y.

Troemner, Henry
909 Arch St.
Philadelphia, Pa.

Ultra-Violet Products, Inc.
Dept. A. D. R.
South Pasadena, Calif.

United Shoe Machinery Corp.
Die Plant
117 East Frederick St.
Binghamton, N. Y.

United States Testing Co., Inc.
1115 Park Ave.
Hoboken, N. J.

Vester Corp.
2516 Wilkinson Blvd.
Charlotte, N. C.

Volant and Sons, Inc.
New Rochelle, N. Y.

Western Electrical Instruments
Corp.
614 Freelinghuysen Ave.
Newark 5, N. J.

Will Corporation
P. O. Box 1050
Rochester 3, N. Y.

Wyzenbeck and Staff, Inc.
838 West Hubbard Ave.
Chicago 22, Ill.

Zeiss, Inc.
485 Fifth Ave.
New York 16, N. Y.

IV. LITERATURE REFERENCES

1. WEAR TESTING OF CARPETS. Herbert F. Schiefer. Journal of Research of the National Bureau of Standards, Vol. 29, pp. 333-379; November 1942. Research Paper RP1505. Out of print.
2. TEXTILE TESTING IN GERMANY. Herbert F. Schiefer, Lyman Fourn, and Richard T. Kropf. Textile Research Journal, Vol. XVII, No. 11, pp. 669-713, December 1947; Vol. XVIII, No. 1, pp. 18-30, January 1948; Vol. XVIII, No. 2, pp. 89-101, February 1948. Textile Research Journal, 10 East 40th Street, New York 16, N. Y. 57 pages. May 1948. \$3.50.
3. ABRASION RESISTANCE OF CLOTH; ROTARY PLATFORM (TABER) METHOD. Method 5306, Federal Specification CCC-T-191b, Reference 119.
4. ROTARY PLATFORM, DOUBLE HEAD METHOD in ASTM Designation: D 1175 - 51 T, 1951 ASTM Standards, Reference 120.
5. INDUSTRIAL FABRICS. G. F. Raven. Wellington Sears Co., 65 World Street, New York, N. Y. 741 pages. Second Edition 1941. \$2.00.
6. IMPROVED SLING-UNIT SCHIEFER ABRASION TESTING MACHINE. Herbert F. Schiefer, Lawrence H. Green, and John P. Krasny. Journal of Research of the National Bureau of Standards, Vol. 42, No. 5, pp. 461-497; May 1949. Research Paper RP 1988. 15 cents. Also in Textile Research Journal, Vol. XIX, No. 5, pp. 259-269; May 1949. ASTM Bulletin, No. 159, pp. 73(TP133)-78(TP138); July 1949.
7. ABRASION RESISTANCE OF CLOTH; UNIFORM-ABRACTION (SCHIEFER) METHOD. Method 5308, Federal Specification CCC-T-191b, Reference 119.
8. UNIFORM ABRASION TESTING MACHINE METHOD in ASTM Designation: D 1175 - 51 T, 1951 ASTM Standards, Reference 120.
9. ABRASION RESISTANCE OF CLOTH; FLEXING FOLDED BAR (STOLL) METHOD. Method 5300, Federal Specification CCC-T-191b, Reference 119.
10. FLEXING AND ABRASION METHOD in ASTM Designation: D 1175 - 51 T, 1951 ASTM Standards, Reference 120.

