



## THE EFFECT OF THE AMOUNT OF WASTE OF YARN ON THE PHYSICAL AND MECHANICAL INDICATORS

Mukhtarov Jurabek Reyimberganovich <sup>[a]</sup>, Atanafasov Mukhiddin Rakhmonovich <sup>[b]</sup>, Valieva Zulfiya Fakhritdinovna <sup>[c]</sup>, Djumaniyazov Mukhammadjon Bakhranovich <sup>[d]</sup>, Laysheva Elmira Talatovna<sup>[e]</sup>

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**Abstract:** In this article, the production of garments from materials in the sewing enterprises, knitted waste was reproduced and yarn is produced from them, and in the laboratory of the Department of "Spinning Technology" yarns were given up to 500 br / m. 4 different variants obtained for testing, 30% cotton fiber + 70% Cotton Waste, 45% cotton fiber + 55% cotton waste, 20% cotton fiber + 80% cotton waste and 50% cotton fiber + 50% sample of yarn was taken from cotton waste and its physical and mechanical properties were determined in the laboratory "Centex Uz" at the Tashkent Institute of Textile and Light Industry.

**Key words:** products, materials, quantitative differences, resource-saving technology, cotton fiber, yarn.

- [a]. PhD, Associate Professor, Tashkent Institute of Textile and Light Industry  
 [b]. Great teacher, Tashkent Institute of Textile and Light Industry  
 [c]. PhD, Associate Professor, Tashkent Institute of Textile and Light Industry  
 [d]. Association Uztekstilprom (Uzbekistan)  
 [e]. Great teacher, Tashkent Institute of Textile and Light Industry

**Email:** muxtarov-j1983@mail.ru, amuhiddin20@gmail.com,  
 zulfiya-valieva-76@mail.ru, bahxiva@mail.ru,  
 elmiralaysheva8@gmail.com

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### INTRODUCTION

One of the most important tasks facing the Republic of Uzbekistan is to provide the population with quality and beautiful sewing products. Because it is aimed at protecting people from the environment, as well as ensuring their beauty. For the efficient use of sewing materials and the production of high quality products, the workers of the garment industry have a great task. The properties of different textile materials depend on what fibers and yarns they are made of, the structure of the materials and how they are decorated [1].

The state standard UzDSt 3310-2018 is applied to secondary material resources in the processing of all types of cotton fiber [2].

Manufacture of garments includes products from basic materials, such as knitwear, nonwovens, gangs (complex), artificial and natural footwear, fur, which are used for the surface and main parts of the product [3].

The article explores the possibilities of collecting, pre-processing and adding to the working mixtures of wastes

generated during the processing of mixtures of different compositions. It is known that the fiber class describes the total amount of defects and foreign impurities in them. The differences between the classes also depend on the industrial navigation of the fiber. Quantitative differences of defects and foreign compounds between adjacent varieties and classes range from 0.5% to 3.5%. Typically, these differences are taken into account in the formation of the primary mixture. However, this difference in the waste generated is very large and is not reflected in the classification. Although it has a significant share in the amount of spinning, it requires special cleaning for processing.

The garment industry must provide the population with quality and elegant clothing.

The increase in the production and expansion of the range of garments depends on the development of the textile industry, as the main sewing materials are yarn, wool, silk and linen. The raw material base of the textile industry is constantly expanding due to the rapid growth of production of artificial and synthetic fibers. The production of bulky synthetic and artificial spool yarns, staple fiber bindings, monolithic dyed chemical fibers has increased significantly.

There are certain hygienic, technical, aesthetic and economic requirements for garments [4].

In recent years, the country has developed a large number of sewing shops or private entrepreneurship in the production of goods. However, the waste that come out in the manufacture of items have been discarded. This leads to an increase the price of the item.

Therefore, in the production of high-quality and low-cost products in the garment industry, first of all, measures have been taken to use them efficiently, without leaving the waste. The garments were processed on the basis of resource-saving technology from the waste generated during the manufacture

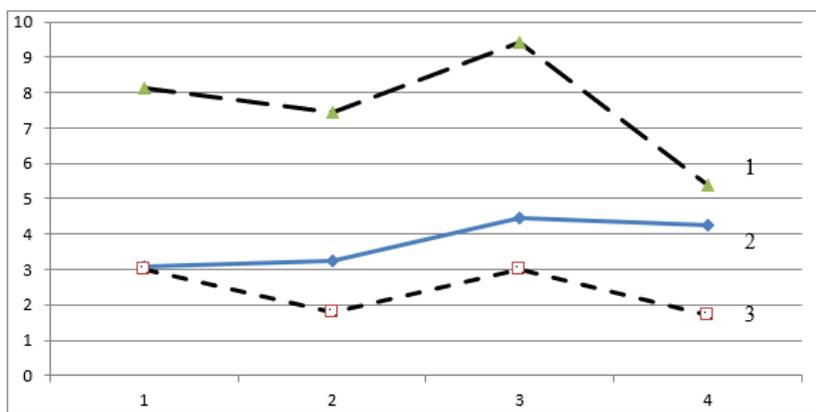
of the garment, from which yarns were produced, and the test results are given in Table 1.

