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Complex Assessment of Quality Indicators of Fabrics Obtained from a Mixture of Fiber and Secondary Material Resources of Different Composition

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Annotation: in this article, 66.4% cotton fiber with 27.0% viscose fiber+6.6% nitron fiber secondary material resources for hemp yarn, 66.4% cotton fiber with 27.0% lavsan fiber+6.6% nitron fiber secondary material resources, 66.4% cotton fiber with 27.0% nitron fiber+6.6% cotton fiber secondary material resources, 66.4% cotton fiber with 27.0% lavsan fiber+6.6% viscose fiber secondary material resources . 100% cotton yarn was used to produce sari weaves and their quality indicators were comprehensively evaluated.

Keywords: differential dimensionless assessment, tissue length and width breaking strength, elongation at break length and width, surface density, coefficient of variation in breaking strength, experimental, organoleptic, expert, sociological, calculated, differential, complex and mixed evaluation methods.

I. INTRODUCTION

Nowadays, textile waste is generated in all light industrial enterprises. Such wastes are generated in large quantities and are not accepted by the preparation and processing enterprises, but are disposed of, which worsens the ecological situation of the country. Therefore, an important scientific and technical problem arises, which is the production of technological processes with the effective use of textile waste

The amount of secondary material resources is also increasing sharply in the sewing and knitting industry of our republic. In the last 5 years, the production of textile products, which process these secondary material resources and use them only for technical purposes, was launched.

A certain amount of secondary material resources is generated in the production of fabrics and articles in the sewing and knitting industry. It depends on the equipment and range of weaving fabrics. Defects occur due to equipment malfunction, pattern failure, lack of qualified maintenance.

The development of improved methods and equipment for the processing of waste from the sewing and knitting industry, and the maximum use of raw materials are of great importance today. Efficient use of raw resources does not cause environmental pollution.

The secondary material is based on the evaluation of the quality of tissues and other types of products with different amounts of resources, the results of the determination and measurement of its quality indicators, and the comparison with standard and regulatory documents. Because the methods of determining product properties are mainly detailed in standards and other regulatory documents.

There are several methods of evaluating the quality of tissues with different amounts of secondary material resources, including experimental, organoleptic, expert, sociological, calculated, differential, complex and mixed.

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The advantage of the comprehensive assessment of the physical and mechanical properties of fabrics with different amounts of secondary material resources is that when determining the surface according to the obtained test results, it can be clearly seen that the fabric with a large surface is better. Therefore, this method is now widely used.

II. METHODOLOGY

Product quality indicators are divided into real and approximate comprehensive evaluation depending on the nature of the comprehensive evaluation. A true composite evaluation has a defined physical objective, which often represents the fiber's tensile strength, as well as the product's service life in use.

The advantage of a comprehensive assessment is that it concludes on a number of final assessments. This assessment is not without its advantages and disadvantages, that is, we will not have complete information about its individual properties.

The average comprehensive assessment may not change according to the level of several quality indicators, some of them may have a lower level, and some may have a higher level. Thus, it is possible to complete a comprehensive assessment without changing the individual quality indicators of the material.

There are various methods of comprehensive assessment of the quality indicators of tissues with different amounts of secondary material resources. For example, a differential dimensionless assessment is given for m materials according to n indicators, and if they have different significance coefficients, they are evaluated by the significance coefficient.

We use the graphic method of complex evaluation in order to recommend the most optimal options according to the indicators of geometric, physical and mechanical properties obtained in our scientific research work. The advantage of this method is that it is possible to objectively evaluate the generalized quality indicators of the properties of the materials according to the requirements, determining the most optimal options.

Based on the length and width of tissues with different amounts of secondary material resources, elongation at break in length and width, surface density, and the coefficient of variation in tensile strength, a comprehensive evaluation was carried out and presented in Figure 1.

