

## COMPREHENSIVE EVALUATION OF QUALITY KNITTED FABRICS JACQUARD WEAVE

### КОМПЛЕКСНАЯ ОЦЕНКА КАЧЕСТВА ТРИКОТАЖНЫХ ПОЛОТЕН ЖАККАРДОВОГО ПЕРЕПЛЕТЕНИЯ

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*This article examines the impact of the number of loops on the jacquard parameters and physical-mechanical properties of the double jersey jacquard weave. Found that the presence in the structure of jacquard knitted loops positively affects the performance increases breathability, abrasion resistance, elongation decreases in length and breaking load.*

*В данной статье рассматривается влияние количества жаккардовых петель на параметры и физико-механические свойства двойного трикотажа жаккардового переплетения. Установлено, что наличие в структуре трикотажа жаккардовых петель положительно влияет на показатели: увеличиваются воздухопроницаемость, прочность на истирание, уменьшаются растяжимость по длине и разрывная нагрузка.*

**Keywords:** jersey, jacquard weave, eraser, fabric, jacquard loop, properties, histogram, a diagram.

**Ключевые слова:** трикотаж, жаккардовые переплетения, ластик, полотно, жаккардовые петли, свойства, гистограмма, диаграмма.

A knitted tissue of jacquard tangle is such knitted tissue where stitches are not formed in a flow, but in the places of stitches missed according to the pattern, thread is prolonged in extension [1], [2]. White knitting jacquard tissue tangles, knitting needles are switched off that is why they do not recline new threads, but the stitches formed before are included.

A knitted tissue of jacquard tangle may be got on the basis of all famous sunk and knitted, single and boucle tangles. Such knitted tissue contains two elements of stitch structure: stitches and spinning. In sunk knitted tissue shins are extended lengthwise of stitch rows, in base – knitted tangle – spins are extended lengthwise of stitch posts. Jacquard Aitches, similar to pressed ones, are characterized by an index showing by how many spins the frame of jaccard Aitches is crossed (traversed).

A knitted tissue of jaccards tangles may be regular and irregular, full and not full.

A knitted tissue of jaccard tissue is divided into single and double, depending on design location formed by jaccard stitches. Necessary conditions for jaccard Aitches obtain are non – laying stitches over a knitted- nudge and stitches not thrown down from this needle. These regiments may by different ways depending of the stitch formation process (machine – knitted or knitting) and the nudges used.

Jaccard stitches are obtained by switching off nudges from the work over knitted machines wits consecutive nudge movement irrespective of nudge type (tongue, hook, puz).

15 variants of jaccard tissue which differed from each other by quantity of jacquard stitches in the rapport of tangle, were worked on the flatfang machine of KH-323D type to study the influence of jacquard stitches quality in the rapport of tangle on parameters and

physical-mechanical features of double knitted jacquard tangle.

a - in pressed knitted tissue pressed stitches are found on one side of knitted tissue;

b - in pressed knitted tissue pressed stitches

es are found on both sides of knitted tissue.

All the variants of jacquard knitted tissue were worked out under identical conditions; i.e. stretching, width of needle culiring and power of stay tissue were the same.

Table 1

Variants	I	IIa	IIб	IIIa	IIIб	IVa	IVб	Va	Vб	VIa	VIб	VIIa	VIIIб	IXб	Xб	XIб
jacquard stitch composition in rapport, %	0	5	5	6,25	6,25	8,33	12,5	12,5	12,5	25	25	4,16	5,5	7,14	10	16,6

As a basic tangle an elastique 1+1 (variant-1) was worked out.

Physical-mechanical features and technological parameters of the obtained samples of jacquard knitted tissue were defined.

To compare jacquard tissue quantity a complex evaluation was done, the latter being a graphic picture of results of analysis of knitted tissue quantity. The chart of a complex diagram is built in such a way that its biggest outline demonstrates the best quality indicators of the worked out knitted tissues; i.e. the closer the outline to exterior outline is, the higher knitted quality indicators are and the better they meet requirements. A complex diagram is built in such a way that on every of its axes results of determination of different knitted tissue qualitative indicators. Moreover, to ensure specific features of every of analyzed indicators the best of its indicators are traced on the exterior outline: the bigger ones are for positive indicators and the lesser ones are for negative indicators [3].

ones are for its negative indicators [3].

The indicators serving as a basis for analysis and having a greater influence over physical-mechanical and hygienic features, on form-stability and economy of expensive raw materials conduce to the task solution. There indicators are a torn load, torn lengthening, air-permeability, setting, thickness, surface and volume closeness.

