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An Analaysis of Structure of Different Filling Parameters Adras Fabrics

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ABSTRACT. In the article was analytically analyzed the structure of adras fabric based on analysis affecting on the decoration of the main indicators.

KEY WORDS: Adras, ikat (abrband), warp yarns, weft yarns, cotton yarn.

I.INTRODUCTION

Adras isone of the national fabrics which warpyarns are producingin a special ikat (abrband) way.During the former Soviet Union also by uzbek scientists there was not any kind of information in brochures about adras and its combination of fabricswith other fibers [1].Unlike khanatlas, in adras used spinner cotton yarn for the weft.

Nowadays, after 1990 years, Adrasattracts not onlyUzbek people, but also visitors who come to our country.Increasingthe demand for high-grade fabrics in our country, decoratingwarp is made by craftsmen which is decorated withikat way, for warp andweft is used cotton yarn, it is the reason for the production of new adras fabric from pure cotton.The using of adras is increasing day by day. From this fabric is sewing not only women's dress but also jackets and another clothess.

This fabric is used not only for decorating wedding parties in our republic but also uzbek people who live abroad are used widely this fabric for embellishing café and restaurants.We can say that the ornaments of the adras is become national symbol of our country.Besides we can see them in women's dress who is going to pilgrimage to Umra and Khadj.

Adrasthatarefor sellingmostly producedby hand tools.Adras is producing by automatic weaving machine in private enterprise "Yodgorlik" andat the productionlaboratory of scientific researchinstitute of natural fibers.There is no produce to definite the factor of the structure of adras fabric and based method of projecting new structure scientifically.

II. THEORY

The founder of the theory of textile structure G.N.Novikov [2] noted 3 types according to the diameters of warp and weftyarns. 1. $d_T=d_A$, 2. $d_T> d_A$, 3. $d_T< d_A$. This correlation influence to physico-mechanical property by warp and weft of fabric (woven) and also their decoration.Usually, in cotton fabrics warp and weftyarns'line density are the same or near to each other.Fabrics weaving from pure silk and the combination of other fibers, in that warp yarns diameter are smaller than the weft, it meansK_d <1.For these textile group is also related adras and its previous types warpyarns from silk, weft yarn from cotton.To demand for this fabric is increasing day by day and types of assortment are rising.For example, there are manufactured ikat decorating adras includingcotton warpand weft yarn too from cotton.But there is not any kind of research about creating new structure ofadras fabric and analysis of suitable importance factors effecting its decoration.

In order to clarify the designator that affect factors, scientifically based on new types of adras we will analyze analytically according to Novikov'stheory.In the 1-picture is shown geometric model of adras fabric having its $d_T<d_A$, that is $K_d=d_T/d_A<1$in it warp yarns are maximal bend down and it has minimal value between the distance that carried out. At this situation, warp compactness equal to below:

$$P_T=\frac{100}{l_T}=\frac{100}{d_T} \quad (1)$$

Here:l_T –geometric compactness of fabric (woven), mm.

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d_T–diameter of warpyarn, it is used for determining diameter coefficientandmedium diameter of warp and weftyarns.
Coefficient of diameters:

$$K_d = \frac{d_T}{d_A} \quad (2)$$

Medium diameter of yarns in geometric compactness of fabric, mm

$$d_{ўP} = \frac{d_T + d_A}{2} \quad (3)$$

The distance of between warpyarns , mm

$$l_T = \frac{100}{P_T} \quad (4)$$

The distance of between weftyarns, mm

$$l_A = \frac{100}{P_A} \quad (5)$$

Wave height ofbending down warpyarn:

$$h_T = \sqrt{4 \cdot d_{ўP}^2 - l_T^2} \quad (6)$$

Wave height of bending down weftyarn:

$$h_A = (d_T + d_A) - h_T \quad (7)$$

Coefficientof wave height of bending down warpyarn:

$$K_{h_T} = \frac{h_T}{d_{ўP}} \quad (8)$$

Coefficientof wave height of bending down weftyarn:

