ANALYSIS OF PHYSICAL AND MECHANICAL PROPERTIESOF LOCAL NATIONAL FABRICS.

Hojimatov Rasuljon Soliyevich
Namangan Institute of Textile Industry
hojimatov@mail.ru +9989072560628
https://doi.org/10.5281/zenodo.10435162

ARTICLE INFO

Qabul qilindi: 20-December 2023 yil
Ma'qullandi: 24- December 2023 yil
Nashr qilindi: 27- December 2023 yil

KEY WORDS

toughness, thickness, hygienic, cotton, friction, wrinkle, surface density, harvest, back, introduction

ABSTRACT

The article examines the physical and mechanical properties of local fabrics used n the design of women's ceremonial clothing and experimented at the Centexuz Certification Center under TTECI, identified and analyzed the physical and mechanical hygienic end other parameters of the samples.

One of the urgent tasks in Uzbekistan is to expand the production of garments from local Fabrics, to study the local fabrics and on this basis to develop new models of women's ceremonial dresses. While one of the urgent problems and tasks of today is the study and restoration of our national costumes is also at the forefront. Naturally, the creators of the dress faced two important tasks:

- Application of national traditios in modern costumes;
- Further development, renewal, enrichment and improvement of national costumes.

When we analyze women's ceremonial attire, it is a means of expressing the most distinct, strong ethnic identity that belongs to the elements of material culture [1].

The shape of the national dress, the pattern on the fabric, the multi-layerednees are important evidence in the study of the social life and worldview of the people who lived at that time. This feature of the national dress shows that it is a more invaluable historical source in the study of our history.

The shope of women's ceremonial dress, it is individual elements, decorative decoation, color scheme show that it is adapted to the natural climate in the area where the population lives [2].

Clothing came in different shapes and coplors, depending on the age of the population, social background, worldview, days of joy or mourning. Such conditions and rules primarily affected the fabric, its decoration and ornament, that is, the shape, color, size of the pattern.

In experiments, the mechanical properties of fabrics include toughness, elongation, abrasion resistence, crease, stiffness, and other properties [3]. The physical properties of the fabric include hygroscopicity, air permeability, vapor permeability, waterproofing, absorbency dust absorption, electrification and other properties. The requirements for physical properties are determined by the function of the fabrics and depend on their fiber composition, structure and finish [4].

Hygienic properties of the fabric. The hygienic properties of silk fabrics ensure that it is safe and harmless to human health. Accordingly, silk fabrics must have hygroscopicity, air permeability and vapor permeability properties [5].

A B C

1-picture.Experimental samples (including, A-atlas, B-address,C-banoras)

Experimental samples of fabrics were tested at the Centexuz Certification Ceter under TTECI, their physica-mechanical, phgienic and other parameters were determined, and approved by international standards (ISO, ASTM), existing standard methodologies in the country.

Experimenal samples results of physical and mechanical indicators.

1-table

	Indicators	Fabrics		
	Fabric composition, %	ilk 00%	ilk 50%+ Cotton 50%	ilk 00%
1	2	3	4	5
1	Harvesting	Cloth	loth	loth
2	Surface density of the fabric, м^2	1,2	7,56	8,86
3	The thickness of the faric, мм	,1	,15	,05
4	Abrasion resistance, cycle	000	500	500
5	Breaking strength, kg·c • tanda • back general	 18,109 89,656 53,882	 57,304 06,593 02,042	 95,952 96,445 43,698
6	Elongation at break, % • tanda • back general	 4,5 5,4 4,79	 8,29 2,57 5,43	 3,65 4,19 3,92

7	Friction resistance of fabric color, Nephew			
8	ir permeability, sm^3/sm^2sek	9,3	36,6	4
9	ompressibility, K% - tanda - back	 '7,7 '3,8	 0 4,2	 7,4 2,8
10	ıtroduction of fabric %, - tanda - back	 ,5 ,0	 ,5 ,0	 ,5 ,0
11	ygroscopicity, %	27	4	2

The properties of the selected fabrics are influenced by factors such as fiber length, thickness, their strength, softness and toughness, that is:

