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# Influence of Different Detergents and Methods on Local Wool Fiber Quality Indicators

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**ABSTRACT:**In this article, the use of back yarns from a mixture of local wool and its nitron fiber instead of imported yarns in the production of carpets is increasing. In order to select their composition and sort the local wool fiber by length and thickness, as well as modeling the properties of the mixture, practical analysis and analysis of factors influencing its properties, experiments were conducted at Khorezm Gilamlari LLC, Tora Sobir Private Enterprise. studies were performed on the instruments.

**KEYWORDS:**the main part of the fiber is cleaned of coarse fibers, wool color, astrakhan, plant residues, organic waste and fatty substances, wool fibers from soap-soda solution impurities and fat-sweat substances

## I. INTRODUCTION

Textile and light industry is one of the most developed sectors of the Uzbek economy. Sufficient conditions for this, the raw material base provides the application and modernization of advanced technologies, diversification of production, government support, incentives, small and medium business development, etc. Development of the textile industry with high performance[1].

Many factors affect the quality of products, the most influential of which is the quality of raw materials and the effective use of technology. The number of joint ventures equipped with modern technology and equipment from a mixture of wool fibers and its chemical (nitron) fibers is growing [2].

In the production of carpets, the use of back yarns from a mixture of local wool and its nitron fiber instead of imported yarns is increasing. In order to select their composition and sort the local wool fiber by length and thickness, as well as modeling the properties of the mixture, practical analysis and analysis of factors influencing its properties, experiments were conducted at Khorezm Gilamlari LLC, Tora Sobir Private Enterprise. studies were performed on the instruments [3].

Three types of wool are used in the textile industry, including shearing of wool, wool obtained from the skins of slaughtered animals and converted by shearing, coagulation of machines[4].

97% of natural wool is obtained from sheep, 2% from goats, and about 1% from other animals - camels and rabbits.

The textile industry uses 97% natural wool, the remaining 2-3% is regenerated wool.

Sheep wool can range in thickness from 5 to 160  $\mu\text{m}$  and in length from 25 to 350 mm and higher.

Due to the fact that the main part of wool fiber grown in the country consists of coarse fibers, they are used to produce blankets, coarse coats, non-woven fabrics. In addition, the properties of local wool fibers are being studied by many scientists. As a result, the textile industry faces the problem of efficient and effective use of this raw material[5].

Wool fiber swells in water and its strength decreases. The properties of the fiber do not change in low temperature water, but the wool fiber decomposes in hot water. Vapor, on the other hand, has less effect on wool fibers than high-temperature water. In addition, a change in wool color, strength, and elongation is observed in hot weather environments. The properties of the fiber partially change when exposed to a temperature of 70-80°C for a long time, so it is recommended not to exceed the temperature of 80°C during the drying process of wool fibers[6].

Studies have focused on fine-wool sheep. The combined content of fat and sweat (4.5-13.8%) in Bukhara (karakul) sheep wool bred in Uzbekistan has been determined. The share of other types of waste in raw materials is not given. The amount of waste and defects is greatly influenced by the breed of sheep, nutrition, changes in annual weather. Mineral (soil, sand) wastes from raw materials, some plant residues are separated by mechanical action, plant residues that are strongly attached to the fibers are removed by treatment (carbonation) in weak acids, organic wastes and fats by washing in liquids of a certain temperature. is prepared for spinning[7].

Until now, cold and hot water washing methods have been used:

-wool cut in washing with cold water is washed in rivers, streams. However, washing with this method leaves a large amount of waste, especially oily substances;

-When washing with hot water, the wool fibers are cleaned of impurities and grease from the soap-soda solution, as well as made ready for use in subsequent technological processes. This method is an industrial method.

Karakol wool produces 65-86% of pure fiber when washed in cold water and 57% in hot water[8].

Initially, small vessels were used for washing with hot water. At present, Ivtekmash (Russia), Petri McNaught (England), Tekstima (Germany), BS-2A (Poland), Almir (France) and many other factories and companies are engaged in washing wool at the primary wool processing (JDI) enterprises. aggregates are installed.

The technological processes performed in all the above units are the same and differ in the structure of the mechanisms and the quality of washing. They are equipped with one and three to six bars, after each bar are placed compression shafts. For fine and semi-coarse wool, at least five-barreled, coarse and semi-coarse three- to four-bar washing machines are recommended[9].

When washing with hot water, not only the water temperature is sufficient, but also depends on the amount (concentration) of soap and soda in the solution, the washing modulus, the degree of contamination of raw materials, the speed of movement of equipment parts, water movement in the wash and other factors.

On the basis of a comprehensive study of the properties of coarse and semi-coarse wool, research was conducted on the basis of small samples to create technologies for their sorting, washing, drying, and preparation for spinning[10].

## II. METHODOLOGY

Physico-mechanical properties of local wool fibers that were not washed in the laboratory and washed in various detergents were determined. The experiments were carried out on local sheep wool fiber samples for 30 minutes in ordinary water and snow water under various detergents according to the following options.

I-unwashed wool; Washed in II-F-drug; III in soda and soap solution; IV Wool washed in a solution of ash and soap. In variant II, 1 mm of water was washed with 5 mm F preparation. Soda and water (option III) 8 g (6 g of soda and 2 g of soap) was added to 1 liter of water, ie 75% of the 0.8% solution was soda and 25% was soap. Ash and soap (option IV) 0.4% solution, ie washed with 85% ash and 15% soap.

