

March 3, 1941

TESTING OF HOSIERY:
References to the Literature

This letter circular has been prepared to answer inquiries about sources of information on the testing of hosiery and related subjects. Most of the books and articles listed can be consulted in the large libraries.

The publishers of the journals referred to in this letter circular are as follows:

- Journal of Home Economics - American Home Economics Association, Washington, D.C.
- Journal of Research of the National Bureau of Standards - Government Printing Office, Washington, D. C.
- Journal of the Textile Institute - The Textile Institute, St. Mary's Parsonage, Manchester, England.
- Textile World - McGraw-Hill Publishing Co., 330 West 42nd Street, New York, New York.

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Physical properties of women's full-fashioned hosiery knit from commercial cotton yarns. Margaret B. Hays, Emma C. Petersen, and Delia A. Taylor. Journal of Home Economics, vol. 32, No. 7, pp. 467-474; September 1940.

Reports the results of a study of the possibility of increasing the use of cotton hosiery.

Hosiery lengths and sizes. Commercial Standard CS46-40. 21 pages. August 15, 1940. Obtainable from the Superintendent of Documents, Government Printing Office, Washington, D. C. Price 5 cents (stamps not accepted).

Gives standard methods of measurement and standard measurements for ladies', men's, children's, and infants' hosiery and anklets.

The National Association of Hosiery Manufacturers' "NAHM" Snag Resistance Tester. Howard E. Shearer and E. Max Schenke. Letter Circular LC-588. 10 pages. April 6, 1940. Obtainable from the National Bureau of Standards, Washington, D. C. Free.

Describes a device and procedure for testing the snag resistance of hosiery developed at the National Bureau of Standards by the research associateship of the National Association of Hosiery Manufacturers.

Attachments for Mullen tester. Mark N. Holmes. Textile World, vol. 89, No. 13, p. 70; December 1939.

Gives a method of applying tension on a stretchy fabric and mechanical attachments for use in making fatigue tests with the Mullen tester.

The physical properties of knitted silk stocking fabrics: Prof. W. Davis. Journal of the Textile Institute, vol. 29, pp. T18-T22; 1938.

Compares results obtained in bursting tests, tensile tests, and "performance" tests of knit stockings. Finds that the tensile test distorts the fabric and gives uneven distribution of loading. The bursting test, however, stresses the fabric in all directions. Results are given for bursting tests made on hosiery, half of each hose being degummed with soap only. The load in pounds is plotted against the area and linear extension. The loss in strength was nearly proportional to the loss in weight in degumming. The removal of the gum increased the maximum extensibility of the fabric, the final increase being about 30 percent of the original extension.

Methods of testing hosiery. E. Max Schenke and Howard E. Shearer. National Bureau of Standards Circular C422. 34 pages. October 11, 1938. Obtainable from the Superintendent of Documents. Price 15 cents.

Describes testing procedures used by the research associates of the National Association of Hosiery Manufacturers at the National Bureau of Standards, and by others.

The wear testing of knitted fabrics. Prof. W. Davis. Journal of the Textile Institute, vol. 28, pp. P215-P217; 1937.

Describes an abrading machine which rubs fabric on fabric with a yielding action on a curved surface underneath.

The machine does not give good results with rayon fabrics, as they develop a glassy surface which resists the abrading action.

Tests with the machine showed that an increase in

the twist of the yarn in a cotton fabric increased its resistance to abrading only 10%, a surprisingly low figure. Chlorination of wool decreased its resistance approximately 30%, although it often increased the tensile strength appreciably when single yarns or hanks were tested.

Standards of construction and inspection for ladies' full-fashioned hosiery. 15 pages. February 1936.

Obtainable from the National Association of Hosiery Manufacturers, 468 Fourth Avenue, New York, New York.

Sets up minimum standards. Defines terms used in the standards.

Procedure for testing women's full-fashioned silk hosiery with the National Bureau of Standards Hosiery Testing Machine. Letter Circular LC-466. 2 pages. April 29, 1936. Obtainable from the National Bureau of Standards. Free.

The recommended procedure for testing women's full-fashioned hosiery for "distensibility," "recoverability," and "stretch-endurability" with the National Bureau of Standards hosiery testing machine is given.

A basis for a performance specification for women's full-fashioned silk hosiery. Herbert F. Schiefer and Richard S. Cleveland. National Bureau of Standards Miscellaneous Publication M149. 14 pages. April 25, 1935. Obtainable from the Superintendent of Documents, Price 5 cents.

The results of a survey on women's full-fashioned silk hosiery purchased from fourteen retail stores located in eight large cities in different parts of the United States are discussed. The brand, retail price, appearance, and construction are found to be inadequate guides to the performance of the stockings as indicated by tests on the National Bureau of Standards hosiery-testing machine, which measures the physical characteristics of the upper part of the leg of the stockings under repeated stretching.

Minimum limits for "distensibility," "recoverability," and "stretch-endurability" of the stocking; a classification of hosiery based upon the thickness of two layers of the leg fabric of the stocking; tolerances for size and length of the stocking; and a requirement for colorfastness to laundering are recommended for use in a performance specification for women's full-fashioned silk hosiery.

Factors affecting the performance of hosiery on the hosiery-testing machine. Herbert F. Schiefer and Richard S. Cleveland. Journal of Research of the National Bureau of Standards, vol. 14, pp. 1-16; January 1935; Research Paper RP753. Reprint obtainable from the Superintendent of Documents. Price 5 cents.

The results which have been obtained on the hosiery-testing machine since the publication of Research Paper RP679 are discussed. It is shown that laundering, dyeing, aging, finishing, and construction all have a great effect on the distensibility, elasticity, and durability of the stockings on repeated distention. The information given furnishes a necessary background for the use of the machine for hosiery testing and demonstrates its suitability for researches in knitting, degumming, dyeing, finishing, aging, laundering, redyeing, and refinishing of hosiery.

Hosiery testing machine. Herbert F. Schiefer and William D. Appel. Journal of Research of the National Bureau of Standards, vol. 12, pp. 543-549; May 1934; RP679. Out of print.

The machine described in this paper provides a convenient means for measuring the behavior of a woman's full-fashioned stocking when the upper part of the leg of the stocking is repeatedly distended in a way which subjects it to forces similar to those which occur at the knee and at the garter clasps of a stocking in use. Two smooth "jaws" are inserted in the upper part of the stocking. It is held by two garter clasps attached at the welt and by a weight fastened to the ankle. The jaws are repeatedly separated and brought toward each other by a reciprocating mechanism in such a way that the circumference of the stocking, that is, the distance around the jaws, is varied between 13.3 and 21.3 inches. Means are provided for recording on a chart the relationship between the load exerted on the stocking and the circumference of the stocking for each cycle of loading and unloading. The number of cycles is recorded by a counter. The test may be continued until holes or runs are produced in the stocking.

Typical results of tests are given. The effect of laundering on the behavior of the stockings is also shown.