

# Application of natural chrysotile fiber in production of refractory fabric in textile industry

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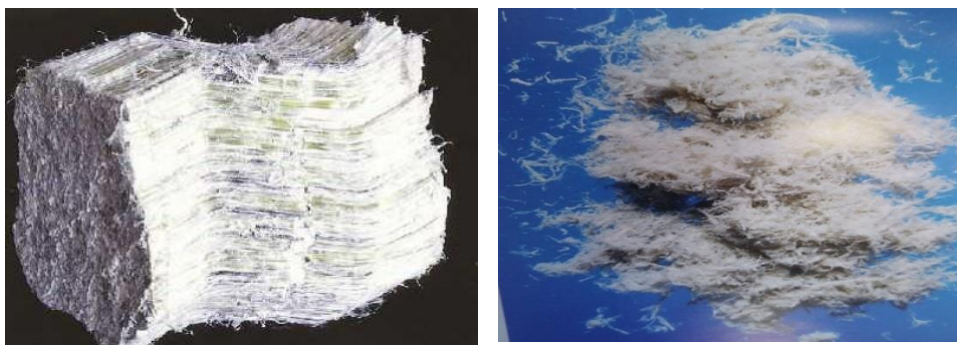
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**ABSTRACT:** The article contains methods for evaluating physical mechanical properties and quality indicators of refractory fabrics were made of natural fibers. Features of application and compliance with requirements of refractory fabrics were produced in textile and light industry are given.

**KEY WORDS:** Natural chrysotile fiber, fiber quality indicators, application of refractory fabric in the area.

## I. INTRODUCTION

According to UP-5997-son the Decree of the President of the Republic of Uzbekistan of May 19, 2020 about implementation of the Law of the Republic of Uzbekistan of "About Fire Safety", for prevention and elimination of the fire, ensuring health and safety of engineering technical workers, workers and employees. "In order to increase the refractory nature of fabrics were intended for special boilers," by mixing chrysotile fiber into cotton fiber, producing high-quality yarns and fabrics, increasing the range, saturating the world market with export-oriented tait products. In scientific research work had been based on results of studying of requirements for special clothes of fire extinguishers, a method is being developed for producing refractory threads and fabrics not only by absorbing chemical protective coatings into the surface of the fabric, but also by mixing chrysotile fiber with cotton fiber. [1] (Figures 1.2).



1.2 - Figures. Visibility of fiber in nature.

Natural chrysotile fiber occurs in nature in a positive state, undergoes several technological processes to come into a fiber state. The natural length of the chrysotile fiber is 8-12cm, the chrysotile fiber 10 had been damaged by several processes before the fiber will be appeared and has an effect on the length of the fiber. After the processes, the fiber length will be ranged from 3.5-4 cm to 2 mm. Natural chrysotile fiber  $Al_2O_3$ , by chemical structure is part of the group of meneral fibers of the  $H_2O$  family (serpentines). According to the chemical composition, chrysotile consists of magnesium, iron, calcium, aqueous silicates. Chrysotile fiber was found in the dastavian nature in the form of meneral fiber, and undergoes a number of technological processes before the appearance of fiber.

**II. METHODOLOGY**

The study showed that in the process of welding, fibers of a chrysotile fiber, fibers of a cotton component, due to the good parallel of fibers with fibers, weren't treated during the welding process, and yarn intended for refractory fabric with a high-quality natural mixture was obtained. [2] (Figures 3.4.5)

For fibrous filaments, the length, viscosity, microneira of the average fiber will be determined also graded. Type of cotton fiber selection according to requirements of the O'z DST-604 2016 standard will be determined. Specifications for tulips are based on specifications for O'z DST-2063-2018 standards and linear filament density.[5]

$$T_s = 1000 \cdot \left[ \frac{\frac{2,65}{\sqrt{\frac{1000}{T_1}} + \frac{\delta}{P_0 \cdot Z \cdot K \cdot \eta}}}{1 - 0,0375 \cdot H_0 - \frac{a}{P_0 \cdot Z \cdot K \cdot \eta}} \right]^2$$

Z - fibre length correction,  $Z = 1 - \frac{5}{l_{III}}$

a , δ – the following coefficient is being set.

Cotton fiber	yarn	Yarn grade	a	δ
medium wave	Carda (simple)	I	11,7	0,1
		II	11,0	0,1
		III	10,0	0,1
Long (thin) fiber	brushes	I	20,5	-0,5
		II	19,5	-0,5

Fibre flexibility capability.  $L_s = \frac{10}{T_s} \cdot B, km/kg$

1 kg shows how many kms of yarns come out of the raw yarn.

V- thread output  $B = D - (C_c + 0,9 \cdot C + 0,5 \cdot K) \cdot A$

here: D-continuous and depends on the assembly system; D = 92 (for snowing disease system), D = 89-P0 (with ridge); Cc- fibre content in fibre composition, %; C is the number of foreign bodies in the fibre; K-chigite fiber; A is a coefficient depending on the amount of fiber and the fiber content (≈3.2).

