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Change of Quality Indicators of Fabric Fabrics

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ABSTRACT

In this article, 100% cotton fibre by knitting method, 70% cotton fibre waste with 70% Rogoza plant waste, 50% cotton fibre waste with 50% Rogoza plant waste and 70% cotton fibre with 30% Rogoza plant waste non-woven upholstery fabrics were produced from a mixture of fibre waste and their quality indicators were determined and the optimal variant of upholstery fabric was recommended for production.

Keywords:

Air permeability, tensile strength, abrasion resistance, consumption, hygienic, physicomechanical requirements, longitudinal and transverse tensile strength, longitudinal and transverse tensile elongation, surface density.

Introduction

The implementation of radical changes in the economy of the country, the gradual transition of the republic's economy from raw materials to the production of competitive products, the expansion of the country's export potential, has set new tasks for each sector of production. In particular, the development of the textile industry, the provision of our people with high-quality bedding is one of the important tasks facing the light industry [1]. The goal is to increase the volume of textile production in the country, meet the needs of the population in yarn and fabrics, create new types of fabrics to expand production, introduce advanced technologies leading to the development of the textile industry, create new designs, dyes and embellishments. research in materials science, use of technological know-how, training of specialists and experts [2].

Quality indicators of textile fabrics are assessed by the physical-mechanical, consumer and hygienic properties of the fabric. Also, the degree of strength of the fabric is its resistance to abrasion and abrasion [3-5]. In turn, the abrasion resistance and air permeability of the fabric depend on many important factors, namely the strength of the yarn, the type of fibre, the composition of the yarn and its linear density, the density of the fabric on the body and back, the thickness of the fabric, the base surface and so on. The abrasion resistance of the fabric, air permeability depends on its structural characteristics, i.e. the degree of mutual bending and density of the body and back yarns. This degree of mutual bending is determined by the area of a

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particular part of the body and the back yarn that can be approached by any surface, and this area is the base surface of the fabric. The flattening of the base surface reveals the porosity between the joints of the body, the backing threads and creates conditions for the passage of air [6].

Lining fabrics obtained from secondary material resources produced in textile enterprises differ from each other in terms of fibre content, structure and quality. For example, the bedding used for bedding in our country is mostly imported from Turkey, China and other foreign countries [7].

Today, foreign and domestic market consumer demand and the global "fashion and design" industry is developing. This leads not only to the improvement of several consumption, hygienic, physicomechanical requirements for fabrics currently produced in the textile industry but also to increased attention to its aesthetic properties [8].

Upholstery fabrics must fully meet the hygienic requirements, taking into account the seasons, climatic conditions, age [9]. Taking into account the healing and positive effects of natural fibres on human health give good results in the creation and production of new assortments of upholstery fabrics.

The produced upholstery fabrics are produced in different ways [10]. For example, upholstery fabrics are produced on looms, knitting machines and in the form of nonwovens. Upholstery fabrics are used for different purposes and are obtained from a mixture of different secondary material resources [11].

The main technological parameters of upholstery fabrics include longitudinal and transverse density, the linear density of yarns, the linear weight of fabrics, surface density, specific gravity.

The appearance, properties and use of a fabric depend on its structure [6]. The density of fabrics is divided into the concepts of actual, relative and maximum density. In addition, the structure of bedding fabrics produced in the textile industry also varies depending on the purpose for which they are used. For example, high-density fabrics are used in the production of autumn and winter, and low-density fabrics are used in the production of light summer and spring clothes [12].

The smaller the density of the fabric, the higher the air permeability, the lighter, otherwise the weight of the fabric will increase, air permeability will decrease, tensile strength, friction resistance will increase. Therefore, any fabric will vary depending on what purpose it is used for.

Fabric structure indicators include yarn density in yarns, yarn filling, structure phase, and the base surface. The density of the threads in the fabric is determined by the body and back [6].

Today, exports of yarn, fabrics and other products made of natural and chemical fibres have grown sharply. This is evidenced by the sharp increase in demand for textile products.