11. ABRASION RESISTANCE OF CLOTH; OSCILLATORY CYLINDER (WIEZENBUEK) METHOD. Method 5304, Federal Specification CCC-T-191b, Reference 119.
12. OSCILLATORY CYLINDER METHOD in ASTM Designation: D 1175 - 51 T, 1951 ASTM Standards, Reference 120.
13. AN IMPROVED MULTIPURPOSE ABRASION TESTER AND ITS APPLICATION FOR THE EVALUATION OF THE WEAR RESISTANCE OF TEXTILES. R. G. Stoll. Textile Research Journal, Vol. XXIX, No. 7, pp. 395-415; July 1949.
14. ABRASION RESISTANCE OF CLOTH; INFLATED DIAPHRAGM (STOLL) METHOD. Method 5302, Federal Specification CCC-T-191b, Reference 119.
15. INFLATED DIAPHRAGM METHOD in ASTM Designation: D 1175 - 51 T, 1951 ASTM Standards, Reference 120.
16. PHOTOELECTRIC COLOR-DIFFERENCE METER. Richard S. Hunter. Journal of the Optical Society of America, Vol. 33, p. 661(A); 1948.
17. ACCURACY, PRECISION, AND SENSITIVITY OF NEW PHOTOELECTRIC COLOR-DIFFERENCE METER. Richard S. Hunter. Journal of the Optical Society of America, Vol. 33, p. 1024(A); 1948.
18. INSTANT TAPTON STUDIES. IX. HUNTER COLOR ID COLOR-DIFFERENCE METER. J. A. van den Esker, Morris Aprison, and C. H. Olson. TAPPI, Vol. 34, No. 9, p. 1431-1501; September 1951.
19. INDUSTRIAL TRI-STIMULUS COLOR METER. George F. Bentley, President, Instrument Development Laboratories, Inc. Electronics, Vol. 24, No. 8, pp. 102-103; August 1951.
20. NEW AUTOMATIC COLOR METER FOR USE IN COTTON QUALITY SPECIFICATIONS. Dorothy Wickerson. Textile Research Journal, Vol. XXI, No. 1, pp. 33-38; January 1951.
21. NEW AUTOMATIC COLORIMETER FOR COTTON. Wickerson, D., Hunter, R. S., and Powell, M. G. Journal of the Optical Society of America, Vol. 40, pp. 446-449; 1950.
22. COLOR STANDARDS OF COTTON, PRESENT AND PROPOSED APPLICATION OF NEW AUTOMATIC COTTON COLORIMETER. D. Wickerson. U. S. Department of Agriculture, Washington 25, D. C. 18 pages, illustrated. April 1950. Free.

23. PHOTOELECTRIC TRIETHYLENE COLOR TESTS WITH THREE FILTERS. Richard S. Hunter. National Bureau of Standards Circular C427. 46 pages. July 30, 1942. 15 cents.
24. A MULTIPURPOSE PHOTOELECTRIC REFLECTOMETER. Richard S. Hunter. Journal of Research of the National Bureau of Standards, Vol. 25, pp. 581-613; November 1940. Research Paper RP1345. 10 cents.
25. COLORFASTNESS OF DYED CELLULOSE ACETATE TO ATMOSPHERIC OXIDES OF NITROGEN. ATCC Method 23-46, 1951 ATCC Technical Manual, Reference 121.
26. EVALUATION OF FASTNESS TO ATMOSPHERIC FUMES OF DYED CELLULOSE ACETATE RAYON. NEW TESTATIVE METHOD. American Dyestuff Reporter, Vol. 35, pp. P174-P176; April 8, 1946.
27. STANDARD MACHINERY FOR LABORATORY WASHING TESTS - THE LAUNDER-O-METER, pp. 85-86, 1951 ATCC Technical Manual, Reference 121.
28. COLORFASTNESS TO COMMERCIAL LAUNDERING AND TO DOMESTIC WASHING. ATCC Method 36-45, 1951 ATCC Technical Manual, Reference 121.
29. COLORFASTNESS TO LAUNDERING OF COTTON AND/OR LINEN CLOTH; LAUNDER-O-METER METHOD. Method 5610, Federal Specification CCC-T-191b, Reference 119.
30. STANDARD METHOD OF TEST FOR COLORFASTNESS TO COMMERCIAL LAUNDERING AND TO DOMESTIC WASHING OF COTTON AND LINEN TEXTILES. ASTM Designation: D 435 - 42, 1951 ASTM Standards, Reference 120.
31. COLORFASTNESS TO LIGHT OF CLOTH; ACCELERATED METHOD (FADE-O-METER), Method 5660, Federal Specification CCC-T-191b, Reference 119.
32. LIGHT-SENSITIVE PAPER NO. 1594 - DIRECTIONS FOR USE IN TESTING TEXTILES FOR COLORFASTNESS TO LIGHT. National Bureau of Standards Letter Circular LC1004. 5 pages. August 30, 1951. Free.
33. LIGHT-SENSITIVE PLATERS AS CONTROLS FOR TESTING TEXTILE COLORFASTNESS AND STABILITY OF MATERIAL UNDER ARC LAMP EXPOSURE. Herbert F. Launer. Journal of Research of the National Bureau of Standards, Vol. 41, No. 3, pp. 169-177; September 1948. Research Paper RP1916. 10 cents.

