



ANALYSIS OF PHYSICO-MECHANICAL PROPERTIES OF KNITTED FABRIC WOVEN ON A JACQUART MACHINE

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Annotation

The article presents the analysis of the physical-mechanical indicators of the jacquard interlock knitted fabric sample taken on the 28 class "HANMA" machine, the type of weaving, the fiber content and the characteristics of moisture elasticity.

Keywords: jacquard, interlock, polyester, spun cotton thread, physico-mechanical index, breaking strength.

In recent years, complex measures have been implemented in the republic to develop the textile, sewing-knitting, light industry branches, to expand the types and assortment of manufactured finished products, as well as to comprehensively support the investment and export activities of branch enterprises. is increasing. At the same time, the increase of competition in world markets, the development of technologies and the reduction of production costs by foreign manufacturers require the development of additional measures for the development of these areas.

Today, the "JACQUART" machine produces knitted products with unique appearance and high quality results using our local raw materials: natural fibers:





cotton and silk, artificial fibers lycra, lavsan, kapron, viscose, polyester fibers. This, in turn, requires achieving high efficiency in the production of high-quality and affordable products with low consumption of raw materials for the domestic and foreign markets. In this scientific-research work, interlock ricotta fabric with jakarta obtained on the basis of rubber fabric was obtained on the 28-class JACQUART machine, and its physical and mechanical properties were tested in the test laboratory of the Namangan Institute of Engineering Technology.



Figure 1. Patterned interlock texture

This patterned interlock fabric is unique in that it is woven on a rubber warp basis is a tissue type. It stretches very well, absorbs heat and moisture well, has high air permeability and shape retention properties. Interlock is usually made of natural spun cotton thread, but there are also types with polyester or viscose added to it. Such fabrics are quite stiff and elastic. The composition of our interlock fabric obtained on the " JACQUART " machine is woven from 2 types of polyester yarn, woven on the basis of white 75 DNE and black 100 DNE yarns.

This knitting-weaving machine has a low consumption of raw materials and a high possibility of obtaining knitted fabrics of various structures with high prospects. In a number of enterprises producing knitted products, it is a natural situation that knitted fabrics have some shortcomings and problems in terms of stretchability, abrasion resistance, and air permeability.



Physico-mechanical parameters of patterned interlock knitted fabrics Indicators:

1-Table

Pointers:	Results:	
Type of thread, line density	Polyester 75 DNE and 100 DNE	
The length of the threads in the fabric	Polyester white 33.6 Polyester black 34.1	
Knitted surface density Ms (gr/m ²)	194	
Knitting thickness T (mm)	1,86	
Bulk density 8 (mg/cm ³)	145	
Air permeability B (cm/cm sec)	39,1323	
Breaking force P (N)	by height	469
	by width	154
Elongation to break L (%)	by height	74,15
	by width	52,05
Irreversible deformation E. (%)	by height	24,3
	by width	42,6
Return deformation E. (%)	by height	21,7
	by width	26,2

Air permeability coefficient B (cm/cm sec) is determined by the following formula.

$$B = V / (S * T), \text{ cm}^3 / \text{cm}^2 \cdot \text{sec}$$

Here:

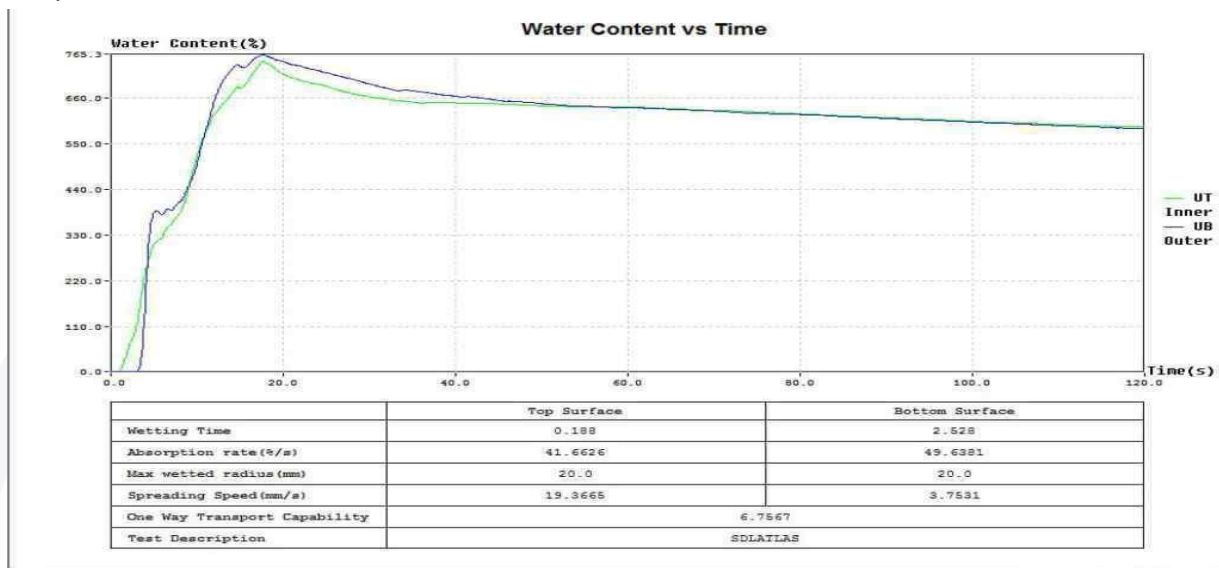
V-the amount of air passing through the fabric at a given pressure difference P, cm³;
S-fabric area, cm²;

Time of air passing through T-fabric, sec. Our Jacquard interlock fabric had a breathability reading of 39.1322. The characteristic of breaking is the main indicator accepted for evaluating the quality of knitted fabrics. All GOSTs and TShs used for knitted fabrics include normative indicators for elongation at break and tensile strength. Breaking strength is the force used to break a sample when stretched at a given size and speed. Breaking force is expressed in newtons. The tensile strength of the presented samples was determined using a "YG-026T" dynamometer according to the standard method. Analysis of tissue toughness, i.e. breaking strength, shows that



473 N in length, 151 N in width, 74.15 L% of elongation at break, showed that it was equal to 51.05 L% in width. In the patterned jakart knitted fabric sample, the percentage of longitudinal deformation is 20.7%, widthwise deformation is 28.2% (Table 1), and lengthwise irreversible deformation is 25.4%. in width was 44.6%. Such indicators of the percentage of recovery deformation indicate that the patterned jacquard knitted fabric quickly returns to its initial state after stretching. The wet elasticity index of our Jacquard interlock knit fabric was 6.7667 and is shown in the table below (Table 2).

(Table 2).



In this scientific-research work, the physical-mechanical properties and technological indicators of the sample obtained on the basis of the Jakarta interlock fabric were analyzed. From the analysis of the physical and mechanical properties of the above-mentioned jakart interlock knitted fabric, it was found that the changes in fabric structure, fiber content, air permeability properties, hardness, elongation and abrasion resistance properties of the interlock fabric was found to be related and provides an opportunity to obtain outerwear from this knitted fabric.

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