Tests were carried out in the laboratory of "Khorezm Gilamlari" LLC on the instrument TEXTECNO FAFEGRAPH ME with clamp spacing 20 mm, initial tension 0.5 cN / tex, breaking speed 40 mm / min and the results are given in Table 1.



Table 1

Indicators of physical and mechanical properties of unwashed and local wool fibers washed in different ways

T / r	Options Indicators	Unwashed wool (I-variant)	F-preparations (Variant II)		Soda-soapy (Variant III)		Gray-soapy (Variant IV)	
			Normal water	Snow water	Normal water	Snow water	Normal water	Snow water
1	Breaking force, P, cN;	40,2	39,5	27,0	45,0	42,0	49,7	41,4
1.1	Dispersion, {p}cN;	449,4	151,3	67,2	77,4	148,8	182,2	148,8
1.2	Coefficient of variation, CV{p}, %;	57,2	30,5	30,3	21,4	29,6	27,2	29,6
2	Relative elongation at break, E, %	45,1	39,8	37,9	43,5	38,8	41,0	38,8
2.1	Dispersion, {E}, %;	3,4	5,8	3,7	2,0	7,5	4,8	7,5
2.2	Coefficient of variation, CV, %;	7,5	14,9	9,7	4,7	19,3	11,8	19,3

In Table 1, histograms of local wool fiber tensile strength, elongation and their aggregate statistical indicators were constructed and analyzed (Figure 1).

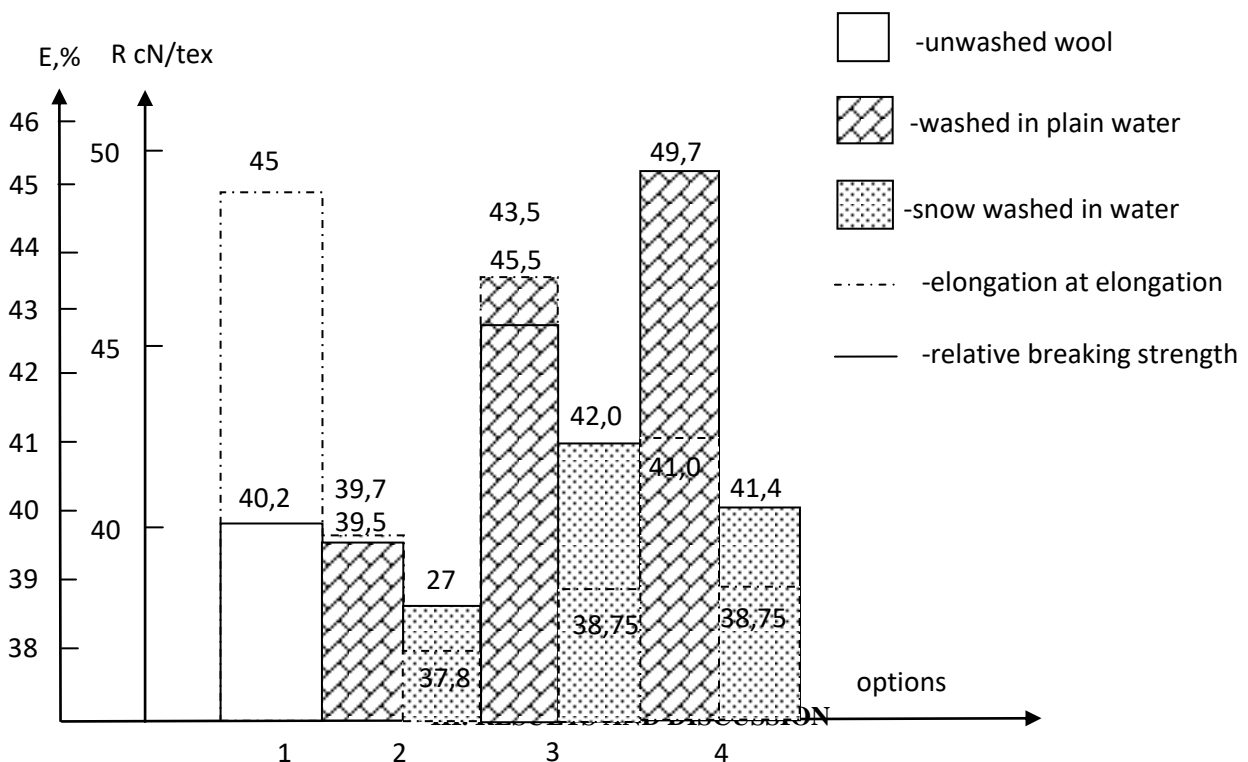


Figure 1. Histogram of elongation and relative tensile strength in fiber elongation by options.

From Table 1 and histograms (Fig. 3.1), the relative tensile strength when washed in solution of drug F decreased by 1.85% compared to wool washed in ordinary water, and by 32.9% in snow water. Elongation rates



decreased by 11.8% and 17.2%, respectively. In variant III, the relative elongation at normal water decreased by 12% (45.05 cN / tex) compared to unwashed wool by 3.5%, and the relative elongation at unwashed wool decreased by + 4.8% and -14%, respectively. . Option IV has a relatively high tensile strength when washed with ordinary water (49.72 cN / tex), almost unchanged for the washed state in snow water (41.35 cN / tex), and less when washed in snow with relative elongation (38.75). %) is obtained.

#### IV. CONCLUSION

Therefore, according to the results obtained, the best option is a solution of soda and soap (0.8%) in plain water..

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