Methodology

When creating a range of new types of upholstery fabrics in the textile industry, special attention is paid to the fibre content of raw materials, the properties of fibres, their interconnection. This is because the fibres that make up the lining fabric are important. The products to be obtained should be obtained from natural raw materials, if possible because they are of great importance for human health.Research has been conducted to determine the mechanical properties of bedding fabrics with different secondary material resources. These fabrics were obtained mainly from a mixture of secondary material resources by the knitting method. The results of the study are presented in Table 1 below.

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Table 1. Changes in the mechanical properties of upholstery fabrics obtained from different secondary material resources

No	From secondary material resources of different composition obtained fabrics	Breaking force, N		Elongation at interruption,%		Thickness, mm	Surface density, g / m2
		Along the length	Along the width	Along the length	Along the width		
1.	100% cotton fiber	215	390	32	32	1,0	336,7
2.	70% fiber waste from Rogoza plant and 30% cotton fiber waste	275	415	57	40	1,0	389,2
3.	50% cotton fiber waste with 50% Rogoza plant waste	231	378	48	35	1,0	388,5
4.	30% cotton fiber waste with Rogoza plant waste and 70% cotton fiber waste	228	366	44	34	1,0	385,4

Based on the results of the study, Figures 1-3 show the longitudinal and transverse tensile strength, longitudinal and transverse tensile elongation, and surface density variation histograms of bedding fabrics from different secondary material resources.

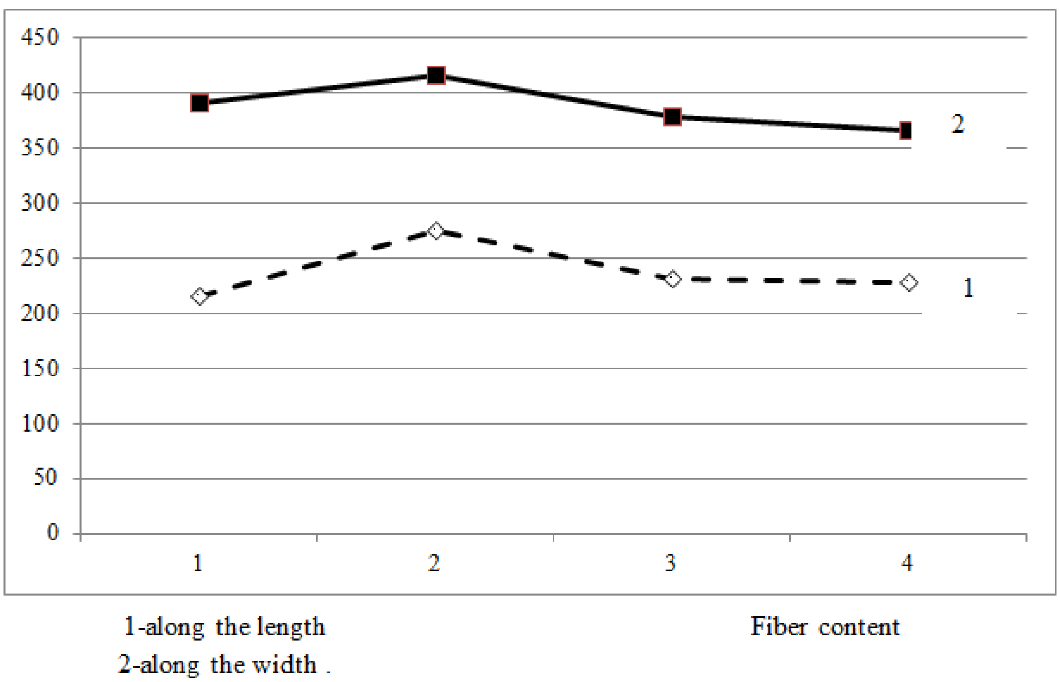

Figure 1. Variation of tensile strength along longitudinal and transverse fabrics obtained from various secondary material resources.

