CHANGES IN THE PHYSICAL AND MECHANICAL PROPERTIES OF SHIRT FABRICS WITH DIFFERENT FIBER CONTENT

Akhmedov Bakhodir, Akbarov Rustam, Ochilov Tulkin Ashurovich, Umirova Robiyakhan Bakhtiyarovna
Department of Science of Textile Material, Tashkent Institute of Textile and Light Industry, Tashkent, Uzbekistan
Department of Science of Textile Material, Tashkent Institute of Textile and Light Industry, Tashkent, Uzbekistan
Department of Science of Textile Material, Tashkent Institute of Textile and Light Industry, Tashkent, Uzbekistan
Magistr, Tashkent Institute of Textile and Light Industry, Tashkent, Uzbekistan

Annotation:

In this article, 68.4% cotton + 31.6% lavsan, 42% cotton + 58% lavsan, 6% wool + 17% lavsan + 67% cotton, 100% viscose and 8.5% wool + 4% lavsan + 87, Physical and mechanical properties of shirt fabrics obtained from a mixture of 5% cotton fibers were determined and an alternative version of the shirt fabric with fiber content was recommended for production.

Keywords:

Self-permeability, crease, positive penetration, appretting, penetration of fabrics in the direction of the base surface, body and back, paint strength in dry and wet friction

I.Introduction

The fabrics currently produced in the textile industry are diverse. They differ in structure, purpose of use, fiber composition and properties. The textile industry is becoming one of the most powerful industries in the world. This is characterized by the availability of raw material reserves, which are the most important, decisive factor for the development of the industry. At the same time, in order to improve the quality of products, it is necessary to increase the scientific and technical level of standards, regularly update standards and specifications, guarantee product quality and high technical level. In addition, new management conditions in a market economy place new demands on product quality. More importantly, textile products must meet the ever-increasing demands and needs of the population.

Every line, every industrial enterprise must have a clear path of renewal in production. Raising product quality to world standards will ensure the release of the product to world markets.

To assess the quality of any product, including textile materials, to substantiate the normative requirements for the important properties of materials in determining the possibility of rational processing and application.

The results of product quality assessment depend not only on the level of total properties and the accuracy of sufficient measurement, but also on the level of demand for these properties. One of the main characteristics of shirt fabrics is air permeability, tensile strength, abrasion resistance, color tensile strength and so on. For example, the fabric itself has the ability to transmit air, water, gas, steam, dust, smoke, liquids, and radioactive pomegranates. Air permeability is the air permeability of the sample itself, which is measured by the air permeability coefficient. The air permeability coefficient represents the amount of air passing through a square meter of surface in one second under known conditions of air pressure on both sides of the sample.

The higher the density of shirt fabrics in the direction of the body and back, the lower the coefficient of air permeability. Therefore, in the production of any shirt fabrics are produced with attention to the season. In addition, the crease of shirt fabrics is one of their negative features. It spoils the look of the item. Fabrics that are easily creased will wear out quickly because they will rub more in bent and twisted areas.

It is understood that shirt fabrics do not wrinkle - they resist wrinkling and return to their original state after wrinkling. In addition, one of the main indicators of a shirt fabric is its abrasion resistance. The abrasion resistance of fabrics depends on the fiber content, density, thinness or thickness of the yarns, thickness and other parameters. For example, the more the fabric is rubbed, the more the structure of the fabric is damaged, the yarns in it are broken, and the tensile strength is reduced. The abrasion of shirt fabrics is mainly due to the effect of friction. The abrasion resistance of fabrics depends on their fiber content, surface texture. First of all, the fiber ends protruding from the surface of the fabric are subject to friction. The fibers protruding from the bends of the threads in the shirt fabric begin to break down. Some areas of the fiber surface are damaged and the fibers break. The yarns are also broken as some fibers or pieces of fiber come out of the yarn.