2-picture. Breaking strength of the sample

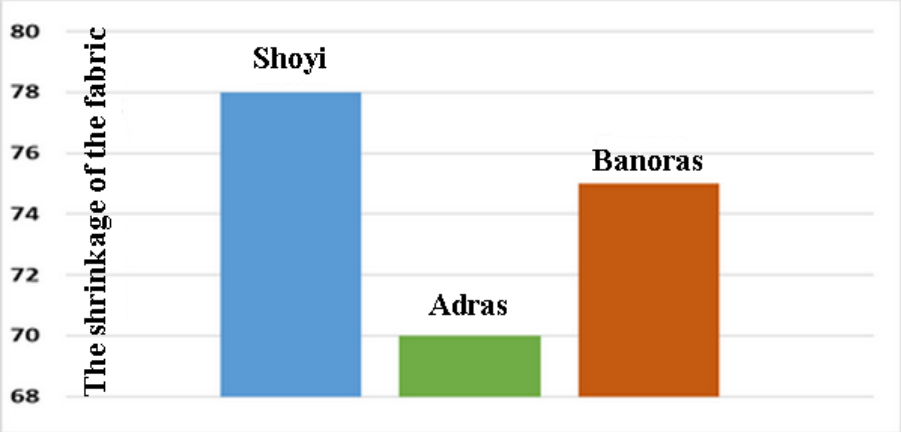
Elongation strength of samples. (kg·c). The tensile strength of the fabric is one of the most important indicators that determine its quality [6]. The tensile strength of a fabric is defined as its tensile strength.

The tensile strength of the fabric is determined on an AG-1 machine using a special computer program. Before starting work, the initial data required for the experient is entered into the program. Samples are prepaed in the size of 300 x50 mm in the body and back, as specified in GOST. The finished samples are clamped (the distance between the clamps is 200mm). Then the START button is pressed and the top clamp begins to rise. When the sample is broken, the experimental results are displayed on the screen in the form of graphs and tables. In the cutting machine, along with the determination of the toughness of the fabric, its elongation is also determined [5].

Abrasion resistance of samples**.** In this case, the resistance of the fabric to various corrosive factors is called abrasion resistance. This indication is performed in a M 235/3 machine. In this case, the samples are cut into circles using a special cutter and fastened in series to the desired location. When the mashine is started, the samples are rubbed against a special solid and

rotated.

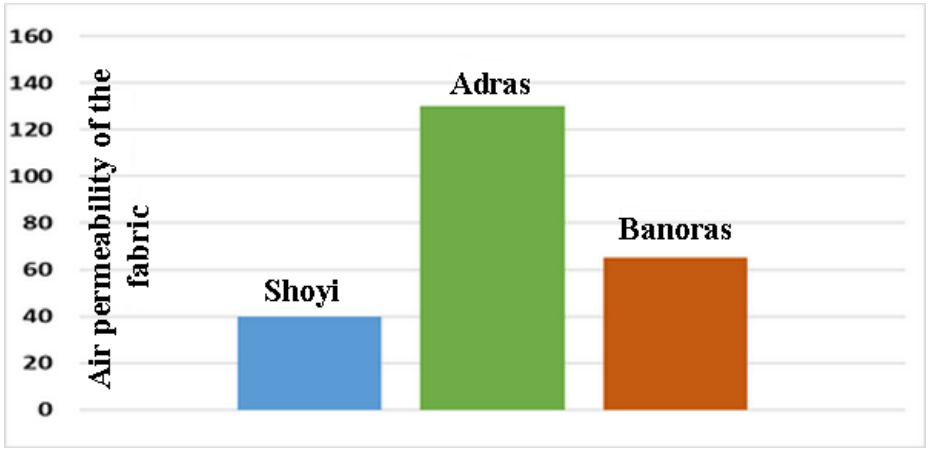
Wrinkling of samples, %. The formation of wrinkles and creases in the fabric when bent and pressed is called wrinkling [8].



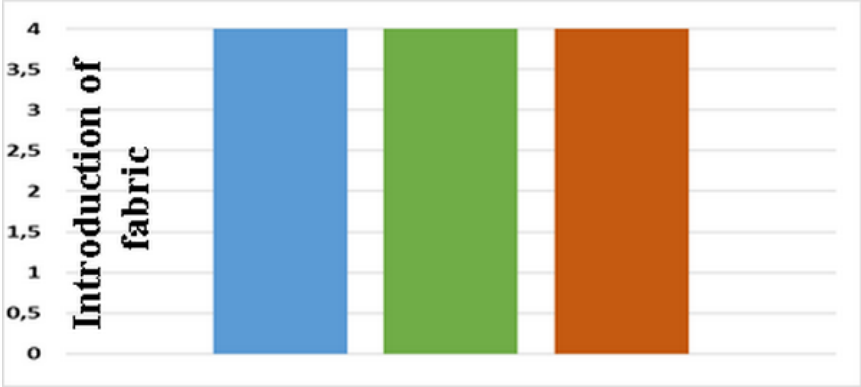
3-pictures. The shrinkage of the fabric

The viscosity is determined using the AW-6 instrument. In this case, 5 samples of size 40X15 mm are cut in the direction of the back and torso. The sample is bent twice, brought to a 180^0 position, and compressed with a force of 500 g. After five minutes, the recovery angle of the deformed specimen is measured.