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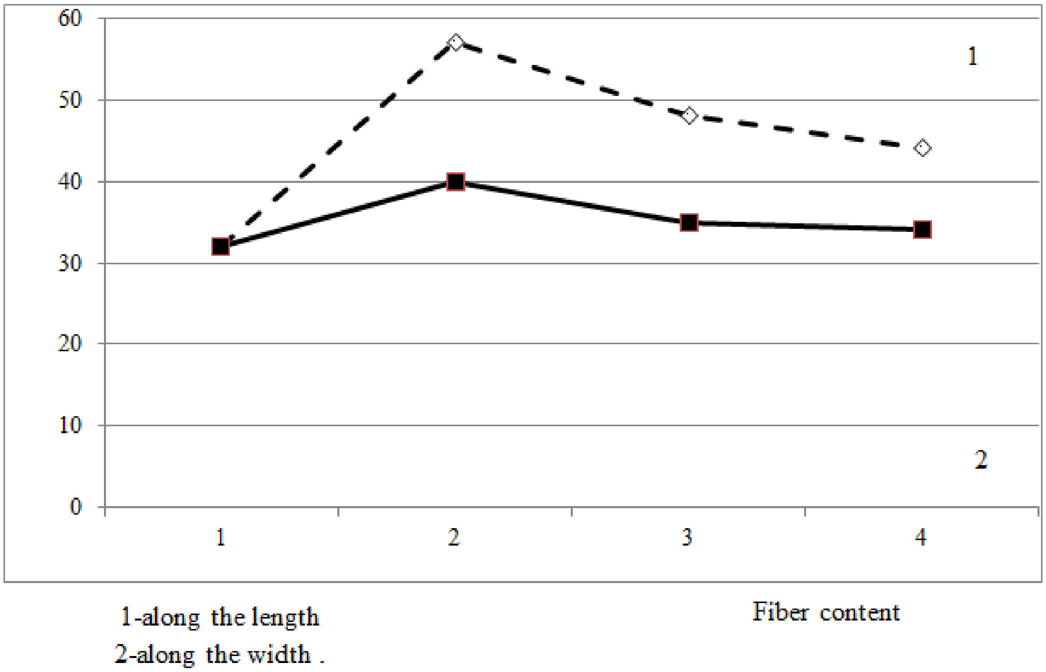

Figure 2. Variation in the elongation of the linear fabric along the longitudinal and transverse rupture obtained from various secondary material resources.

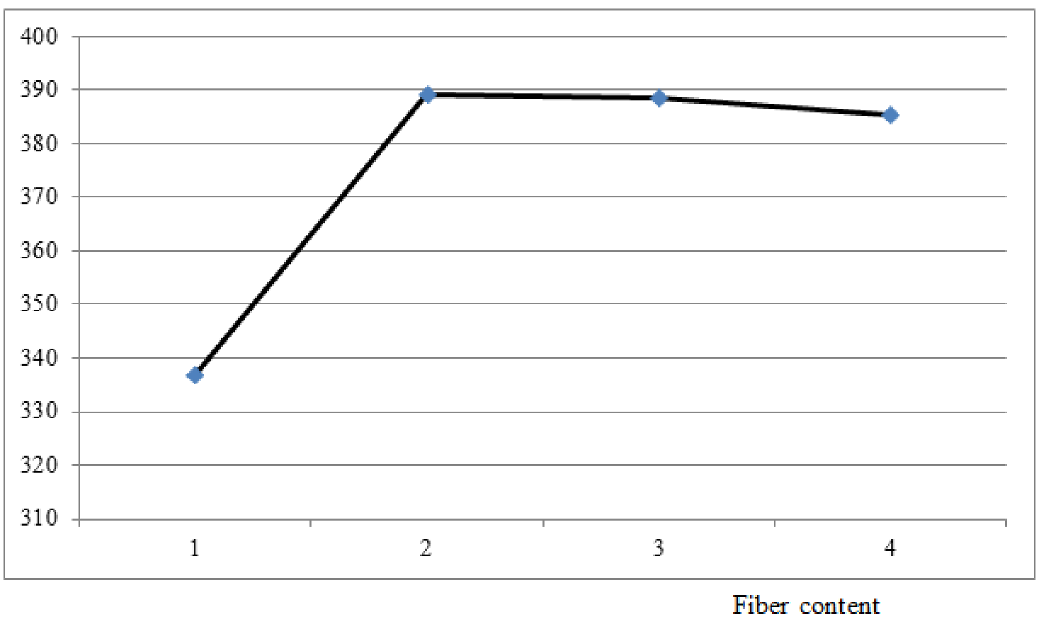

Figure 3. Changes in the surface density of bedding fabrics obtained from various secondary material resources.