The bent areas of the threads protruding from the surface of the fabric are the first to be eroded by friction. These areas are the base surface of the fabric, i.e. the larger the base surface of the fabric, the better its abrasion resistance. By strengthening the base surface of the fabric, its abrasion resistance can be increased. For this purpose, long-coated wraps (satin, satin), abrasion-resistant fibers (kapron, lavsan) or finishing processes (appreting) are used. The frictional abrasion of shirt fabrics containing short fibers, especially synthetic fibers, usually begins with the appearance of peeling.

II. Methodology

In the most rubbed areas of the product, soft balls are formed from the tangled fibers. First, the ends of the fibers protrude to the surface of the fabric. Then, they get confused. When tangled, some of the fibers come out of the fabric structure. Later, the fibers in the pillars break off from the surface of the fabric. As a result, the thickness of the fabric is reduced and it is easily absorbed. Research has been conducted to determine the physical and mechanical properties of fabrics.

The test results are presented in Table 1.

Table 1

Influence of different fiber content on physical properties and non-wrinkle performance of shirt fabrics

t / r	Fiber of the fabric structure	Air permeability, dm^3/sm^2 sek	Water permeability, mm. suv.ust	No wrinkles, %	
				on the body	on the back
1.	68.4% cotton + 31.6% lavsan fiber	83,3	160	62,2	60,5
2.	42% cotton + 58% lavsan fiber	92,1	145	67,1	65,8
3.	6% wool + 17% lavsan + 67% cotton fiber	53,2	150	59,1	60,7
4.	100% viscose	79,9	240	50,0	52,2

5.	8.5% wool + 4% lavsan + 87.5% cotton fiber	50,4	142	68,1	65,8

Based on the results of the table, Figures 1-2 show a graph of changes in air permeability, non-wrinkle, abrasion resistance of garments made of a mixture of fibers of different compositions.

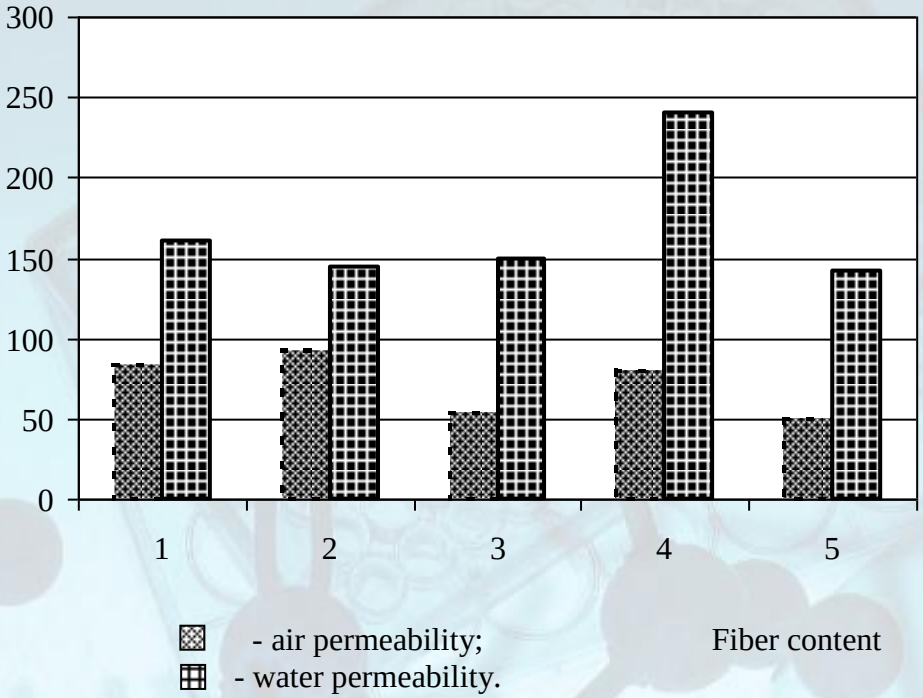


Figure 1. Changes in air and water permeability of shirt fabrics with different fiber content.