34. COLORFASTNESS TO LIGHT. AATCC Method 16-45, 1951 AATCC Technical Manual, Reference 121.
35. TENTATIVE METHOD OF TEST FOR FASTNESS OF COLORED TEXTILES TO LIGHT. ASTM Designation: D 506 - 50 T, 1951 ASTM Standards, Reference 120.
36. COLORFASTNESS TO PERSPIRATION. AATCC Method 15-49, 1951 AATCC Technical Manual, Reference 121.
37. COLORFASTNESS TO PERSPIRATION OF CLOTH; PERSPIROMETER METHOD. Method 5680, Federal Specification CCC-T-191b, Reference 119.
38. CROCKING OF CLOTH. Method 5650, Federal Specification CCC-T-191b, Reference 119.
39. COLORFASTNESS TO RUBBING (CROCKING). AATCC Method 8-45, 1951 AATCC Technical Manual, Reference 121. See also the 1944 AATCC Year Book, pp. 192-194, for a description of the Crockmeter.
40. COLORFASTNESS TO WEATHER OF CLOTH; ACCELERATED METHOD (NATIONAL WEATHERING UNIT). Method 5671, Federal Specification CCC-T-191b, Reference 119.
41. COLORFASTNESS TO WEATHER OF CLOTH; ACCELERATED METHOD (TWIN ARC WEATHER-O-METER). Method 5670, Federal Specification CCC-T-191b, Reference 119.
42. COMPRESSION METER FOR EVALUATING THE COMPRESSIBILITY AND RESILIENCY OF FABRICS. E. C. Dreby. American Dyestuff Reporter, Vol. 33, No. 10, pp. 199-204; May 8, 1944.
43. PHYSICAL METHODS FOR EVALUATING HAND OF FABRICS AND FOR DETERMINING THE DEVELOP OF CERTAIN TEXTILE FINISHING PROCESSES. E. C. Dreby. American Dyestuff Reporter, Vol. 31, No. 21, pp. P497-P504; October 12, 1942.
44. THE COMPRESSIONETER, AN INSTRUMENT FOR EVALUATING THE STIFFNESS, COMPRESSIBILITY, AND COMPRESSION AND RESILIENCY OF TEXTILES. Herbert E. Schiefer. Journal of Research of the National Bureau of Standards, Vol. 10, pp. 705-713; June 1933. Research Paper RP561. Out of print. Textile Research, Vol. 3, pp. 505-513; October 1933.