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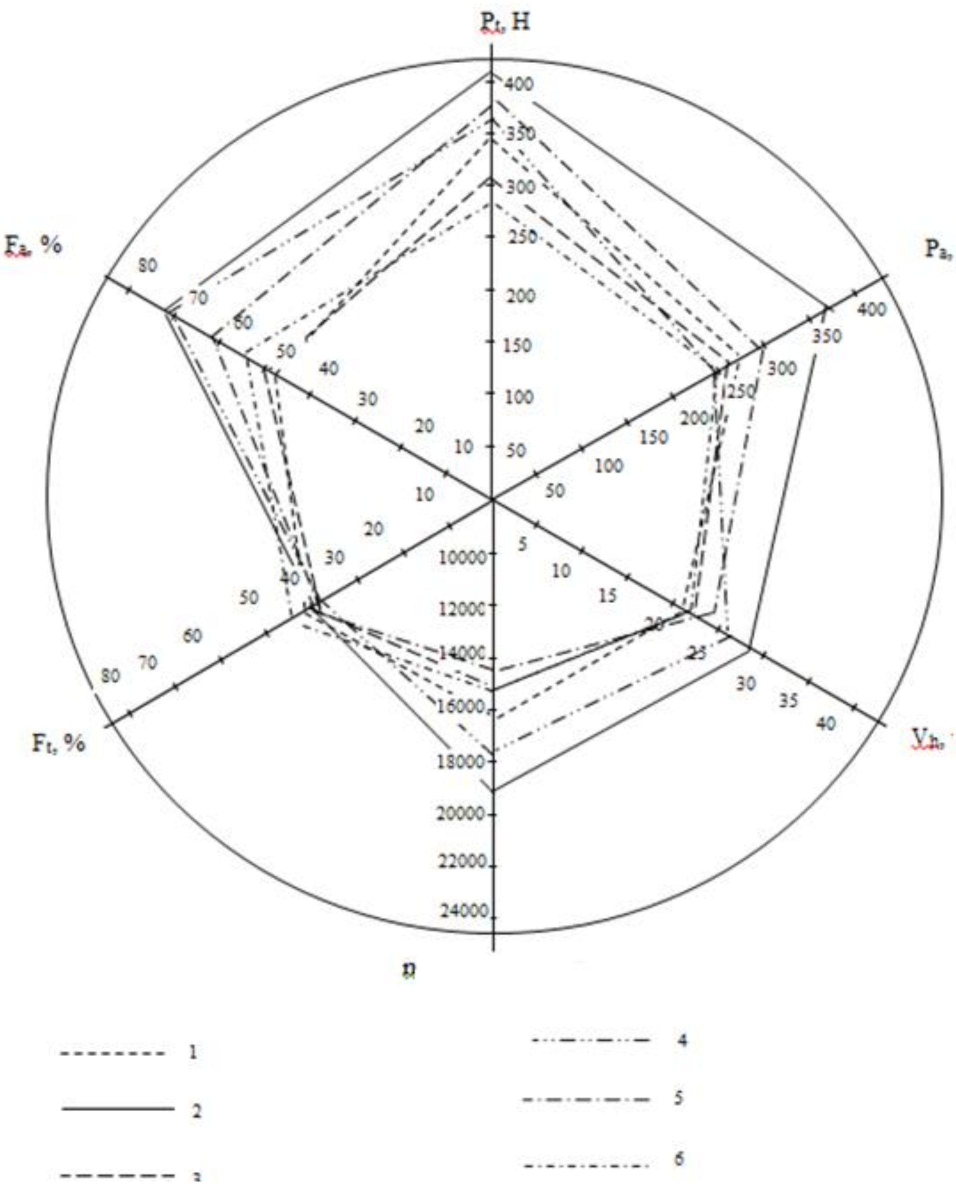

Figure 1. Diagram of comprehensive assessment of quality indicators of fabrics obtained from a mixture of fiber and secondary material resources with different composition.

For evaluation, many angles are drawn with the help of radius-vectors, with indicators from the center (m) on the axes or decreasing values on the appropriate scales.

It is necessary to take into account the purpose of the material, its physical and mechanical properties, and the compliance of the accuracy indicators with the specified standards in the distribution of the axes. For example, radius vectors surface density, longitudinal and transverse density are determined from the center, hardness, air permeability, elongation at break indicators are determined toward the center.

he resulting polygons are divided into triangles, and options based on their surface and property values are sums of the surface of the triangles.

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After a comprehensive evaluation of the test results obtained from the determination of the physical and mechanical properties of tissues with different raw materials composition, their surfaces were determined and the results are presented in the form of a histogram in Figure 2.