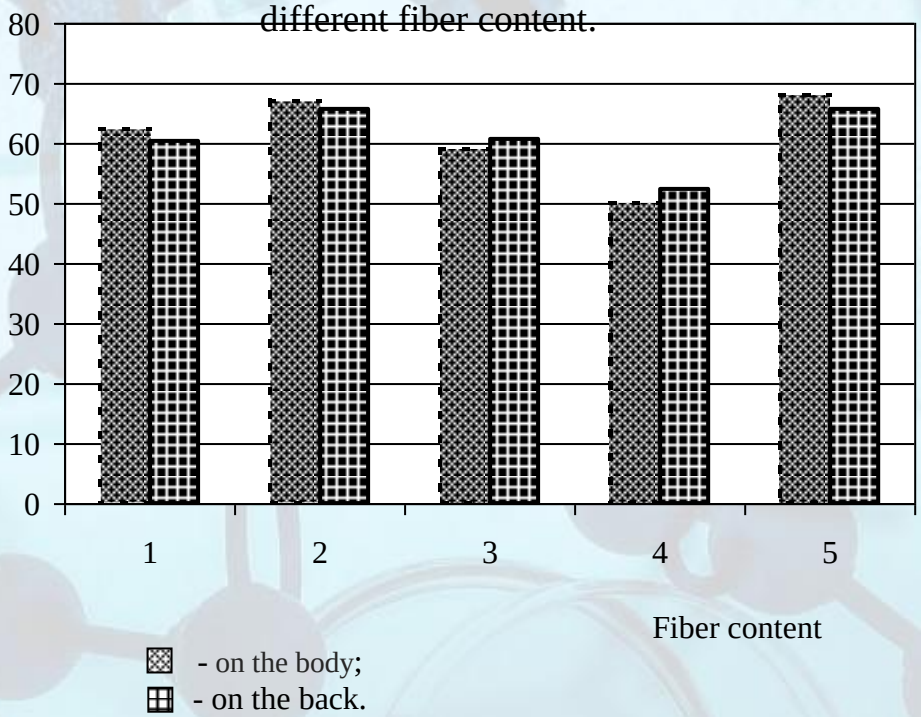


Figure 2. Changes in the non-wrinkling of shirt fabrics with different fiber content.

III. Results And Discussion

Analyzing the results of the test, compared to the quality of 68.4% cotton + 31.6% lavsan fiber, the air permeability of 42% cotton + 58% lavsan fiber increased by 9.6%. water permeability decreased by 9.4%, non-wrinkle in body direction increased by 7.3%, back wrinkle increased by 8.1%, air permeability of shirt fabric made of 6% wool + 17% lavsan + 67% cotton fiber mixture 36.2

%, water permeability decreased by 6.2%, body wrinkle decreased by 5.0%, back wrinkle increased by 0.4%, air permeability of 100% viscose fiber fabric decreased by 4.1%, water permeability 33 , Increased by 3%, non-wrinkle in the direction of the body decreased by 19.6%, non-wrinkle in the back decreased by 13.7%, air permeability of the shirt fabric obtained from a mixture of 8.5% wool + 4% lavsan + 87.5% cotton fiber 39, 5%, water permeability 11.2% g a decreased, the crease in the direction of the body increased by 8.7%, the crease in the back increased by 8.1%. The results of the study show that the air permeability of the shirt fabric, obtained from a mixture of 42% cotton + 58% lavsan fibers, does not wrinkle in the direction of the body and back, has a higher performance than other fiber fabrics.

According to the analysis of the results of the study, compared to other indicators of fibrous shirts, the air permeability of shirts made of a mixture of 42% cotton + 58% lavsan fibers increased by 9.6%, water permeability decreased by 9.4%, no wrinkles in the body - by 7.3% was found to increase by 8.1%.

Dimensions change when fabrics are washed, soaked, ironed, and stored in air with high relative humidity. A change in such dimensions is the introduction of fabrics, in which process the dimensions of the fabrics are often reduced. The input in this case is called the positive input. The dimensions of some fabrics increase. Such an introduction is called a negative introduction.

