

CWS:EMM

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DEPARTMENT OF COMMERCE
BUREAU OF STANDARDS

Letter
Circular
LC 143

(Revised to August 1, 1925)

T E X T I L E S

(Official distribution is restricted to public service libraries, technical journals, and cooperating experts who cooperate in the work. Others may purchase the publications from the Superintendent of Documents, Government Printing Office, Washington, D.C., at the prices appended.)

Number	Title	Price
T19*	Physical Testing of Cotton Yarns, by W. S. Lewis. April 1, 1913. 31 pp.	
C45*	The Testing of Materials (textiles included) November 1, 1913.	
T57*	Difference in Weight between Raw and Clean Wools, by W. S. Lewis, September 23, 1915. 5 pp.	
T68*	Standardization of Automobile Tire Fabric Testing, by W. S. Lewis and C. J. Cleary. March 17, 1916. 18 pp.	
M19	Proceedings of the Second Annual Textile Conference, held at the Bureau of Standards, Washington, May 21-22, 1917. 87 pp.	
T96*	Comparative Tests of Stitches and Seams, by W. S. Lewis. June 25, 1917. 7 pp.	
C41	Testing and Properties of Textile Materials. September 20, 1918, 3d edition. 15 pp.	5¢
T231	Tentative Standard Test Methods and Percentages of Oil and Moisture in Hair Press Cloths, by F. R. McGowan and C. W. Schoffstall. March 10, 1923. 20 pp.	5¢
	Hair press cloth is used in the oil-pressing industries in the extraction of the oil from the pulpy matter. Hair fibers are more generally used than others on account of the resiliency required. Since the fabric is bought on a weight basis, the moisture and oil which are added to permit efficient manufacturing become important items. This paper	

*Out of print. May be consulted at leading libraries.

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outlines means of ascertaining the various contents. The petroleum ether extraction method is used for obtaining the oil content. The results of testing 27 samples are given. The standard percentages obtained are as follows: Moisture, 11 per cent; oil, 5 per cent; water-soluble material, 2 1/2 per cent.

C149	A Standardized Method of Measuring the Size of Hosiery. February 1, 1924. 5 pp.	5¢
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As a result of cooperation of the National Association of Hosiery and Underwear Manufacturers, methods of measuring the size of hosiery were investigated, and a standard method based on the suggestions of the Bureau of Standards was selected by a committee of manufacturers. Inquiries to a number of manufacturers and users brought out the fact that no large class of them used the same method of measuring. This resulted in a great confusion of marked sizes on hosiery. The standard method described in this paper has been adopted by the manufacturers, and the Government departments through the Federal Specifications Board, and is being introduced to the retailers and consumers.

T253	Standardization of Hosiery Box Dimensions, by Charles W. Schoffstall and E. M. Schenke. March 1, 1924. 13 pp.	10¢
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Hosiery boxes in use at the present time are represented by photographs and a series of graphs which show waste, defects in packing, breakage, etc. A list of the proposed standard dimensions is given for men's, ladies', and children's hosiery boxes. It is estimated that a reduction of 76 to 83 per cent of the number of present sizes will result from the adoption of these standards. A new method of packing men's hosiery is shown. The results to be obtained from the adoption of standard hosiery boxes are discussed.

C169	Methods of Calculating Hosiery Shipping Case Dimensions. August 13, 1924. 37 pp.	10¢
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Methods for calculating the dimensions of the most suitable arrangement of hosiery boxes which will require a minimum surface area of the shipping case, using both the proposed standard inside dimensions of hosiery boxes and boxes of other dimensions, are given. The development of the equations of a minimum surface of a hexahedron for a given volume is shown in the Appendix to be, when

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with sides a, b, and c, where k and c are constants,

$$c = \frac{2k}{k+1}$$

Use is made of this in selecting the most economical case. The minimum areas are grouped and, in addition, the most common sizes are listed for the use of the manufacturer of all styles of hosiery. Considerations for the use of these dimensions are discussed. The saving resulting from the reduction of the surface area in the design of the case is the feature brought out by this paper.