**Table 1.** Changes in the physical and mechanical properties of yarns obtained from waste on the based of resource-saving technology

№	Indicators	Secondary material resource mix in yarn,%			
		30% cotton fiber + 70% waste cotton fiber	45% cotton fiber +55% waste cotton fiber	20% cotton fiber +80% waste cotton fiber	50% cotton fiber +50% waste cotton fiber
1.	The linear density of the yarn, teks	52,77	55,50	62,27	61,14
2.	Variation coefficient of yarn linear density	3,08	3,25	4,46	4,25
3.	The number of twisting of yarn br/m	503,0	493,3	531,7	520,0
4.	The coefficient of variation in the number of twisting of the yarn %	3,0	1,8	3,0	1,7
5.	The breake force of the yarn, cN	360,12	410,30	376,11	465,23
6.	Coefficient of variation in the breake strength of the yarn, %	8,12	7,44	9,43	5,39
7.	Comparison break strength of the yarn, cN/teks	6,82	7,39	6,04	7,61
8.	Elongation of the yarn at break %	10,06	14,16	12,41	11,01
9.	The coefficient of variation in the elongation at break of the yarn, %	13,81	8,08	16,09	12,57
10.	The work done at the break of theyarn., cN·cm	1054,93	1551,49	1377,96	1681,54
11.	The coefficient of variation on the work done by the yarn at break , %	22,0	17,21	28,49	18,64

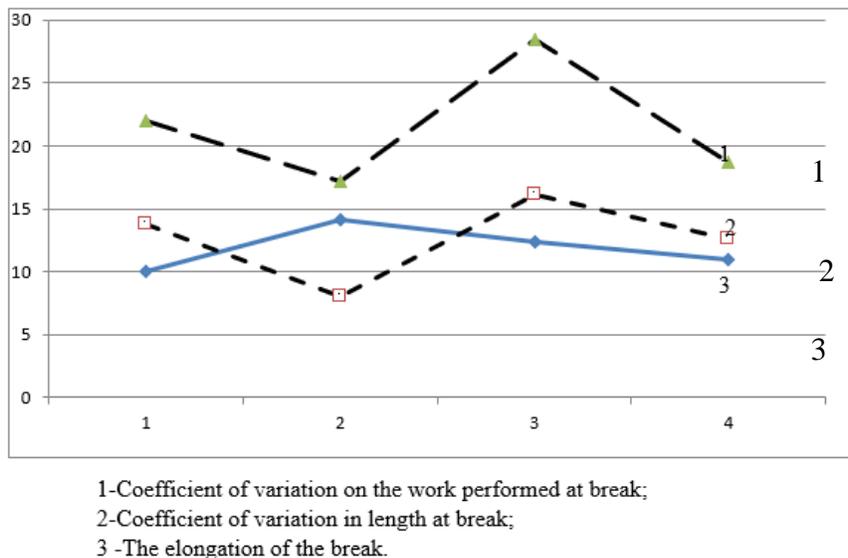
Based on resource-saving technology 30% cotton fiber + 70% yarn is from waste of cotton fiber, 45% cotton fiber + 55% yarn is from waste of cotton fiber, 20% cotton fiber + 80% yarn is

from waste of cotton fiber, 50% cotton fiber + 50% the change in the physical and mechanical properties of the yarns obtained fromwaste of cotton fiber is shown in Figures 1-4 below.