Even in the case of wet-heat treatment of materials in weaving, its size decreases (increases the process of ironing) or increases (the process of elongated ironing). The introduction during wet heat treatment is called forced-introduction. With the help of mandatory introduction, the textiles are given a certain desired shape. With the help of mandatory introduction, the textiles are given a certain desired shape. Interventions other than mandatory introduction are negative indicators of fabrics. As a result of the penetration of fabrics, the size and shape of the fabric and parts sewn from them can be distorted. The introduction of fabrics with different fiber content and changes in dye strength were studied and the test results are given in Table 2.

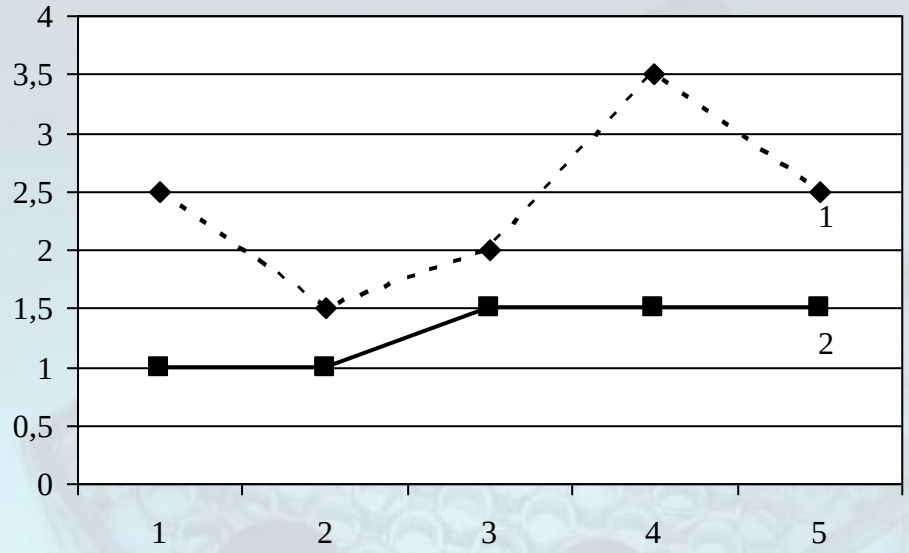
Table 2

Introduction of shirt fabrics and dye strength change in fiber content

t / r	Fiber of the fabric structure	Dye strength in soap treatment, points	Introduction, %		Paint strength, score	
			on the body	on the back	dry	wet
1.	68.4% cotton + 31.6% lavsan fiber	5/5/5	-2,5	-1,0	4	3
2.	42% cotton + 58% lavsan fiber	5/4,5/4	-1,5	-1,0	4	4
3.	6% wool + 17% lavsan + 67% cotton fiber	5/5/5	-2,0	-1,5	3	2
4.	100% viscose	5/5/5	-3,5	-1,5	4	2
5.	8.5% wool + 4% lavsan + 87.5% cotton fiber	4,5/4/4,5	-2,5	-1,5	3	3