T264	Development of the Standard Numbered Cotton Duck Specification, by Charles W. Schoffstall and Russell T. Fisher. September 26, 1924. 21 pp.	10¢
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This investigation was carried on by the Bureau of Standards in cooperation with the Cotton Duck Association through its technical committee. A study of various samples of numbered duck, ranging for the medium texture from 2/0 to 6, and for the hard texture from 2/0 to 12 was made. The various test methods are shown. For breaking strength, the strip and three types of grab methods were used, 1 by 1 by 3 inches, 1 by 2 by 3 inches, and 1 by 1 by 1 inch. The 1 by 1 by 3 inch grab method was selected for the standard breaking strength method of test. The results are listed in construction and breaking strength tables with various graphs to illustrate the significance of the data. The study of the results shows how the specifications were formulated. There is given the final specification for numbered cotton duck.

T273	Performance Tests of a Liquid Laundry Soap Used With Textile Materials, by F. R. McGowan, F. W. Smither, and C. W. Schoffstall. October 3, 1924. 26 pp.	10¢
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This study was made to compare the properties of a liquid laundry soap with other washing and scouring agents with respect to shrinkage in weight and dimensions, fading of dye, and changes in construction and feel. Tests were run on various textile materials, including knitted fabrics, wool fabrics, mohair yarns, and wool fleeces. The laundry practice was both mild and severe to cover the range of usual practices in laundry operations. It was found that the liquid laundry soap was superior in each of the tests.

Number	Title	Price
T266	Measurement of Heat Insulation and Related Properties of Blankets, by P. D. Sale and A. F. Hedrick. December 5, 1924. 17 pp.	10¢
	<p>The principal factors influencing the heat insulating properties of fabrics are discussed. Apparatus is described and methods proposed for the measurement of this and other related properties of blankets, viz., permeability to air and water vapor. Standard test conditions are recommended simulating those to which fabrics are subjected in service. Data illustrative of the several tests made on new blankets, typical of the variety to be obtained in the trade, are presented. The heat-insulating value of blankets is correlated with thickness, weight, and density of the specimens. It is planned to supplement this paper by a following publication, Specifications for Constructing and Operating the Heat Transmission Apparatus, and later by a more thorough analysis of experimental data, only a part of which has been presented herein.</p>	

T268	A Study of Silk Waste Used for Cartridge Bag Cloth, with an Appendix on the General Classification of Waste Silk, by F. R. McGowan, Charles W. Schoffstall, and A. A. Mercier. December 4, 1924.	15¢
	<p>A study was made of the waste silk used in the spun silk industry in comparison with the waste silk purchased by the Government for the manufacture of cartridge bag cloth, in order to find if the surplus of this cartridge bag waste silk which remained on hand after the war was of use in connection with the normal textile requirements of the country. It was shown that this cartridge bag waste silk was not suitable for use in the usual spun silk processes of manufacture. Since this necessitated a continuance of the manufacture of this material on a system which combined the cotton and woolen systems of manufacture as was the case during the war, a commercial use adaptable to the normal requirements of the country was extremely desirable. A fabric was woven using this material as a single yarn in the warp direction, unsized, with a wool yarn as the filling. Tests showed the resulting fabric to be suiting material well balanced in regard to wear. The general types of spun silk are given and the system of grading is outlined in the appendix. Figures show the various grades of spun silk and the waste silk used for cartridge bag cloth.</p>	

