EVALUATION OF THE FIRE RESISTANCE PROPERTIES OF YARN AND FABRIC WITH A STRUCTURE MADE OF ASBESTOS "AT-2" AND COTTON FIBER

S. A. Khamraeva, professor
Ya. I. Sirojiddinova,
N.Ahmadjonova
Master. Tel. +99899 8599158.
Tashkent Institute of Textile and Light Industry

Annotation. The article provides information on the development of the method of" bleaching" yarn to improve their flammability in the production of composite flammable fabrics, which is one of the main problems of the textile industry. In order to improve the above-mentioned properties to meet the needs and tastes of firefighters. It is claimed that the production of high-quality yarn and fabric is possible not only by mixing cotton fiber, but also by mixing At-2 asbestos fiber with cotton fiber. A new fire-resistant fabric made of natural fiber of mixed composition was obtained by theoretical and experimental evaluation of specific wear to determine the high quality of the fabric. The fabric obtained by mixing At-2 asbestos fiber with cotton fiber is designed for special firefighter clothing, has breathability and convenience for firefighters, fire protection and safety.

Keywords: Cotton and asbestos fibers At-2, weft yarn, warp yarn, workwear,

Introduction. "In accordance with the Decree of the President of the Republic of Uzbekistan dated May 19, 2020 No. PF-5997 on the implementation of the Law of the Republic of Uzbekistan" On Fire Safety "in order to prevent and extinguish fires, to ensure the health and safety of engineers , workers and employees. In order to increase the combustibility of fabrics for clothing, it is necessary to work on the production of high-quality yarn and fabric by mixing At-2 asbestos fiber with cotton fiber, to expand the range, fill the world market with finished products focused on export.

It is known that flammable fabrics have unique properties, and fibrous materials and fire protection are valued for their ability to protect human health and safety [1-5]. Although the highly flammable textile threads and fabrics produced have clear properties, special firefighter clothing is required to ensure breathability and comfort in accordance with the actions of firefighters in emergency situations. According to the results of studying the requirements for firefighters ' workwear, in order to improve the above properties, it is easy to obtain combustible yarn and fabric not only by impregnating the fabric surface with chemical coatings, but also by mixing AT-2 asbestos fiber with cotton fiber [6-12].

Theoretical research. A theoretical analysis of the quantitative part of the process of mixing asbestos fiber "At-2" with cotton fiber and protecting the free ends of the cotton fiber on the yarn surface from flame will achieve the goal of scientific work. .

Performing tasks to achieve the goal in the work expands the possibilities of removable flammable yarn and fabric. Thus, the determination of the rate of penetration of yarn for the

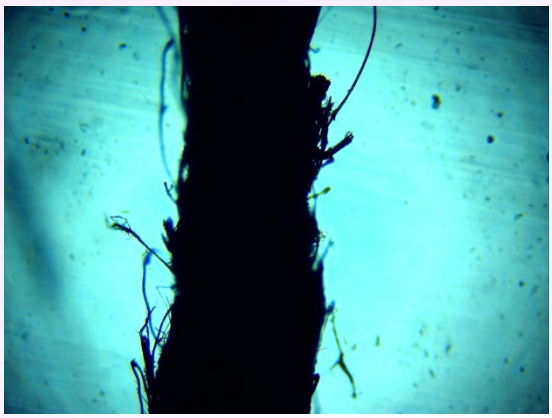
fabric for the production of special clothing for firefighters, obtained by mixing asbestos fiber "At-2" with cotton fiber, determined the rate of complete absorption of yarn into yarn. [7].

The following regression equations were obtained to estimate the air permeability of the proposed fire-resistant fabric [13].

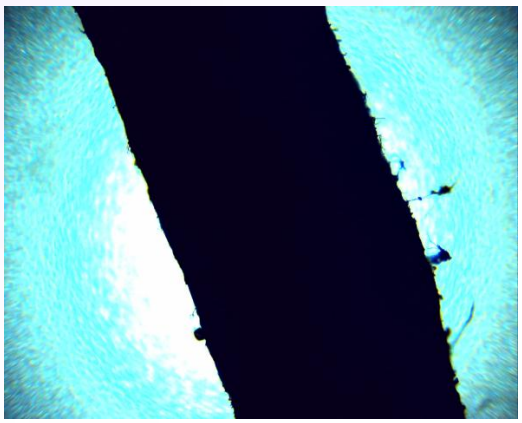
$$V_x = 45,5 + 1,33X_1 + 4,03X_2 - 1,78X_1X - 2,63X_1^2 + 3,27X_2^2$$

After studying the air permeability of cotton fiber from a mixture of natural asbestos fiber At-2 in accordance with the combustibility of yarn and fabric, the test results were evaluated according to the Student's criteria.