45. EVALUATION OF CRUSH-RESISTANT FINISHING TREATMENTS FOR FABRICS. Herbert F. Schiefer. Journal of Research of the National Bureau of Standards, Vol. 19, pp. 571-574; November 1937. Research Paper RF1047. 5 cents. Also in American Dyestuff Reporter, Vol. 26, pp. P667-P669; November 1, 1937.
46. IMPROVED EVALUATION OF THE CREASE RESISTANCE OF RESIN TREATED FABRICS. R. R. de Waard, A. Hvizdak, and C. R. Stock. American Dyestuff Reporter, Vol. 37, No. 16, pp. 513-518, 536-537; August 9, 1948.
47. CREASE RECOVERY OF FABRICS. AATCC Method 67-51, 1951 AATCC Technical Manual, Reference 121.
48. CREASE RECOVERY OF FABRICS. AATCC Method 66-51, 1951 AATCC Technical Manual, Reference 121.
49. CREASE-RESISTANCE AND COTTON. George S. Buck, Jr., and Frank A. McCord, National Cotton Council of America. Textile Research Journal, Vol. XIX, No. 4, pp. 216-247; April 1949.
50. DETERGENCY COMPARATOR. AATCC Method 60-50, 1951 AATCC Technical Manual, Reference 121.
51. HOW MILLS ARE USING THE PACIFIC EVENNESS TESTER. James H. Kennedy, Jr., and Michael J. Koroskys. Textile World, Vol. 101, No. 10, pp. 138-141, 143, 232, 234; October 1951.
52. SUTER-WEBB COTTON FIBER DUPLEX SORTER AND RESULTING METHOD OF LENGTH-VARIABILITY MEASUREMENTS. R. W. Webb. American Society for Testing Materials Proceedings Thirty-Five; Vol. 32, Part 2, pp. 1-11; 1932.
53. COTTON FINENESS AND IMMATUREITY AS MEASURED BY THE AREA LOMETER. K. L. Hertel and G. J. Craven. Textile Research Journal, Vol. XXI, No. 11, pp. 765-774; November 1951.
54. SAMPLING AND MEASUREMENT METHODS FOR DETERMINING FINENESS AND UNIFORMITY IN WOOL. Elroy M. Pohle, L. H. Hazel, and H. R. Keller. U. S. Department of Agriculture Circular No. 704. 14 pages. August 1944. 10 cents.
55. A RAPID METHOD FOR PROJECTING AND MEASURING CROSS SECTIONS OF WOOL FIBERS. James O. Grandstaff. U. S. Department of Agriculture Circular No. 590. 10 pages. December 1940. 5 cents.

56. DETERMINATION OF FIBRE FINENESS AND CROSS-SECTIONAL VARIABILITY - AN IMPROVED TECHNIQUE FOR OBTAINING PHOTOMICROGRAPHS BY PROJECTING CROSS-SECTIONS ON SENSITIZED PAPER. J. I. Hardy. Textile Research, Vol. 5, No. 4, pp. 184-190; February 1935.
57. EVALUATION OF FIRE RESISTANT TEXTILES. AATCC Method 34-47, 1951 AATCC Technical Manual, Reference 121.
58. FLAMMABILITY OF CONSUMER TEXTILES. AATCC Method 35-50, 1951 AATCC Technical Manual, Reference 121.
59. FLAMEPROOFING OF TEXTILES. Marjorie W. Sandholzer. National Bureau of Standards Circular C455. 20 pages. August 23, 1943. 10 cents.
60. BURNING RATE OF CLOTH; HORIZONTAL. Method 5906, Federal Specification CCC-T-191b, Reference 119.
61. FIELD TESTS FOR FLAMEPROOFED TEXTILES: Part III, Section 7, CLAMP TEST, Standard for Flameproofed Textiles, Reference 117.
62. FLAME RESISTANCE OF CLOTH; VERTICAL, FIELD. Method 5904, Federal Specification CCC-T-191b, Reference 119.
63. A STUDY OF THE EFFECTS OF FORM FACTORS ON THE TRANSLATION OF THE INHERENT PHYSICAL PROPERTIES OF TEXTILE FIBERS INTO TEXTILE STRUCTURE - LITERATURE SURVEY. Walter J. Hamburger, Milton H. Platt, and Marcelotte W. Ross. Office of the Quartermaster General, Military Planning Division, Research and Development Branch. Textile Series - Report No. 59. 308 pages. July 1949. Obtainable as PB 100 363 from the Office of Technical Services, U. S. Department of Commerce, Washington 25, D. C., for \$0.25, by check or money order payable to the "Treasurer of the United States".
64. TECHNICAL EVALUATION OF TEXTILE FINISHING TREATMENTS. VI. TEST METHODS FOR THE DRAPOMETER. L. J. Winn and G. R. Schwarz, American Dyestuff Reporter, Vol. 30, No. 9, pp. P226-P230, P238; April 28, 1941.
65. THE MEASUREMENT OF THE BENDING MOMENTS OF MONOFILS. P. W. Carleno. Journal of The Textile Institute, Vol. 38, pp. T1-T142; 1947.
66. THE FLEXOMETER, AN INSTRUMENT FOR EVALUATING THE FLEXURAL PROPERTIES OF CLOTH AND SIMILAR MATERIALS. Herbert P. Sch. Per. Journal of Research of the National Bureau of Standards, Vol. 10, pp. 647-657; May 1933. Research Paper RP555. Out of print. Also in Textile Research, Vol. 3, pp. 388-403; June 1933.