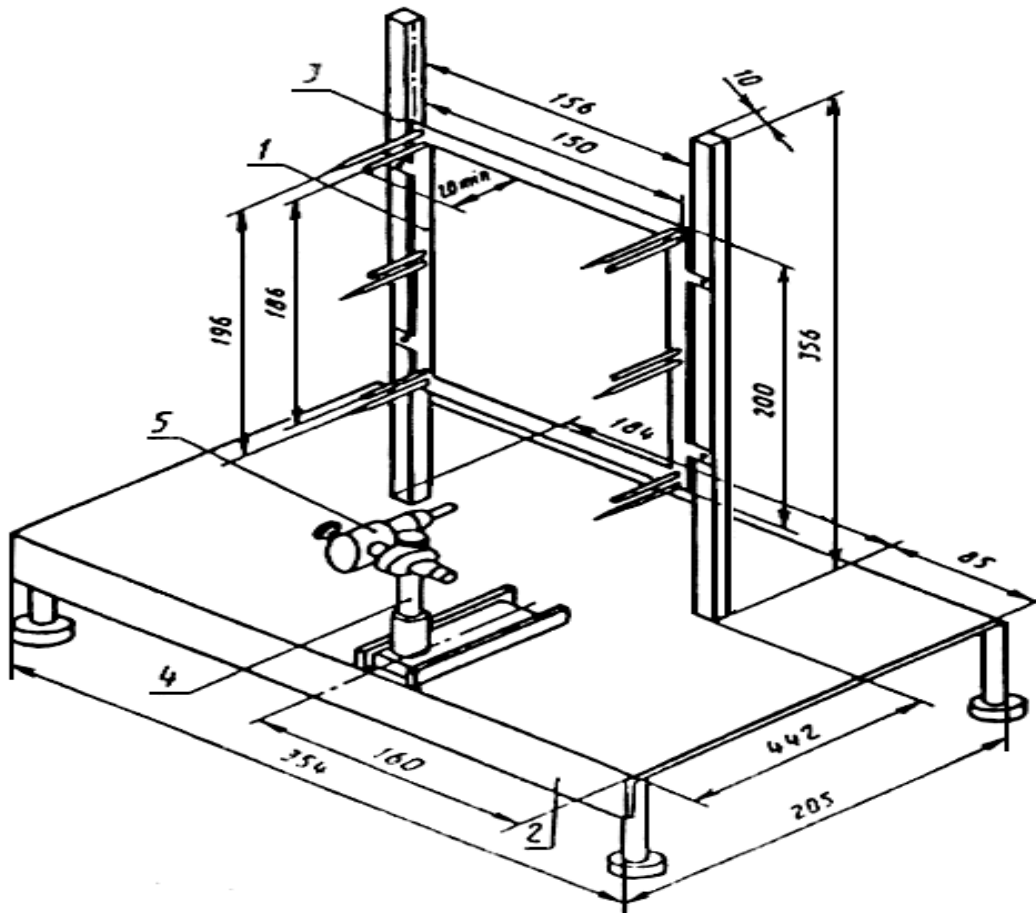
**III. RESULTS AND DISCUSSION**

Today, along with the production of textile products of wide range through new innovative technologies, it is relevant to be established of the production of refractory fabrics. One of the most important priorities is to ensure security issues in the comprehensive and dynamic development of the State and society. [3]

In case of detection of protectors, quality of refractory fabrics is detected in ShNK chorus. The test results from the sample tested on this OBT device shall comply with requirements of the standard. (Figures 8)

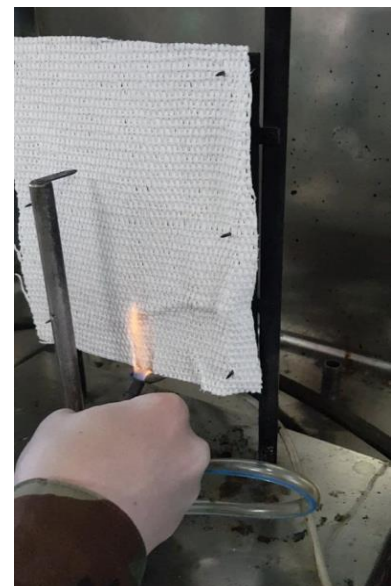


Figures 3.4. Cotton and chrysotile fibers are refractory, mixed. Readiness of refractory fabric made of natural fibres



Figures 6. Fabric Refractory Detection Equipment

- 1 - keeper - sample frame;
- 2 - basis;
- 3 - vertical columns;
- 4 - burner keeper; 5 - burner.



The using of refractory fabric clothing is effective way to prevent fires at manufacturing plants and to prevent the spread of fire caused by an emergency.

In order to ensure safety of employees, along with requirements, it was required to have warm and refractory, waterproof and oil clothing, depending on the types of work performed by employees. To do this, it is advisable to use special chrysotile (75% chrysotile fiber) and thread-like fabrics intended for textile fabrics obtained from cotton fiber 25%. [4].

#### IV. CONCLUSION

When assigning the refractory property, it is necessary to carry out it without negative affecting to quality of textile fabrics. To do this, one can achieve the expected result when studying a structure of tissue which directly affects to chemicals and natural substances which were contained in the mixture. At the same time, the technology of supplying refractory properties, the temperature of influence on the fabric is important.

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