Number	Title	Price
T269	Specifications for Constructing and Operating Heat-Transmission Apparatus for Testing Heat-Insulating Value of Fabrics, By P. D. Sale. December 16, 1924 13 pp.	10¢
	<p>The information contained in this paper may be useful to those interested in textile testing, or the building of apparatus for this purpose, others contemplating investigational work in this field, and to the general public who desire information as to how such tests can be made.</p> <p>This paper is really a supplement to Technologic Paper No. 266, which deals with the general problem of Heat Insulating Properties of Fabrics. Detailed specifications for the construction and operation of an apparatus which has proven satisfactory for this type of test is given herein. Electric wiring diagrams are given for the power and measurement circuits. Instructions and precautions for making measurements and for manipulation are illustrated by a sheet of data and a plot of this for a typical run.</p>	
T277	Comparative Wearing Qualities of Pima and Ordinary Cotton Used in Mail Bags, by F. R. McGowan, Charles W. Schoffstall, and A. A. Mercier. February 2, 1925. 11 pp.	10¢
	<p>The general characteristics of Pima cotton are discussed, together with the reasons for attempting to find new uses for this type. The purpose of this investigation was to compare mail bags made from Pima cotton with those made from ordinary cotton in the regular catcher-pouch service. The details of the organization used for making the yarn is given. The tests and results are described and discussed. The conclusion from this investigation is that Pima cotton mail bags stand the service wear decidedly better than ordinary cotton bags.</p>	
T278	Effect of Twist on the Physical Properties of a Number 7s Yarn, by F. R. McGowan, Charles W. Schoffstall, and A. A. Mercier. February 11, 1925. 11 pp.	10¢
	<p>This investigation was made to determine the most suitable twist for manufacturing the yarn to be used in the Pima post office bag investigation. Data were obtained on the relation of the twist to the breaking strength, diameter of the yarn, yarn count, contraction, and angle of twist. While these data were not sufficiently extensive to attempt to fix definite formula for these relations, it is thought</p>	

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that the tabular and graphical relation studied in this investigation will be useful for the cotton manufacturer. The most suitable twist for the yarn to be used in the Pima mail bags was found to be about 12 turns per inch.

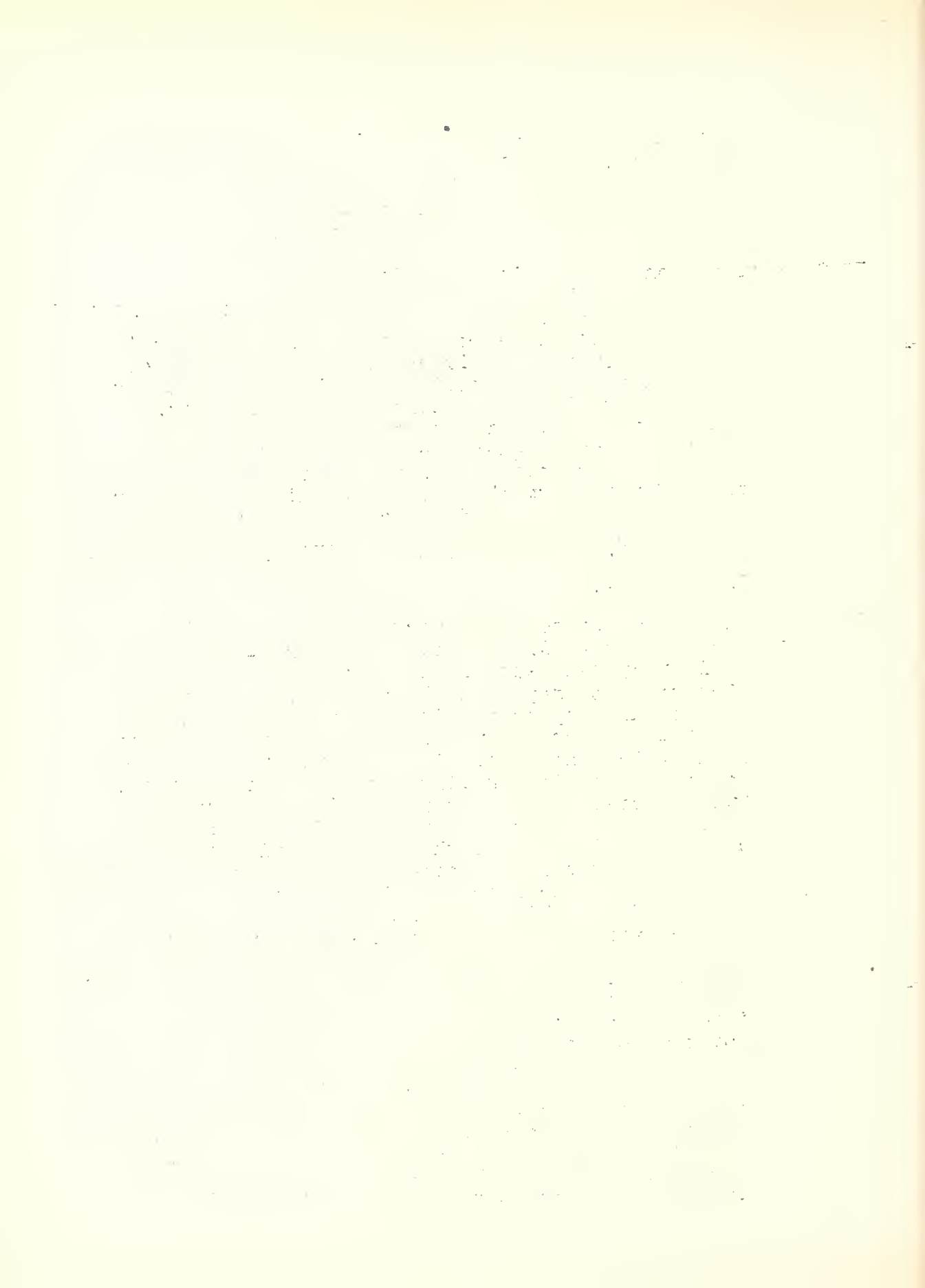
T280 Reclamation of Gasoline Used in Dry Cleaning, by C. C. Hubbard. March 31, 1925. 13 pp. 5¢