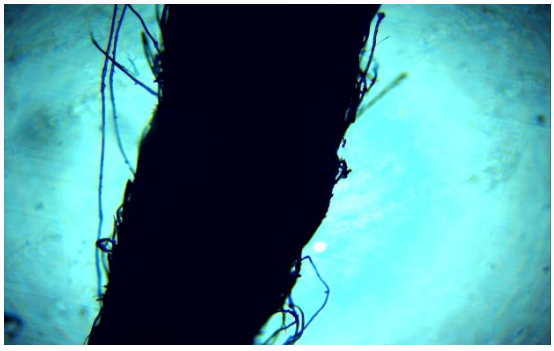
Experimental research. In the production and use of special clothing for firefighters, textile personnel are provided with breathability and all-round comfort, as well as fire resistance in the performance of official duties, which ensures their safety. When the yarn is woven into the fabric, the impregnated yarn must form a smooth coating on the surface, must not self-destruct under the pressure of the water used in the fire, and must have a low swelling capacity (Fig. 1-4).



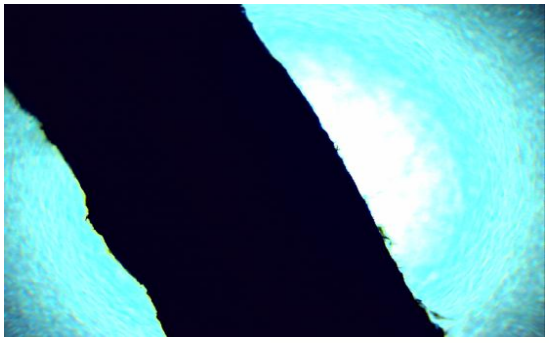
1-picture. Unbleached weft yarn



2-picture. Bleached weft yarn



3-picture. Unbleached warp yarn



4-picture. Bleached weft yarn

To meet such requirements and needs , the burning time was determined in accordance with the percentage of mixing of cotton fiber with natural At-2 abestone fiber(table).

T /p	Names of indicators	Percentage of fiber content of the compound in the yarn								
		35% cotton 65% At-2 asbestos fiber			30% cotton 70% "At-2" asbestos fiber			25% cotton 75% "At-2" asbestos fiber		
		Warp yarn	Weft yarn	Yarn	Warp	Weft	Yarn	Warp yarn	Weft yarn	Yarn
1	Burning time, seconds	2,5	1,6	Smoke formed, but side by side	1,8	1,2	It looked black, it hasn't burnt	1,4	0,7	Haven't burn
2	Burning time, seconds	2,8	1,4		1,6	1,3		1,3	0,5	
3	Burning time, seconds	2,9	1,6		1,8	1,0		1,4	0,5	
4	Burning time, seconds	2,6	1,7		2,0	1,2		1,5	0,6	
5	Burning time, seconds	2,6	1,5		1,8	1,0		1,4	0,6	
	Average	2,7	1,6		1,8	1,1		1,4	0,6	

From biurning results, it is clear that the burning rate of yarn containing three different percentages of the mixture varied over time. Burning: Most importantly, the burn time of the weft yarn in the sample was less than the tanning time in all variants. This is because the tanda yarn was weighed in the basic method by winding the coils, while the weft yarn was soaked in gently twisted bobbins for 30-40 minutes. The burning results show that the increased storage time of the yarn due to its immersion in the gutter leads to a reduction in the burning time.

The burning experiment showed that the burning time of 35% cotton 65% At-2 asbestos yarn 30% cotton 70% At-2 asbestos yarn increased by 33.3%, 25% cotton 75% At-2." The burning time of the asbestos yarn was reduced by 48.2%. According to the results of the analysis of yarn yarn 35% cotton 65% asbestos fiber yarn At-2 mixed yarn 30% cotton 70% asbestos fiber yarn At-2 gorenje 31.3%, 25% cotton 75%. the mixing time of At-2 asbestos fibers was reduced by 62.5%. 35% cotton 65% At-2 asbestos fiber fabric is smokeless but does not burn, 30% cotton 70% At-2 asbestos fabric is dark but not burnt, 25% cotton is 75% At-2 Asbestos fiber was not burned. It was found that all the variants listed in the table have high permeability characteristics.

Based on the results of the tests of the above-mentioned threads for flammable fabrics, a diagram was constructed for the main and wrong threads. The gorenje gorenje diagram shows that the burning time of 30% cotton 70% At-2 asbestos fiber yarn is 33.3%, 25% cotton 75% The burning time of At-2 asbestos fiber yarn is reduced by 48.2%.The burning time of At-2 asbestos fiber yarn is reduced by 48.2%. The burning time of At-2 asbestos fiber yarn is reduced by 48.2%. The burning time of At-2 asbestos fiber yarn is reduced by 48.2%. According to the results of the analysis of yarn yarn 35% cotton 65% asbestos fiber yarn At-2 mixed yarn 30% cotton 70% asbestos fiber yarn At-2 gorenje 31.3%, 25% cotton 75%. the mixing time of At-2 asbestos fibers was reduced by 62.5%.

Conclusion. According to the results of the study, the main and back threads of At-2 asbestos-fiber composite meet the requirements for fabrics for firefighters ' clothing and have increased flammability and breathability, reduced specific tensile strength.

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