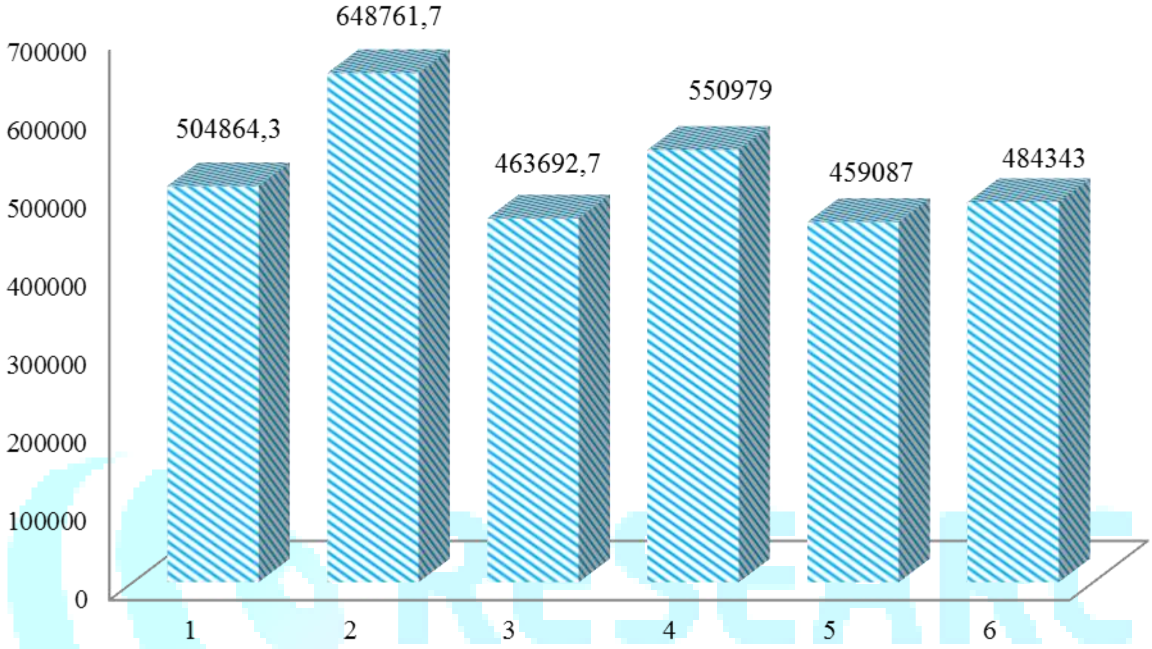

Figure 2. Comparative histogram of the quality indicators of tissues with different amounts of secondary material resources.

III. RESULTS AND DISCUSSION

As can be seen from the comparative histogram of the quality indicators of the fabrics with different amounts of secondary material resources, the physical quality of the fabric obtained from a mixture of secondary material resources of 100% cotton fiber for tanda yarn and 66.4% cotton fiber with 27.0% viscose fiber + 6.6% nitron fiber - physical and mechanical properties of the fabric obtained from a mixture of 66.4% cotton fiber and 27.0% lavsan fiber + 6.6% nitron fiber secondary material resources for the body yarn 100% cotton fiber and 27.0% lavsan fiber + 6.6% nitron fiber surface area is 6487.62 mm2, body yarn is made of 100% cotton fiber and 66.4% cotton fiber with 27.0% nitron fiber + 6.6% cotton fiber is a mixture of secondary material resources. 4636.92 mm2, surface of fabric obtained from a mixture of 100% cotton fiber and 66.4% cotton fiber with 27.0% lavsan fiber + 6.6% viscose fiber secondary material resources 5509.79 mm2, the surface of the fabric obtained from a mixture of secondary material resources with 66.4% cotton fiber and 27.0% viscose fiber + 6.6% lavsan fiber for the body yarn is 4590.87 mm2 , the physical-mechanical properties surface of the tissue obtained from a mixture of 66.4% cotton fiber and 27.0% cotton fiber + 6.6% viscose fiber secondary material resources for tanda yarn was 4843.43 mm2. As a result, it is proved that the surface of the fabric obtained from the mixture of secondary material resources of 66.4% cotton fiber and 27.0% lavsan fiber + 6.6% nitron fiber for the yarn is larger than the surface of other fabrics in terms of quality indicators.

The initial properties of textile materials and finished products are determined and the indicators obtained by the test method are compared in accordance with the established requirements.

RESEARCH PARKS
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It analyzes the changes in the initial and in-use results of the product, that is, over time, for example, during storage, initial operation and use. Such properties are obtained for evaluation of material properties and reliability theory methods.

At present, the most important factor for multiple types of product reliability is the quality indicator.

In our work, the mechanical properties of the fabric intended for special clothing, obtained from a mixture of fiber and secondary material resources of 6 different options, were studied. Based on these results, in the analysis of statistical models, the initial results were processed by systematization, i.e. by increasing or decreasing random values, and the a priori distribution was minimized to match the hypothetical distribution. sorted by increasing values.

A comparative assessment of the conformity of the empirical distribution of tissue tensile strength with the law of normal distribution based on the criterion is given in Table 1.

Table 1

т/р	Indicators	Sample options					
		1	2	3	4	5	6
1.	Number of tests, n	10	10	10	10	10	10
2.	Tensile strength of the fabric, N	270,6	377,3	265,5	284,2	280,8	247,9
3.	Mean squared deviation, $S\{Y_i\}$	14,1	19,6	12,15	11,8	12,6	14,8
4.	Dispersion, $S^2\{Y_i\}$	366,4	240,5	278,9	310,6	324,5	357,8
5.	The difference of random values is a calculation criterion, W_x	7,86	6,80	7,98	7,24	8,12	8,32
6.	Function tabular value $W_{0,95}$	0,82	0,82	0,82	0,82	0,82	0,82
7.	Fulfillment of the distribution function condition	$W_x > W_T$, $P_Д = 0{,}95$	$W_x > W_T$, $P_Д = 0{,}95$	$W_x > W_T$, $P_Д = 0{,}95$	$W_x > W_T$, $P_Д = 0{,}95$	$W_x > W_T$, $P_Д = 0{,}95$	$W_x > W_T$, $P_Д = 0{,}95$