67. EVALUATION OF GREASE-RESISTANT FINISHES FOR FABRICS. Herbert P. Schiefer. Journal of Research of the National Bureau of Standards, Vol. 20, pp. 241-252; February 1938. Research Paper RP1077. Out of print. Also in American Dyestuff Reporter, Vol. 27, pp. 22-30; January 10, 1938.
68. THE PLINOFLEX, A SIMPLE DEVICE FOR EVALUATING THE PLIABILITY OF FABRICS. E. C. Dreby. Journal of Research of the National Bureau of Standards, Vol. 27, No. 5, pp. 469-477; November 1941. 10 cents.
69. A FRICTION METER FOR DETERMINING THE COEFFICIENT OF KINETIC FRICTION OF FABRICS. E. C. Dreby. Journal of Research of the National Bureau of Standards, Vol. 31, No. 4, pp. 237-246; October 1943. Research Paper RP1562. Out of print.
70. METHODS OF TESTING HOSIERY. E. Max Schenke and Howard H. Shearer. National Bureau of Standards Circular C422. 34 pages. October 11, 1938. 15 cents.
71. TENTATIVE METHOD OF TEST FOR SNAG RESISTANCE OF HOSIERY. ASTM Designation: D 1115 - 50 T, 1951 ASTM Standards, Reference 120.
72. SNAG RESISTANCE OF HOSIERY. AATCC Method 65-51, 1951 AATCC Technical Manual, Reference 121.
73. TENTATIVE GENERAL METHODS OF TESTING COTTON FIBERS. ASTM Designation: D 414 - 49 T, 1951 ASTM standards, Reference 120.
74. RECENT DEVELOPMENTS IN FLUORESCENT DYES, WITH PARTICULAR REFERENCE TO COLOUR PROBLEMS. S. T. Henderson. The Journal of the Society of Dyers and Colourists, Vol. 67, No. 10, pp. 362-366; October 1951.
75. PHOTOMETER FOR LUMINESCENT MATERIALS. Roy P. Teale. Journal of Research of the National Bureau of Standards, Vol. 34, No. 4, pp. 325-332; April 1945. Research Paper RP1546. Out of print.
76. AN IMPROVED APPARATUS FOR MEASURING THE AIR PERMEABILITY OF FABRICS. Herbert P. Schiefer and Paul H. Royland. Journal of Research of the National Bureau of Standards, Vol. 26, No. 5, pp. 637-642; May 1942. Research Paper RP1471. Out of print.
77. PERMEABILITY TO AIR; CLOTH; CALIBRATED ORIFICE METHOD. Method 5450, Federal Specification CCC-T-191b, Reference 119.

