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ijirset@gmail.com

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Changes in the Physical and Mechanical Properties of Fabrics for Special Clothing

Ochilov Tulkin Ashurovich, Akbarov Rustam, Madjidova Shaira Gafurovna, Avezov Tukhtamurod

Hayitmurodovich, Ismoilov Doniyor Abdulxamidovich

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 Construction and Technology Sewing Goods, Tashkent Institute of Textile and Light Industry,
Tashkent, Uzbekistan

Department of Automation and Control of Technological Processes and Production, Tashkent Institute of Textile and
Light Industry, Tashkent, Uzbekistan

Department of Science of Textile Material, Tashkent Institute of Textile and Light Industry, Tashkent, Uzbekistan

ABSTRACT:In this paper, the fiber content varies, i.e., 68.4% cotton fiber with 31.6% lavsan fiber, 64.7% cotton fiber with 35.23% lavsan fiber, 65.76% cotton fiber with 34.24% lavsan fiber, Samples were taken from 12.0% wool + 11.0% lavsan and 77.0% cotton fiber, 14.8% cotton fiber with 85.2% lavsan fiber blends and 100% lavsan fiber for special clothing fabrics. mechanical properties were determined.

KEY WORDS: folds and wrinkles, wet ironing, wrinkling depends on their fiber content, the thickness of the yarn used in the structure, the type of weaving and finishing, density

I. INTRODUCTION

In the context of market relations, the issue of providing the population with quality textile products is one of the urgent tasks of today. Because the demand of the population for textile products is growing from year to year. In the near future, about 50% of raw cotton grown in the country will be processed into finished products and the potential for export to foreign countries will be increased, filling our domestic markets with finished products [1].

One of the main factors in strengthening the independence of our country and boosting the economy is the development of production in all sectors of the economy, the tasks of specialists in each field. At the new stage of economic reforms, the rich natural resources at our disposal in the development of structural strategies, relying heavily on human resources and their efficient use will accelerate the production process, expand export opportunities and create great opportunities for access to world markets [2-4].

New advanced textile enterprises established during the years of independence and advanced new technologies installed at existing enterprises undergoing re-equipment produce high-quality products along with a sharp increase in the efficiency of enterprises [4].

Under the influence of bending and compression deformations under the influence of various technological processes in the textile industry, fabrics are wrinkled, that is, they form folds and wrinkles. Wrinkles and creases can be removed only by wet ironing. The shrinkage of fabrics depends on their fiber content, the thickness of the yarn used in their structure, the type of weaving and finishing, the density [5-6].

II. METHODOLOGY

The density of fabrics designed for special clothing will vary widely. The thinner the yarns of fabrics of the same density, the thinner the fabric, i.e., the less it is filled with yarns. In addition, another feature of the fabric is its durability.

Research work has been carried out to study the size and density characteristics of fabrics. For this purpose, samples were taken from fabrics designed for special garments with different fiber content, and size and density parameters were studied.



The test results are presented in Table 1.

Table 1
Density of fabrics designed for special clothing change of indicators

t / r	Fibercontent	Harvesting	Linear density of yarn, tex		Density, n / dm		Surfacedensity, g / m ²
			main	weft	main	weft	
1,	68.4% cotton + 31.6% lavsan	1/3 sarja	30	28	460	280	218,2
2.	64.7% cotton + 35.23% lavsan	1/3 sarja	30	30	480	260	219,8
3.	65.76% cotton + 34.24% lavsan	1/3 sarja	30	30	540	260	221,1
4.,	12.0% wool + 11.0% lavsan + 77,% cotton	полотно	24	24	300	210	219,7
5,	14.8% cotton + 85.2% lavsan	1/3 sarja	30	32	460	250	196,9
6.	100% lavsan	1/3 sarja	38	37	520	320	207,0

Based on the results in the table, Figures 1 and 2 show histograms of changes in the density and surface density of fabrics for special garments obtained from a mixture of fibers of different composition in the direction of the body and back.