Conclusion

Comparing the test results with the performance of 100% cotton fiber waste, the tensile strength of the fabric obtained from a mixture of 70% Rogoza plant fiber and 30% cotton fiber waste increased by 21.9% along the length and 6.1% across , longitudinal elongation increased by

43.9%, transverse elongation by 20.0%, surface density increased by 13.5%, and thickness did not change, 50% Rogoza plant fiber waste and 50% cotton fiber waste mixture longitudinal tensile strength increased by 6.7%, transverse tensile strength decreased by 3.1%, longitudinal tensile strength increased by 33.4%, longitudinal tensile strength increased by 8.5%, surface density increased by 13.3% , the thickness did not change, the tensile strength of the upholstery fabric obtained from a mixture of 30% Rogoza plant fiber waste and 70% cotton fiber waste increased by 5.7%, the transverse tensile strength decreased by 6.2% i, longitudinal elongation increased by 27.3%, transverse elongation increased by 5.9%, surface density increased by 12.6%, and thickness did not change.

The analysis of the results showed that all the mechanical properties of the bedding fabric obtained from a mixture of 70% Rogoza plant fibre waste and 30% cotton fibre waste were higher than the performance of bedding fabrics with different fibre waste content.

The results of the study show that the longitudinal tensile strength of bedding fabrics obtained from a mixture of different fibrous wastes ranges from 5.7% to 21.9%, the tensile strength from the transverse to 3.1% to 6.2%, the elongation from the longitudinal tensile from 27.3%. from 43.9%, transverse elongation at 5.9% to 20.0%, and surface density from 12.6% to 13.5%.

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References

[1] Müller H., Maidel H. (1997). Abhdgigkeit der Rotorgarneigenschaften von der mechanischen Beanspruchung der Baumwolle beim Kardieren und Rotorspinnen. Melliand Textilber. 78, No.1,2 P.35.

[2] CyniakDanuta, JuzonBoguslaw. (1998).Investigation of the properties of yarn obtained on rotor spinning machines of different models. RS. The textile industry, No.5, P.12.

[3] OnikovE.A., KharayevaS.A. (2002). Cotton fabrics with higher resistance to abrasion international textile reports. Melliand Textilberichte. -Germany.No.1.pp.37-38.

[4] Semak Z.N. (1981). Influence of the structure of various fibrous dress and suit fabrics on their dielectric properties. Izv. universities. Textile Industry Technology.No.5. pp. 36-39.

[5] Dodonkin Yu.V., Kiryukhin S.M. (2001). Assortment, properties and quality assessment of fabrics. Moscow.

[6] T.Yu. Kareva Development of a method, technology for the manufacture of fabrics of new structures and the study of their structure: Dis. doct. tech. Sciences. - M .: MTU, 2005.-332 p.

[7] Melyachenko Zh.V., Nikolaev S.D. (1991). The relationship between the technological parameters of weaving and the parameters of the structure of the fabrics produced. Izv.

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universities. Technol. text. industry. No.1. pp.47-50.

[8] Martynova A.A., Slostina G.L., Vlasova P.A. (1999). Fabric construction and design. M., RIO MGTA. P.434.

[9] Ashurov Kh.T., KulmetovM., Ubaydullayeva D.X., Ismoilov D.A.,Usanov M.M.(2021). On the quality indications of bed fabrics evaluation and analysis. *International Journal of Innovative Research in Science, Engineering and Technology (IJIRSET).*10(2).

[10] Ashurov Kh.T., Usmonova Sh.A., Atanafasov M.R., LayshevaE.T., Sobirov D.X.(2021). Evaluation of Mechanical Properties of Covered Fabrics from Different Secondary Material Resources. *International Journal of Innovative Research in Science, Engineering and Technology (IJIRSET).*10(2).

[11] Ashurovich, O. T., & Khasan To'lqin o'g'li, A. (2021). Evaluation of Physical and Mechanical Properties of Fabric Fabrics from Different Secondary Material Resources. *Design Engineering*, 171-180.

[12] Ashurovich, O. T., Abdalimovich, K. D., Pulatovna, S. S., Ugli, U. M. M., & Ahmadjanovich, K. S. (2021). Analysis of Quality Indicators of Mixed Spun Wool Yarns. *Annals of the Romanian Society for Cell Biology*, 779-786.