78. PERMEABILITY TO AIR; CLOTH; FALLING CYLINDER METHOD. Method 5452, Federal Specification CCC-T-191b, Reference 119.
79. PERMEABILITY TO HYDROGEN GAS; CLOTH. Method 5460, Federal Specification CCC-T-191b, Reference 119.
80. DIMENSIONAL CHANGES IN TEXTILE FABRICS. COTTON AND LINEN. ATCC Method 14-33, 1951 ATCC Technical Manual, Reference 121.
81. SHRINKAGE IN LAUNDERING; COTTON AND/OR LINEN CLOTH. Method 5550, Federal Specification CCC-T-191b, Reference 119.
82. STANDARD METHOD OF TEST FOR SHRINKAGE IN LAUNDERING OF WOVEN COTTON CLOTH. ASTM Designation: D 437 - 36, 1951 ASTM Standards, Reference 120.
83. SHRINKAGE IN LAUNDERING OF SHRINK-RESISTANT WOOL SOCKS. Method 7560, Federal Specification CCC-T-191b, Reference 119.
84. SHRINKAGE IN LAUNDERING OF SHRINK-RESISTANT TREATED WOOL SOCKS; ACCELERATED METHOD. Method 7561, Federal Specification CCC-T-191b, Reference 119.
85. THE "HANDLE" OF CLOTH AS A MEASURABLE QUANTITY. F. T. Peirce. Journal of the Textile Institute, Vol. 21, pp. T377-T416; 1930.
86. STIFFNESS OF CLOTH, DRAPES AND FLEX; CANTILEVER BEADING METHOD (PIRCE FORMULA). Method 5206, Federal Specification CCC-T-191b, Reference 119.
87. THE QUANTITATIVE MEASUREMENT OF STIFFNESS AND RESILIENCE. I. J. Saxl. American Dyestuff Reporter, Vol. 27, pp. 65-69; February 7, 1938.
88. LEATHER AND LEATHER PRODUCTS; GENERAL SPECIFICATIONS (METHODS OF SAMPLING, INSPECTION, AND TESTS). Federal Specification KX-L-311. 10 cents.
89. STRENGTH AND ELONGATION, BREAKING, OF WOVEN CLOTHS IN BARRIER. Method 5100, Federal Specification CCC-T-191b, Reference 119.
90. STRENGTH CALIBRATION OF CONSTANT-RATE-OF-LOAD MACHINES, INCLINED PLANE TYPE. ASTM Designation: D 76 - 49, Appendix 1, 1951 ASTM Standards, Reference 120.
91. VISCOSE RAYON; STRESS-STRAIN PROPERTIES. I. EFFECT OF SPECIMEN LENGTH. H. R. Bollinson. Textile Research, Vol. X, No. 7, pp. 287-297; May 1940.

92. STRENGTH OF CLOTH; RETAINING; PENETRATION METHOD. Method 5132, Federal Specification CCC-T-191b, Reference 119.
93. STRENGTH OF CLOTH; BALL PUNTING METHOD. Method 5120, Federal Specification CCC-T-191b, Reference 119.
94. STRENGTH OF CLOTH; DIAPHRAGM BURSTING METHOD. Method 5122, Federal Specification CCC-T-191b, Reference 119.
95. ENGINEERING TENSILE TENSION. Dr. Erwin J. Saxl. Rayon Textile Monthly, Vol. 26; No. 9, pp. 57(465)-59(467), September; No. 10, pp. 59 (539)-61(541), October; No. 11, pp. 50(588)-52(590), November, 1947.
96. AN IMPROVED APPARATUS FOR MEASURING THE THERMAL TRANSMISSION OF TEXTILES. Richard S. Cleveland. Journal of Research of the National Bureau of Standards, Vol. 19, pp. 675-684; December 1937. Research Paper RP1055. 5 cents.
97. YARNS PER INCH IN WOVEN FABRICS. Method 5050, Federal Specification CCC-T-191b, Reference 119.
98. STANDARD GENERAL METHODS OF TESTING WOVEN TEXTILE FABRICS. ASTM Designation: D 39 - 49, 1951 ASTM Standards, Reference 120.
99. TWIST IN SINGLE YARNS; TURNS PER INCH. Method 4052, Federal Specification CCC-T-191b, Reference 119.
100. TWIST DETERMINATION IN SINGLE YARNS. W. R. Bollinson. Textile Research, Vol. X, No. 3, pp. 120-125; 1940.
101. TENTATIVE METHODS OF TEST FOR RESISTANCE OF TEXTILE FABRICS TO WATER. ASTM Designation: D 563 - 50 T, 1951 ASTM Standards, Reference 120.
102. WATER RESISTANCE OF CLOTH; LOW RANGE, HYDROSTATIC PRESSURE METHOD. Method 5514, Federal Specification CCC-T-191b, Reference 119.
103. WATER RESISTANCE TEST APPARATUS. American Dyestuff Reporter, Vol. 40, No. 6, pp. P188-P192; March 19, 1951.
104. HYDROSTATIC PRESSURE TEST. ATCC Tentative Method, 1944 Year Book of the American Association of Textile Chemists and Colorists, Vol. XXI. Howes Publishing Co., Inc., 44 East 23rd Street, New York, N. Y.