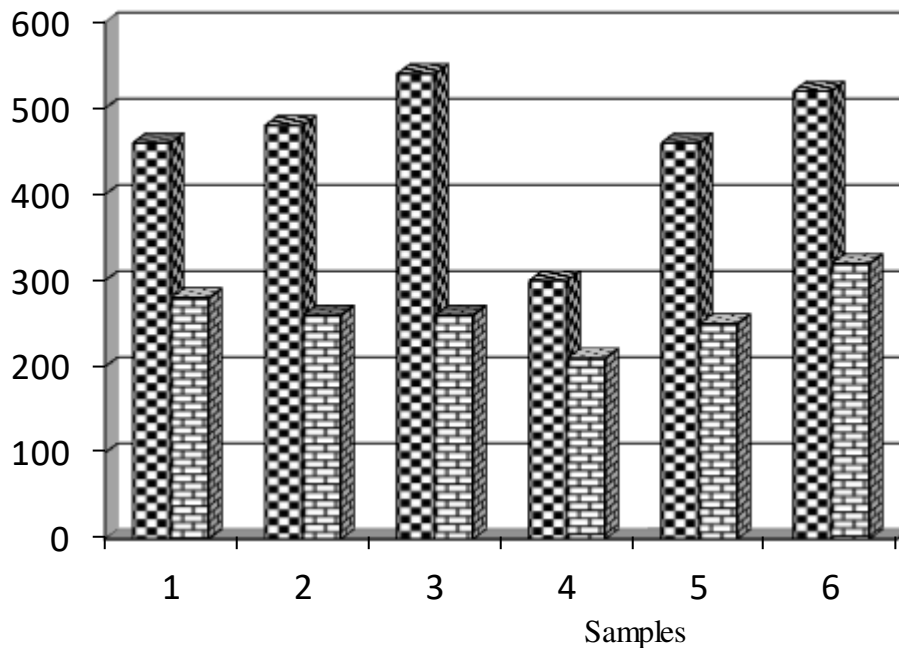


Figure 1.Changes in the density of a mixture of fibers of different composition in the direction of the body and back of the fabric for special clothing.

- in the direction of the body;
- in the direction of the back.

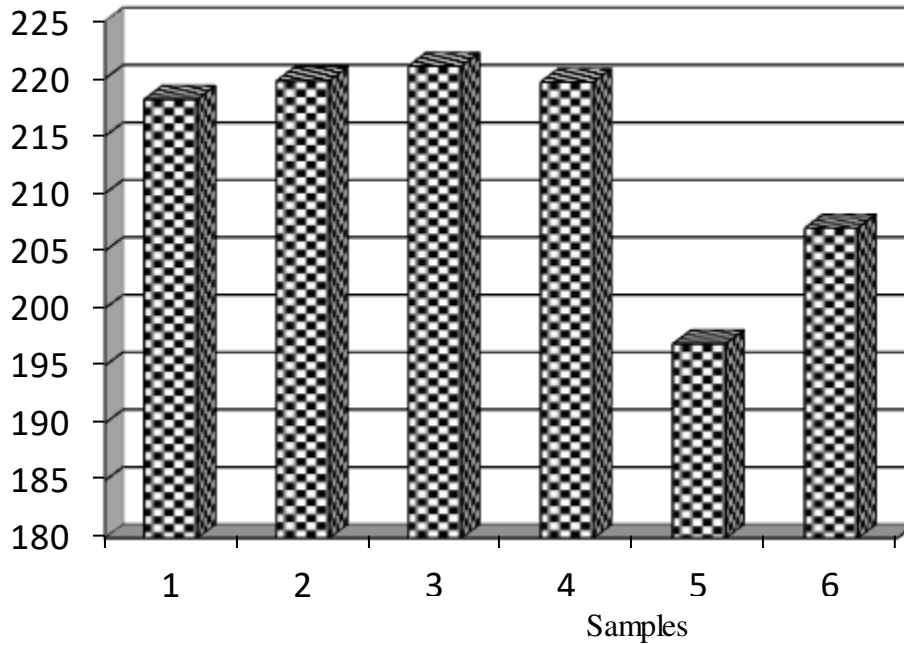


Figure 2. Variation of the surface density of fabrics for special garments of a mixture of fibers of different compositions.