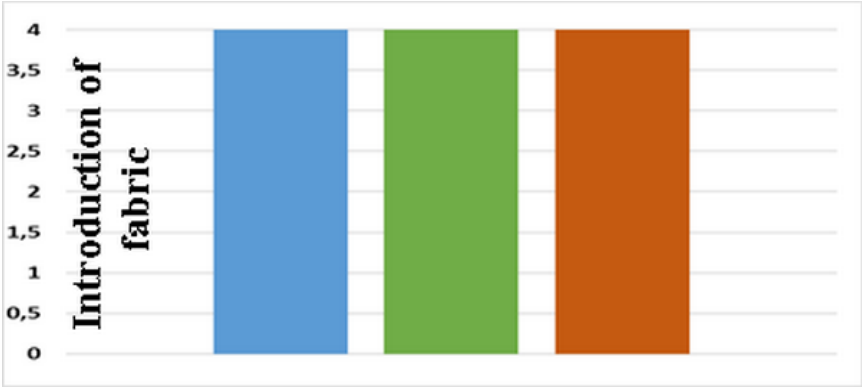
Air permeability of samples. (sm^3/sm^2sek). In this case, the air permeabiltyof the fabric depends on its fiber content, density and texture. Air permeability is checked using an AR-360 SM instrument. Before starting the experiment, the amount of water in the inclined and vertical manometer is checked. Depending on the thickness of the fabric, the stock is selected. The sample is placed in the camera using a clamp. The instrument fan is lowered. The hydrostatic pressure in the inclined manometer is 12.7 mm. The process is stopped and the hydrostatic pressure on the vertical monomoter is determined [9]. The pointer is determined using a special table. Sample fabric penetration %, occurs when the item is washed, soaked, ironed and pressed. To determine this figure, a sample measuring 10x10 sm is prepared, wetted and dried. The length and width of the dried sample are measured in the direction of the body and back.



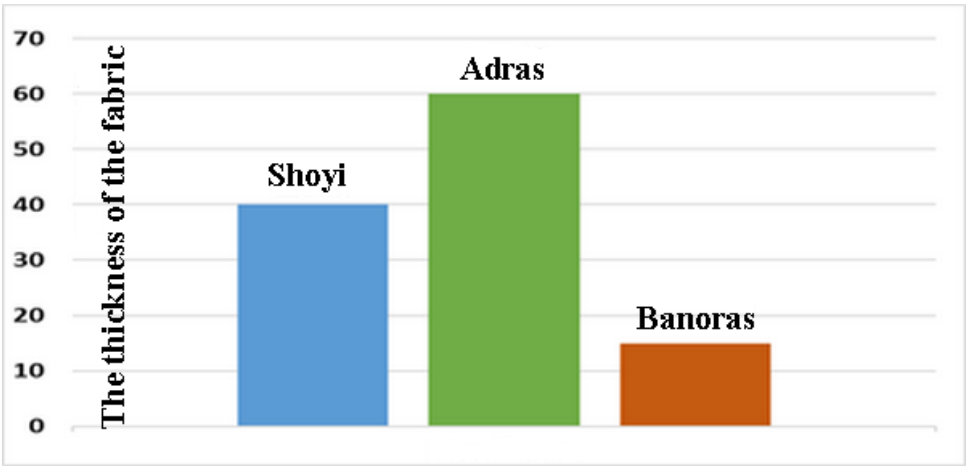
4-picture. Air permeability of the fabric



