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The Effect Of Physical And Mechanical Properties Of Costume Fabrics On The Constitutive Structure Of Fibers

Mirjamol Mirkarimovich Mirkhojaev
Doctor Of "Philosophy In Technical Sciences (PhD)", Department Of "Metrology, Standardization And Quality Management", Namangan Institute Of Engineering Technology, Uzbekistan

Dilmuhammad Davronbek Ogli Atambaev
Assistant Of The Department Of "Metrology, Standardization And Quality Management", Namangan Institute Of Engineering Technology, Uzbekistan

Zohidjon Jurabaevich Atamirzaev
Assistant Of The Department Of "Metrology, Standardization And Quality Management", Namangan Institute Of Engineering Technology, Uzbekistan

Utkirbek Erkaboevich Askarov
Master's Student, Department Of "Metrology, Standardization And Quality Management", Namangan Institute Of Engineering Technology, Uzbekistan

Abdurasul Khasanboy Ogli Khasanboev
Student, Metrology Standardization And Product Quality Management Training Specialization, Uzbekistan

ABSTRACT

For the study, samples of 2 variants of suiting fabrics were selected: a twill weave fabric with a woolen fiber base and a polyester fiber weft yarn, as well as a 100% woolen fiber fabric and physical and mechanical properties were determined using modern equipment.

KEYWORDS

Costume fabrics, composition, Polyester and polyamide synthetic fibers, sarja, canvas, wool.

INTRODUCTION

Today, the range of suit fabrics produced in textile enterprises is very large. Fabrics differ from each other in structure, fiber composition and properties. In addition, they are produced for spring, autumn, winter and summer seasons. The suit fabrics produced for the summer and spring seasons are lightweight and have high air permeability.

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Yarns produced at spinning mills must meet the standard requirements for toughness, elongation, twisting and roughness. The quality of the yarn also depends on the quality of the raw material, i.e. the higher the quality of the fiber, the better the quality of the product [1].

THE MAIN FINDINGS AND RESULTS

The linear density of textile products, as well as cotton fiber, is expressed in national and international standards in tex or milli-tex units and is assessed depending on the length and type of fiber. According to modern standards, long-fiber cotton is divided into type's I-III, and medium-fiber cotton into types IV-VII; the linear density of the fiber varies depending on the order of growth of the type; the length decreases inversely. If the fiber exceeds the limit in terms of linear density or length, then it passes into subtypes, resulting in a reduced spinning capacity of the yarn and the production of poor quality finished products.

The textile industry is changing rapidly in terms of production. In the current globalization of the market, major textile brands control based on international quality standards. This quality framework is based on the control of the quality of the yarn to the finished fabric by complete textile processes [2, pp. 281-292].

Recently, the demand for costume fabrics in our country is growing. Because the costumes made in our country are made at the expense of fabrics imported from foreign countries.

Since suit fabrics cover a large part of the human body, they must fully meet the hygienic requirements, taking into account the seasons, climatic conditions, age level. Taking into account the healing and positive effects of natural fibers on human health gives good results in the creation and production of new assortments of costume fabrics.

Costume fabrics are used to make men's, women's and children's suits, pants, skirts, jackets, belts and jackets.

Requirements for suiting fabrics include non-creasing, non-scratching, non-penetration, and uniform retention. This includes reducing the penetration and creasing of suit fabrics. The suit fabrics are specially treated to reduce penetration and creasing. Polyester and polyamide synthetic fibers are added during the production process to improve the properties of suit fabrics.

The structure of textile fabrics is determined by the intertwining and connection of the body and back yarns. The appearance, properties and use of textile fabrics depend on its structure. One of the indicators that characterize the structure of the fabric is its density, the other is their weave. The density of a fabric is determined by the number of threads per unit length. If the density of the fabric on the body and back differs from each other, the density of such fabrics is uneven fabric, and vice versa, if the density is equal to each other, the density is a flat fabric. Typically, in fabrics, the density on the body is greater than the density on the back. However, in some fabrics (such as satin, poplin) the opposite is true. In addition, the thinness and thickness of the yarns that make up the fabric are also important. If the yarns in the fabric are thick, then the fabric will have low air permeability, strength, stiffness and high abrasion resistance.

Under the conditions of market relations, research work was carried out in textile enterprises for the production of quality suit fabrics. For him, the quality indicators of suit fabrics with different fiber content were determined in modern equipment.

The obtained research results are presented in Table 1.

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Table 1

Influence Of Fiber Content On The Quality Indicators Of Suit Fabrics

Types	Fiber Content	Type Of Weaving	Linear Density, Tex		Surface Density, G / M²	Density	
			On The Body	On The Back		On The Body	On The Back
1.	The Body Thread Is Made Of 40% Wool Fiber + The Back Thread Is Made Of 60% Polyester Fiber	Sarja	80	90	360,7	200	180
2.	100% Wool Fiber	Canvas	40	30	151,8	260	220

Analyzing the test results obtained, the density of the suit fabric obtained from 40% wool fiber + 60% polyester fiber from the back yarn is 200; the density on the back was 180, the surface density was 360.7 g / m2, the density of the suit fabric made of 100% wool fiber was 260 on the body, the density on the back was 220, the surface density was 151.8 g / m2.