Comparing the results of the study with the performance of fabrics for special clothing made from a mixture of 68.4% cotton fiber and 31.6% lamsan fiber, the density of the fabric for special clothing made from a mixture of 64.7% cotton fiber and 35.23% lamsan fiber on the body 4, Increased by 2%, the density on the back decreased by 7.1%, the surface density increased by 0.7%, the density on the body of the fabric for special garments made from a mixture of 65.76% cotton fiber and 34.24% lamsan fiber 14, Increased by 8%, density on the back decreased by 7.1%, surface density increased by 1.3%, body density of fabric for special clothing made from a mixture of 12% wool + 11.0% lamsan and 77.0% cotton fiber 34.8%, back density decreased by 25.0%, surface density increased by 1.3%, fabric for special garments made from a mixture of 14.8% cotton fiber and 85.2% lamsan fiber remained unchanged on the body, the density on the back is 10.7% lower and the surface density is 9.8% lower The density of the fabric for special clothing made of 100% lamsan fiber increased by 11.5% on the body, by 22.5% on the back, and decreased by 5.1% on the surface.

As the density of fabrics designed for special clothing increases, so does the air permeability. Especially in our conditions it is absolutely not true. In addition, the body will sweat more often if the fabrics are densely woven or if more synthetic fibers are added[7].

Research work has been carried out to determine the physical and mechanical properties of fabrics. For him, the physical and mechanical properties of fabrics for special clothing produced in different countries were studied.

The test results are presented in Table 2.



Table 2
Changes in the physical and mechanical properties of fabrics for special clothing of a mixture of fibers of different compositions

t / r	Fibercontent	Harvesting	Breakingforce, N		Interruptionelongation,%		Air permeability, dm ³ / cm ² sec
			main	weft	main	weft	
1,	68.4% cotton + 31.6% lavsan	1/3 sarja	550	355	21	15	83,3
2.	64.7% cotton + 35.23% lavsan	1/3 sarja	813	332	15,5	13,8	91,4
3.	65.76% cotton + 34.24% lavsan	1/3 sarja	822	346	15,0	16,5	79,9
4.,	12.0% wool + 11.0% lavsan + 77,% cotton	полотно	645	330	16	14	45,3
5,	14.8% cotton + 85.2% lavsan	1/3 sarja	1022	460	22	20	157,5
6.	100% lavsan	1/3 sarja	1015	1015	26	32	215,7

Based on the results of the study, Figures 3-5 show graphs of the tensile strength of the fabric for special clothing made of a mixture of fibers of different compositions in the body and back, elongation in the direction of the body and back, and changes in air permeability.