A complex quality evaluation of jacquard knitted tissues. In the course of testing of technological parameters and physical and mechanical features a complex quality evaluation of knitted tissues of double jacquard knit wear was built to define the optimal interweaving variants. On picture 1 a complex diagram of quality of knitted double jacquard tangle is shown, where jacquard stitches are found on one side, and on the picture 2 a complex diagram of quality of knitted tissue double jacquard tangle, where jacquard stitches are found on both sides.

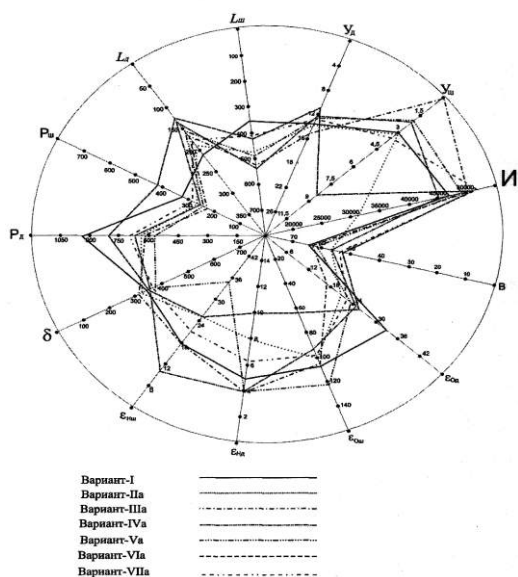


Fig. 1

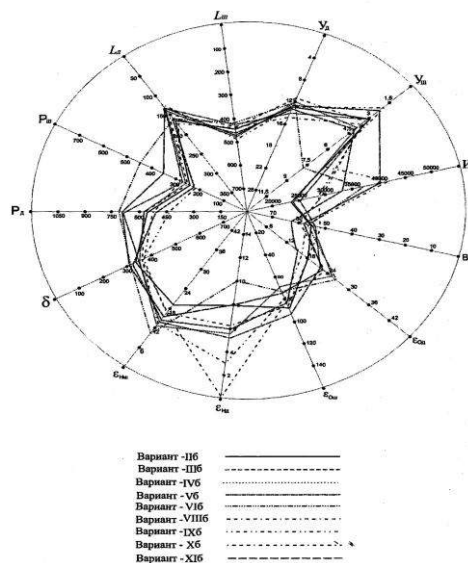


Fig. 2

A complex diagram of quality of knitted tissue double jaccard tangle with jaccard stitches being on one side:  $P_d$  – a torn load over length;  $P_{ш}$  – a torn load over width;  $L_d$  – lengthening over length;  $Y_d$  – setting over length;  $Y_{ш}$  – setting over width;  $И$  –wearing out;  $B$  –air-permeability;  $e_{од}$  –reversed deformation over length ;  $e_{ош}$  – reversed deformation over length;  $e_{нд}$  – non reversed deformation over length;  $e_{нш}$  – reversed deformation over width;  $d$  – volume knitted tissue density.

Jaccard stitches, being in the structure of knitted tissue, have a positive influence on air-permeability indicators, the more jaccard stitches in the rapport of tangle are, the air-permeability of knitted tissue is increased, stability over wearing out is not changed in comparison with basic tangle considerably.

Spins and length stitches, being in the structure of jaccard knitted tissue decrease knitted tissue stretchability over length, setting of knitted tissue is not changed considerably, torn load and non-reversed deformation are decreased, volume density of jaccard knitted tissue is close to that of basic tangle.

The mentioned histogram show that the best quality indicators of the worked out knitted tissues of double jaccard tangle are variants IIIa, IVa, VIIa, XIb. These variants were recommended for putting into practice.

In the pic. 3 histograms showing a sum of squares of polygons of double jaccard knitted tissue, obtained on the basis of elastic.

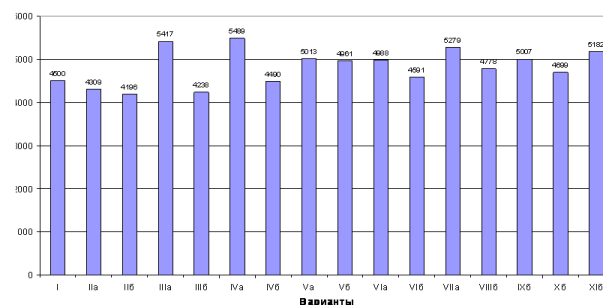


Fig. 3

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