This paper outlines and discusses briefly the processes that have been used in the dry-cleaning industry for the "purification" and recovery of gasoline from the material that has become dirty in use. Results are reported of experimental studies in the laboratory and in dry-cleaning plants and of large-scale tests in dry-cleaning plants, using activated carbon and an aqueous solution of trisodium phosphate, definite temperature range, settling, and finally decantation of the colorless, recovered solvent. The process also provides for the recovery of the gasoline retained by the sludge.

T282 Technology of Cotton Machinery, Part 1, Calculations on Pickers, by A. A. Mercier. April 2, 1925. 30 pp. 10¢

A study was made of the calculations on cotton pickers which may be applied to similar machines in the industry or to like machines used in experimental or research work. Methods are given for finding (a) the revolutions per minute of pulleys, rolls, and various moving parts; (b) the ratio between surface speeds of rolls; (c) the production resulting from the revolutions of the calender or delivery rolls and weight of lap; and (d) the amount of beating given the cotton. The speed of the beater is used as a basis or starting point when calculating the speed of rolls and fans.

The machines from which the diagrams were taken are of the ordinary commercial type and represent machines put out by two manufacturers of well-known cotton mill machinery. The calculations are put into the form of tables and charts, permitting the formulation of "organizations" with ease and rapidity. The speeds are used in connection with production, the draft with regard to the weight of the lap, and the blows per inch are determined with regard to the amount of cleaning the cotton will receive. The settings of feed rolls and grids to the beater have not been considered in these calculations. The production of the pickers is tabulated



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for beater speeds from 500 to 1,500 revolutions per minute, when using feed pulleys from 5 to 15 inches in diameter and for laps weighing from 5 to 20 ounces per yard. Various drafts, draft constants, and blows per inch are also included in the calculations.

September 1925

The Bureau of Standards wishes to announce the publication of Technologic Paper 292, Relative Merits of Cotton and Jute Cement Sacks, by Robert J. Morris. Official distribution is restricted to public service libraries, technical journals, and cooperating experts who cooperate in the work. Others may purchase the publication from the Superintendent of Documents, Government Printing Office, Washington, D.C., for 10 cents.

ABSTRACT

This paper contains information concerning the tests made and the apparatus used in determining the relative merits of one type of cotton osnaburg and several types of jute burlap sacks used as containers for Portland cement. A brief description is given of the physical tests made, such as breaking strength, thread count, length, width, stretch, and, of greater importance, the resistance to failure from dropping or rough handling; also of the practical tests made, such as the service test, for which the sacks were put into actual service; the hot-cement test, in which the sacks were filled with hot, freshly ground cement; the humidity test, in which samples were exposed to various atmospheric conditions; and the moisture test, during which the sacks of cement were subjected to excessively damp conditions. The results of all these tests are given in tabular and graphical form. From these data the type of sack with the most serviceability was chosen.