Another feature of the suit fabric is its durability and durability.

The strength of fabrics depends on their fiber content, the structure and linear density of the resulting yarns, the type of weave, density, finish. The thicker and denser the threads, the stronger it is. Finishing processes such as pressing, appretting increase the strength of fabrics, while bleaching, dyeing processes slightly reduce the strength of fabrics.

Research work has been carried out to determine the mechanical properties of costume fabrics, and the results of the obtained tests are presented in Table 2.

Table 2

Influence of fiber content on mechanical properties of costume fabrics

т/р	Fiber content	Type of weaving	Consistency, N		Interruption elongation,%	
			on the body	on the back	on the body	on the back
1.	The body thread is made of 40% wool fiber + the back thread is made of 60% polyester fiber	Sarja	310	190	26,9	44,8
2.	100% wool fiber	Canvas	314,8	281,5	20,4	22.6

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Comparing the test results with the performance of a suit fabric made of 40% wool fiber + back yarn 60% polyester fiber, the strength of the suit fabric made of 100% wool fiber increased by 0.3% on the body and 32.1% on the back. The length of the break in the trunk decreased by 23.9%, and the length of the break in the back decreased by 49.4%.

The effects of fiber content on the mechanical properties of suit fabrics in Table 2 are shown graphically in Figure 1.

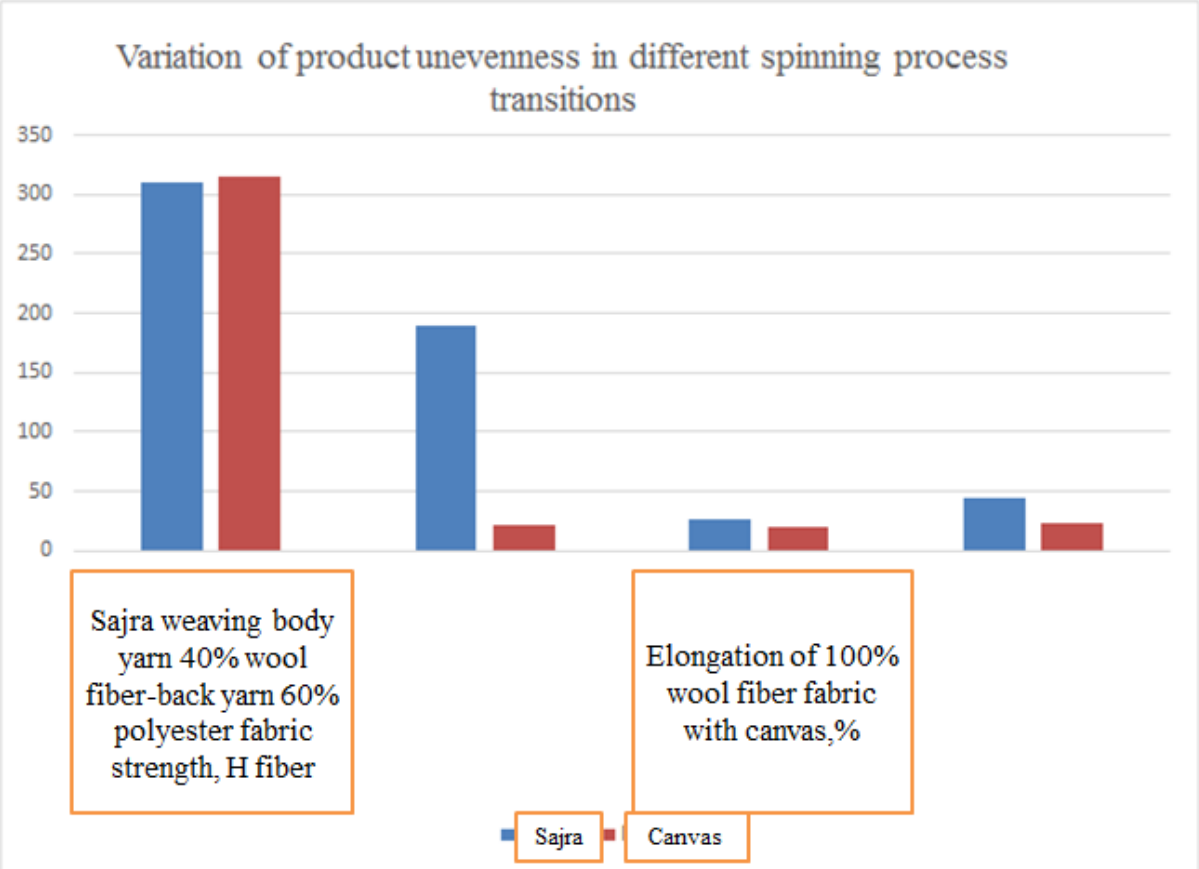

Figure 1. Influence of fiber content on the mechanical properties of suit fabrics

CONCLUSION

In summary, the strength of a suit fabric made of 100% wool fiber on the trunk and back increased from 0.1% to 32.1% compared to the performance of a suit fabric made of 40% wool fiber + back yarn 60% polyester fiber. The lengthening of the break decreased from 23.9% to 32.1%.

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