105. RESISTANCE TO PENETRATION (HYDROSTATIC PRESSURE TEST). AATCC Method 18-41, 1951 AATCC Technical Manual, Reference 121.
106. WATER-RESISTANT FABRIC UTILITY. George A. Slowinske. American Dyestuff Reporter, Vol. 32, No. 4, pp. P85-P91; February 15, 1943.
107. RESISTANCE TO PENETRATION (IMPACT PENETRATION TEST). AATCC Method 42-45, 1951 AATCC Technical Manual, Reference 121.
108. THE EVALUATION OF WATER-RESISTING TEXTILE FINISHES. George A. Slowinske. American Dyestuff Reporter, Vol. 30, No. 1, pp. P6-P12; January 6, 1941.
109. RESISTANCE TO WETTING (SPRAY). AATCC Method 22-44, 1951 AATCC Technical Manual, Reference 121.
110. WATER RESISTANCE OF CLOTH WITH HYDROPHOBIC FINISH; SPRAY METHOD. Method 5526, Federal Specification CCC-T-191b, Reference 119.
111. A CORRELATION OF WATER-REPELLENT GARMENT PERFORMANCE AND LABORATORY TESTS ON FIBRICS. George A. Slowinske and Arthur G. Pope. American Dyestuff Reporter, Vol. 36, pp. P108-P121; March 10, 1947.
112. RESISTANCE TO PENETRATION (RAIN TEST). AATCC Method 35-47, 1951 AATCC Technical Manual, Reference 121.
113. WEATHERING RESISTANCE OF CLOTH; ACCELERATED WEATHERING METHOD (NATIONAL WEATHERING UNIT). Method 5804, Federal Specification CCC-T-191b, Reference 119.
114. ACCELERATED WEATHERING TESTS. Test Method 6-6(b), Standard for Flameproofed Textiles, Reference 117.
115. ACCELERATED WEATHERING TESTS. Test Method 6-6(a), Standard for Flameproofed Textiles, Reference 117.
116. YARN NUMBER; COTTON YARN METHOD. Method 4020, Federal Specification CCC-T-191b, Reference 119.
117. STANDARD FOR FLAMEPROOFED TEXTILES. Adopted by the National Fire Protection Association and the National Board of Fire Underwriters. Pamphlet NFPA No. 701. National Fire Protection Association International, 60 Batterymarch Street, Boston 10, Mass. 22 pages. 1951. 35 cents.

118. TEXTILES - TESTING AND REPORTING. U. S. Department of Commerce Commercial Standard CS59-44. 45 pages. Fourth Edition 1944. 15 cents.
119. TEXTILE TEST METHODS. Federal Specification CCC-T-191b. May 15, 1951. \$1.75.
120. ASTM STANDARDS ON TEXTILE MATERIALS (WITH RELATED INFORMATION). Prepared by ASTM Committee D-13 on Textile Materials, American Society for Testing Materials, 1916 Race Street, Philadelphia 3, Pa. Annual. 1951 Edition: 597 pages; \$5.00. Copies of individual methods, 25 cents each.
121. 1951 TECHNICAL MANUAL AND YEAR BOOK OF THE AMERICAN ASSOCIATION OF TEXTILE CHEMISTS AND COLORISTS. Howes Publishing Co., Inc.; 44 East 23rd Street, New York 10, N. Y. Annual. 1951 Edition, Volume XXVII: 610 pages; \$5.00 United States and Canada; \$5.50 elsewhere.
122. TEMPERATURE, LOW, EFFECT ON COATED CLOTH. Method 5874, Federal Specification CCC-T-191b, Reference 117.
123. LOW TEMPERATURE PROPERTIES OF TEXTILE MATERIALS. Ernest R. Kaswell. American Dyestuff Reporter, Vol. 38, No. 3, pp. P127-P134; February 7, 1949.
124. AN IMPROVED ELECTRONIC FLEXOMETER FOR BRIDGING ANALYSIS AND STIFFNESS STUDIES OF FABRICS AND THIN PLASTICS. H. H. Hebel, H. J. Kolb, J. W. Stillman, and J. H. Balt. ASTM Bulletin, No. 176, pp. 52(TP190)-55(TP193); September 1951.