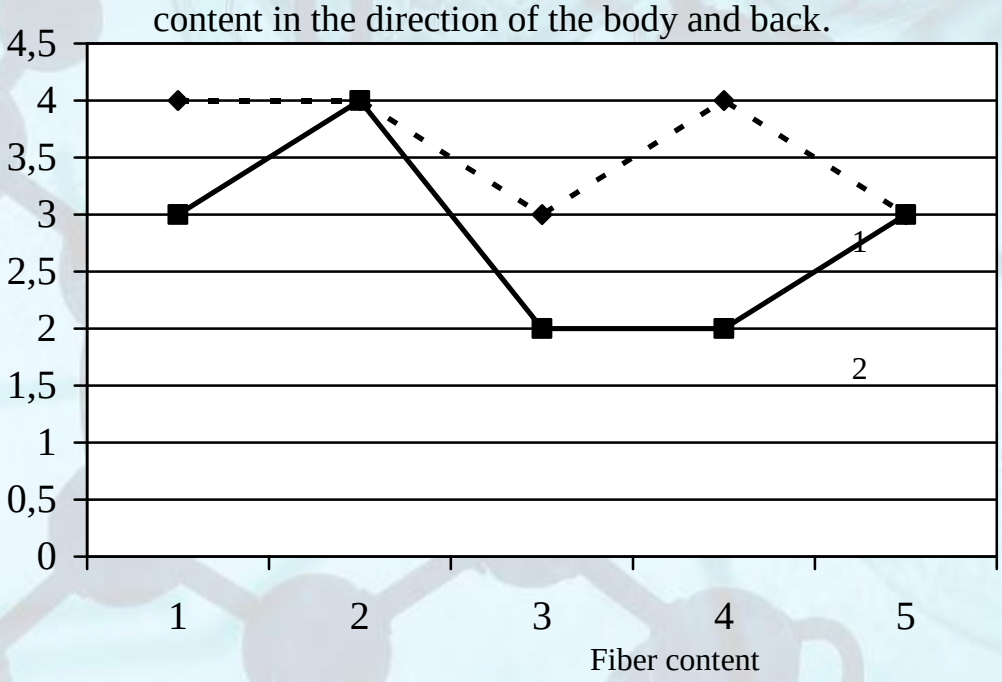
1

Based on the results of the study, in Figures 3 and 4, depending on the fiber content, graphs of changes in the strength of the dye in dry and wet friction, the penetration of shirt fabrics in the direction of the body and back, were constructed.



1- on the body;
2- on the back.

Figure 3. Changes in the penetration of shirt fabrics with different fiber content in the direction of the body and back.



1- dry friction;
2- wet friction wet friction.

Figure 4. Changes in dye strength in dry and wet friction of shirt fabrics with different fiber content.

Analyzing the test results, the strength of the dye in the soap treatment of a shirt fabric made from a mixture of 68.4% cotton + 31.6% lavsan fibers is 5/5/5 points, penetration on the body -2.5, penetration on the back -1, 0, dry friction dye strength 4, wet friction dye strength 3, 42% cotton + 58% lavsan fiber blend, dye strength in soap treatment 5 / 4,5 / 4 points, body penetration -1, 5, back-to-back penetration -1.0, dry friction dye strength 4, wet friction dye 4, 6% wool + 17% lavsan + 67% cotton fiber blend dye strength with soap 5 / 5/5 points, body penetration -2.0, back penetration -1.5, dry friction paint strength 3, wet friction paint strength 2, 100% viscose fiber fabric fabric soap strength 5 / 5/5 b allni, body penetration -3.5, back penetration -1.5, dry friction dye

strength 4, wet friction dye strength 2, 8.5% wool + 4% lavsan + 87.5% cotton fiber The strength of the dye in the soap treatment of the fabric obtained from the mixture is 4.5 / 4 / 4.5 points, the penetration on the body -2.5, the penetration on the back -1.5, the strength of the paint on dry friction 3, the strength of the paint on wet friction 3.

The results of the study show that the strength of the dye in dry and wet friction is 42% in cotton + 58% lavsan fiber, the strength of dye in soap is 68.4% in cotton + 31.6% in lavsan fiber and 6% in wool. + 17% lavsan + 67% cotton fiber blend was found to be superior to other fabrics.

References

1. Bakaev M. X. 2. Karaeva T.Yu. «Optimization of parameters of refueling and processing of fabrics with poperechnymi and prodolnymi strips on beschelnochnyh weaving looms» Author. dis. ... Kand. techn. science. - Kostroma: Kosotkzti, 1992.
2. Siddikov P.S. "Technology - process design" T .: Science-2006.
3. Buzov B.A. and others Material production of sewing production. M.: Legprombytizdat, 1986.
4. Kiryuxin S. M., Dodonkin Yu. V.: «Kachestvo tkaney» M.: Legprombytizdat, 1986.
5. Buzov B.A. and dr. Laboratory practice on material science of Swedish production. M .: Legprombytizdat, 1991.
6. Sklyannikov V.P. Structure and quality of the fabric.-M .: light and food industry , 1984.-176pages.