5-picture. Air permeability of the fabric



5-picture. Introduction of fabric



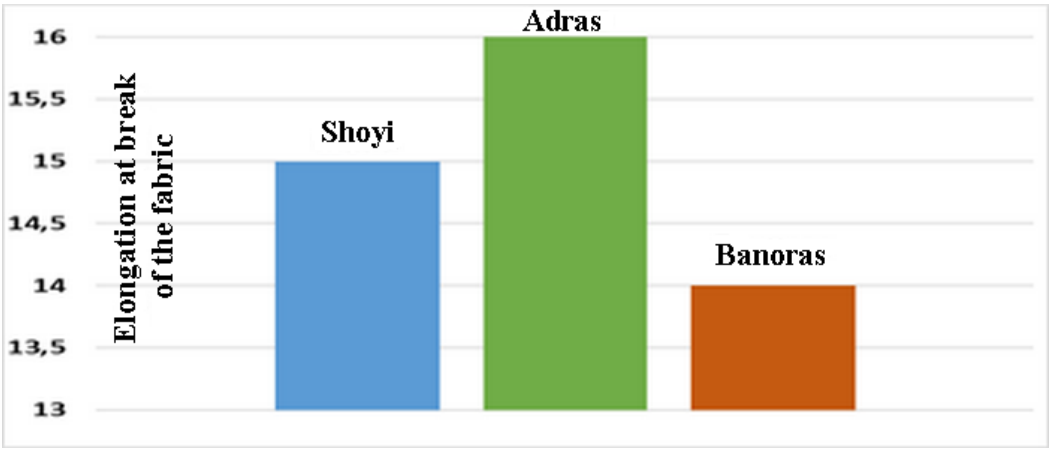
6-picture. The thickness of the fabric

The results are put into the following formula and the index is determined:

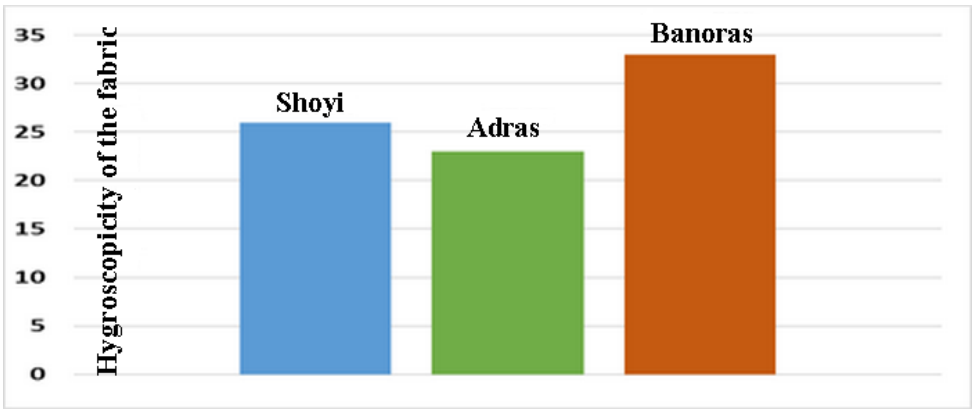
$$y_т = \frac{L_1 - L_2}{L_1} 100; \qquad y_a = \frac{L_1^1 - L_2^1}{L_1} 100;$$

In this case, L_1 ,L_1^1 are the initial dimensions of the fabric on the body and back; L_2, L_2^1 - are the dimensions of the fabric on the body and back after the test. [10].

The results obtained from the experiments are given in the following graphs.



7-picture. Elongation at break of the fabric



8-picture. Hygroscopicity of the fabric

The results of experiments obtained in the above diagram show that the physic-machanical and hygienic performance of silk, adras and banoras fabrics can meet the consumer demand on all parameters. After experimental studies it was concluded as follows:

The fabrics are rugged, durable due to the high density of the fabric, as well as thefolds of the fabric; the elasticity of silk fiber leads to the restoration of the shape of fabrics after deformation, increasing the non-wrinkling properties; woven from natural fibers fully meets the hygienic characteristics of the fabric, increases the level of hygroscopicity.

References:

1. Н.Насриев “On the path of light industry development” O’zbekistan news. ҳттп://уза.уз/уз/бусинесс/ On the path of light industry development.
2. Н.Г.Аббасова, Б.Б.Ахмедов, Ш.М.Маҳкамова, Т.А.Очилов, “Materials science of lght industry products”. Toshkent “Communicator” 2006 й.
3. Жабборова М.Ш. “Sewing technology” teacher 1994 й.
4. [4]. Х.Ҳ.Комилова, Н.К.Ҳамроева. “Construction of garments”. Тошкент. “Чўлпон”. 2011 й.
5. . Мартинова А.И Андреева Г.И. Конструктивное моделирование одеждқы. М., 2002.
6. Коблякоба Э.Б. Основы конструкцирования одежды. М., 1988 г.