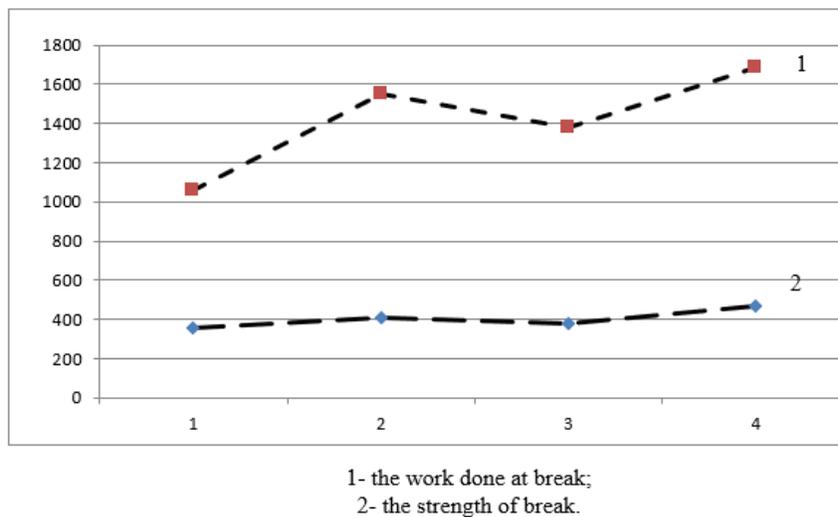


1-Coefficient of variation in breaking strength;  
 2-Coefficient of variation in linear density;  
 3-Coefficient of variation in the number of twists.

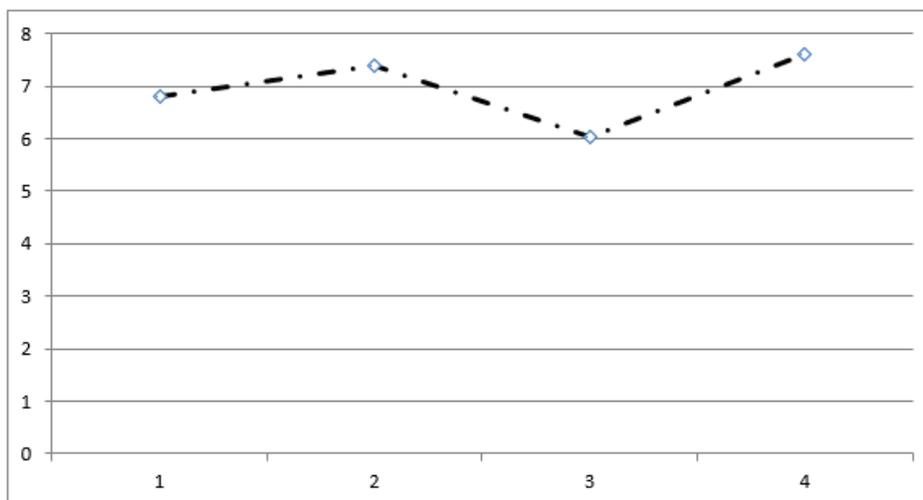
**Figure 1.** Changes in the coefficient of variation in terms of linear density, number of twists and breaking strength of yarns obtained from waste based on the resource-saving technology.



**Figure 2. Change in the coefficient of variation in the elongation at break and the work done at break in the yarns obtained from the waste based on on the resource-saving technology.**



**Figure 3. Changes in the break strength of yarn and the work done at break in the yarns obtained from the waste based on the resource-saving technology**



**Figure 4. Changes in the comparison break strength of yarns obtained from waste based on resource-saving technology**

## CONCLUSION

Compared to the indicators of yarn from 30% cotton fiber + 70% cotton fiber yarn on the basis of resource-saving technology, the coefficient of variation in linear density of yarn from 45% cotton fiber + 55% cotton fiber yarn increased by 5.2%, the coefficient of variation in the number of twists increased by 40.0% decreased, the breaking force increased by 12.2%, the coefficient of variation in the breaking strength increased by 12.2%, the elongation at break increased by 28.4%, the coefficient of variation in breaking length decreased by 41.5%, the specific breaking strength 7, Increased by 7%, the work done at the break increased by 32.1%, the coefficient of variation on the work done at the break decreased by 21.8%, the coefficient of variation on the linear density of yarns obtained from 20% cotton fiber + 80% cotton fiber. The coefficient of variation in the number of twists did not change, the breaking force increased by 4.3%, the coefficient of variation in the breaking force increased by 13.1%, the breaking coefficient increased by 18.9%, the coefficient of variation in breaking increased by 14.2%, the specific breaking strength decreased by 11.4%, the work done in the break increased by 23.5%, the coefficient of variation in the work done in the break increased by 22.8%, 50% cotton fiber + 50% linear yarn from cotton fiber loops density coefficient of variation increased by 27.5%, coefficient of variation by number of twists decreased by 43.3%, the breaking strength increased by 22.5%, coefficient of variation by braking strength decreased by 33.6%, elongation at break increased by 8.6%, the coefficient of variation in the length of the break decreased by 8.9%, the specific breaking strength increased by 10.4%, the work done in the break increased by 37.3%, and the coefficient of variation decreased by 15.3% i in the break.

The results of the study showed that the breaking strength of yarns obtained from lavsan fiber and yarns, the specific breaking strength of which is higher than that of yarns obtained from mixtures of other compositions.

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