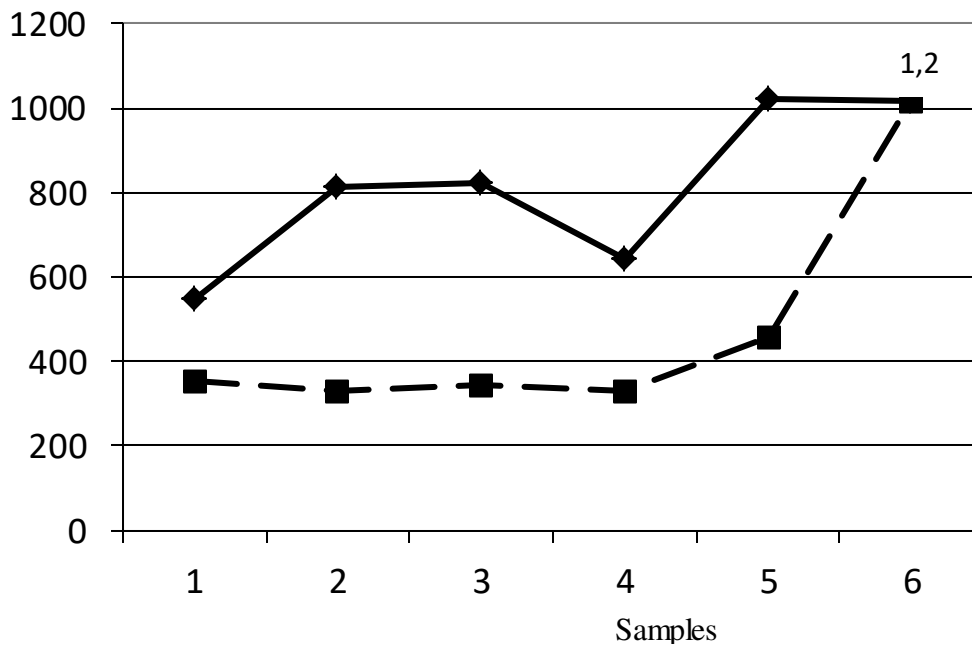


Figure 3. Variation of tensile strength of a mixture of fibers of different composition in the direction of the body and back of fabrics for special clothing,

1-in the direction of the body;
2-in the direction of the back.

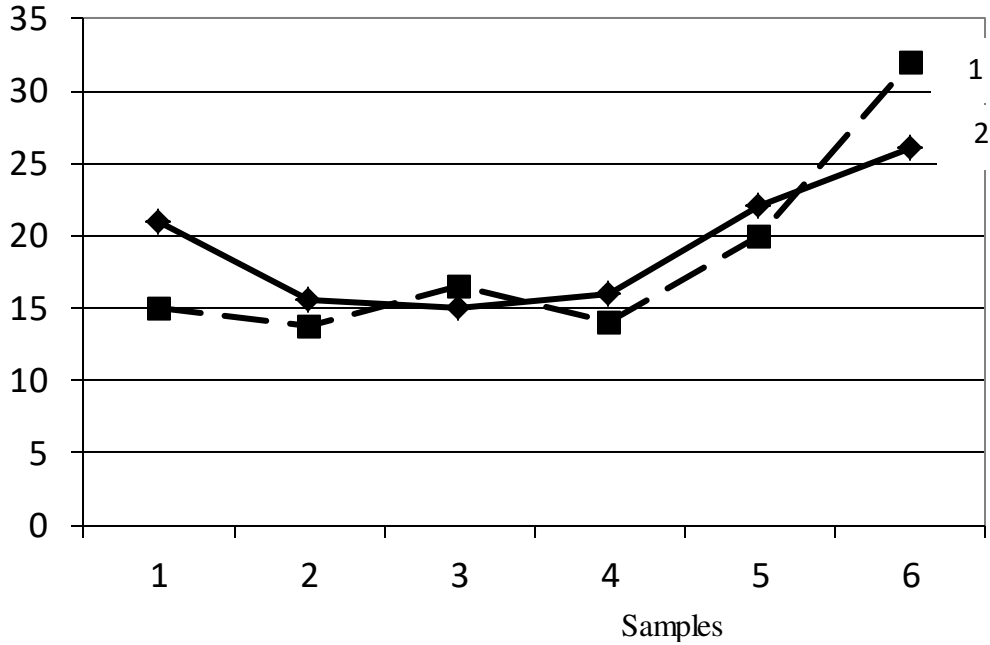


Figure 4. Variation in the elongation of a mixture of fibers of different compositions in the direction of the body and back of the fabric for special clothing.

1-in the direction of the body;
2-in the direction of the back.