$W_x > W_T, P_Д = 0{,}95$

The parameters of the breaking force in option 1:

$\bar{x}_1 = 270{,}6$ N, dispersion $S_{01}^2 = 14{,}1^2$ $n = 10$ (couple) for being

$C = (10-1)\cdot 0{,}5 = 4{,}5$

b - the sum of least squares is chosen.

$$b = \sum_{i=1}^{c} a_i (x_{n-i+1} - x_i) = a_1 \cdot (x_n - x_1) + a_2 (x_{n-1} - x_2) + \ldots + a_c (x_{n-c+1} - x_c)$$

Criterion $W_{x1} = \dfrac{b^2}{S_0^2}$

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IV. CONCLUSION

The hypothesis that the empirical distribution of the tensile strength of fabrics obtained from a mixture of fiber and secondary material resources with different composition corresponds to a normal distribution is not rejected.

For argoq thread, the fabric obtained from a mixture of secondary material resources with 66.4% cotton fiber and 27.0% lavash fiber + 6.6% nitron fiber was found to be the most optimal option.

Empirical distributions of the tensile strength of fabric intended for special clothing obtained from a mixture of fiber and secondary material resources of different compositions corresponded to a normal distribution, so the probability of reliability of the mean values was also considered significant.

REFERENCES

1. Isaeva L.K. The effect of harmful and harmful ecological factors on the human body. Metrological aspects. - M.: VNIIPI. - 1997. - T. 1. – 510 s.
2. Urumova A.G. Ispolzovanie i pererabotka ugarov i vtorichnogo syrya v BNR // Tekstilnaya promyshlennost. - 1978. - No. 2. – S. 38-40.
3. Textile factories. - URL: http://recyclers. ru/modules/ section/item.php?itemid=190 (data processing: 10.03.2020).
4. Izmesteva L.K. Technology izgotovleniya shveinykh izdeliy. - M.: Legkaya industry, 1973. - 510 p.
5. Atanafasov Muhiddin Rakhmonovich, Ochilov To'lqin Ashurovich, Rahimjonov Husanboy Rahimjonovich "Turli tarkibli va qayta ishlangan tolalar aralashmasidan olingan piltaning notekislik ko'rsatkichlarining o'zgarishi" Innovative Development in Educational Activities, Volume 2, Issue 4, ISSN: 2181-3523, 2023.
6. Atanafasov M.R., Ochilov T.A., Usmonova Sh.A., Yuldashyev J.N., Hakimov Sh.H. Influence of Cotton Fiber of Different Composition and Secondary Material Resources on Single-Cycle Elongation Deformation of Yarns // International Journal of Innovative Research in Science, Engineering and Technology – India, Volume 11, Issue 2, February 2022. pp.1135-1137. (05.00.00; #8).
7. Ashurov Khasan To'lqin o'g'li, Usmonova Shakhnoza Anvarovna, Atanafasov Mukhiddin Rakhmonovich, Elmira Talgatovna Laysheva, Sobirov Doniyor Xolmurodovich "Evaluation of Mechanical Properties of Covered Fabrics from Different Secondary Material Resources". International Journal of Innovative Research in Science, Engineering and Technology (IJIRSET) 2021.
8. T.A.Ochilov, D.M.Isaeva, N.A.Niyazova, Sh.P.Shumkarova, T.G'. Bobomurodov. Changes in Technological Performance of Lastic Knitted Textiles in Different Range. International Journal of Advanced Research in Science, Engineering and Technology Vol. 7, Issue 9 , September 2020. P. 14846.
9. M.R.Atanafasov, T.A.Ochilov, R.X.Norboev, M.A.Mansurova, D.A.Khalmatov. Changes in the Uneven Indexes of Sliver and Threads by Different Technological Processes. International Journal of Recent Technology and Engineering, Volume-9 Issue-1, May 2020. P.2809.
10. T.A.Ochilov, B.B.Akhmedov, T.A.Toyirova, Sh.S.Mengnarov, J.T.Xasanov. Influence of Separating Fibrous Seed Mass to Fractions to Quality. International Journal of Recent Technology and Engineering, Volume-9 Issue-1, ay 2020.p.200.
11. Akhmedov Bakhodir, Akbarov Rustam, Ochilov Tulkin Ashurovich, Umirova Robiyakhan Bakhtiyarovna. Changes in the physical and mechanical properties of shirt fabrics with different fiber content. Proceeding of International Conference on Research Innovation In Multidisciplinary Sciences, 2021 Hosted From New York USA.p.227.