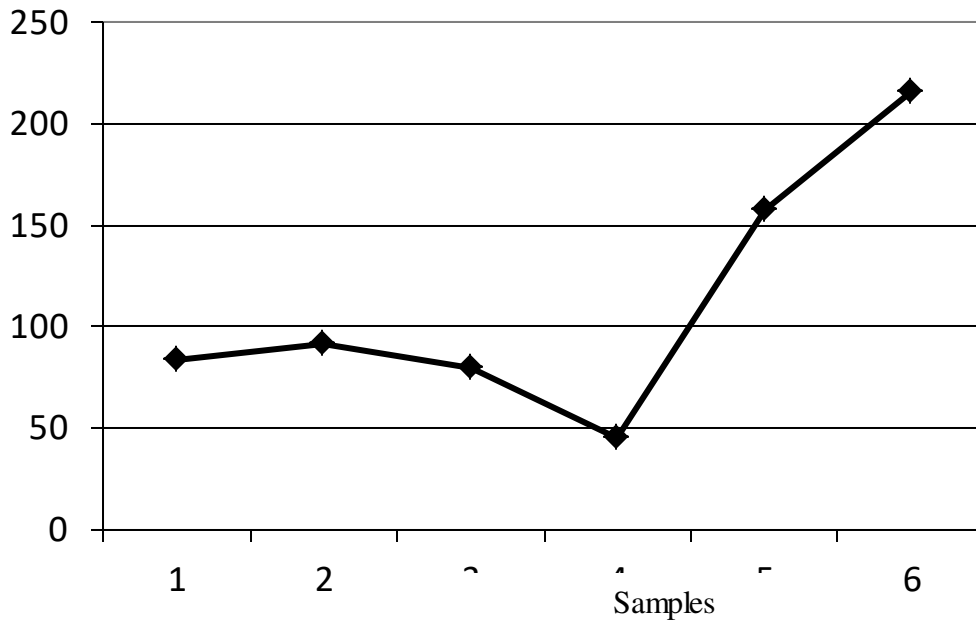


Figure 5. Variation of air permeability of fabrics for special garments of a mixture of fibers of different compositions.



Comparing the results of the study with the performance of fabrics for special clothing made from a mixture of 68.4% cotton fiber and 31.6% lavsan fiber, the tensile strength of the fabric for special clothing made from a mixture of 64.7% cotton fiber and 35.23% lavsan fiber Increased by 32.3%, tensile strength on the back decreased by 6.5%, elongation at the trunk decreased by 26.2%, elongation at the back decreased by 8.0%, air permeability increased by 8.9%, 65.76 The tensile strength of the fabric for special clothing made from a mixture of 34.24% lavsan fiber with 34.24% cotton fiber increased by 33.1%, the tensile strength decreased by 2.5%, the tensile strength decreased by 28.6%. The elongation at break was increased by 9.1%, air permeability was reduced by 4.1%, the tensile strength of the fabric for special garments made of a mixture of 12.0% wool + 11.0% lavsan and 77.0% cotton fiber was 14, Increased by 7%, the tensile strength on the back increased by 7.1%, body height on the body of the fabric for special clothing made from a mixture of 14.8% cotton fiber and 85.2% lavsan fiber, the elongation at the waist is 23.9%, the elongation at the back is 6.7%, the air permeability is reduced by 46.6%. tensile strength increased by 46.1%, posterior tensile strength increased by 22.8%, trunk extension increased by 4.5%, posterior tensile strength increased by 31.9%, air permeability increased by 47.1%, 100% lavsan The fabric for special garments made of fiber has a tensile strength of 45.9% on the body, 65.1% on the back, 19.2% on the body, 53.1% on the back, air permeability 61, Increased by 4%.

From the analysis of the test results obtained, the greater the amount of lavsan fiber mixed in the fabric, the higher the tensile strength of the fabric.

IV. CONCLUSION

In summary, it was found that the densities of fabrics designed for special garments varied widely on the body and back, while the densities on the back and the surface density were almost close to each other.

The analysis of the results of the study shows that the fabric made of 14.8% cotton fiber, 85.2% lavsan and 100% lavsan fiber has a higher tensile strength and air permeability than other fabrics.

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