$$K_{h_A} = \frac{h_A}{d_{ўP}} \quad (9)$$

The structure of phase(the order of phase):

$$\Phi = 4 \cdot K_{h_T} + 1 \quad (10)$$

Maximal technologic compactness of fabric (woven) by the weftyarn:

$$P_T^T = \frac{100}{l_{ўP}^T} \quad (11)$$

Maximal technologic compactness of fabric (woven) by the warpyarn:

$$P_T^A = \frac{100}{l_{ўP}^A} \quad (12)$$

III. EXPERIMENTAL RESULTS

For researching work there were buying different types of adrasin shops, besides the 3rd variant.In the 3rd variant new experimental samples of structural fabric is manufactured in loom workshopin Margilan for our research work.And at this warpyarnfrom cotton,weftyarnfrom modification nitron. Modificationnitron is added to adras foraim not to crumple[3,4].

Diameter makes coefficient smaller, to remove warpyarn more to the surface of the fabric, in order to do better the view of it as a weft line compactness from warp used2 times higher modification nitron.All adras models indicators are determined andnominated in thistable1:

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1-table

Different adras fabric's mean parameters by experimental determined

Variants \ Indicators		Fiber composition	Line density of the fabric's yarn	Number of yarns in 10 sm	Reducing of fabric yarns, %	Fabric surface density, g/m^2	Weave name
1	Warp	silk	8,3	650	1,96	198,1	atlas 8/3
	Weft	cotton	62	225	1,96		
2	Warp	silk	7,6	728	5,66	124,3	Linen
	Weft	cotton	36,2	190	0,99		
3	Warp	cotton	32	282	18	223,5	Linen
	Weft	mod.nitron	69	150	1,96		
4	Warp	silk	5,6	740	0,99	81,6	atlas8/3
	Weft	silk	11	378	0,99		
5	Warp	cotton	37,4	183	6,10	129,5	Linen
	Weft	cotton	46,8	116	1,96		
6	Warp	cotton	32,4	318	2,91	149,4	Linen
	Weft	cotton	29	133	4,21		

3-variant

5-variant

1-picture. Different line density weft yarn for adras fabrics.

The first table according to the defined indicators the structure indicators of these fabrics is accounted through theabove mentioned formulas and is of used in the 2ndtable.

2-table

Calculations for adras fabrics

№	Indicators of fabric structure	Marked	Variants					
			1	2	3	4	5	6
1	Diameter of yarns, mm	d_T	0,14	0,13	0,24	0,11	0,26	0,24
		d_A	0,33	0,25	0,35	0,16	0,29	0,23
2	Coefficient of diameters	K_d	0,42	0,53	0,68	0,71	0,89	1,05
3	Medium diameter yarns of weft and warpin fabrics, mm	$d_{\breve{y}P}$	0,24	0,19	0,29	0,14	0,27	0,23
4	The real compactness according to the warp of the fabric, yarn/dm	P_x^T	650	728	282	740	183	318
5	The real compactness according to the weft ofthe fabric, yarns/dm	P_x^A	225	190	150	378	116	133
6	Distance between warp yarns, mm	l_T	0,15	0,13	0,35	0,13	0,54	0,31
7	Distance between weft yarns, mm	l_A	0,44	0,52	0,66	0,26	0,86	0,75
8	Wave height of bending down the warp yarn	h_T	0,45	0,37	0,48	0,24	0,09	0,35
9	Wave height of bending down the weft yarn	h_A	0,02	0,02	0,11	0,03	0,45	0,11
10	Wave height coefficient of bending down the warp yarn	K_{h_T}	1,89	1,87	1,61	1,75	0,35	1,49
11	Wave height coefficient of bending down the weft yarn	K_{h_A}	0,10	0,12	0,38	0,24	1,64	0,50
12	Structure of phase	Φ	8,58	8,50	7,44	8,03	2,40	6,99
13	Maximal technologic compactness according to the weft	P_τ^T	683	728	282	816	183	318
14	Maximal technologic compactness according to the warp	P_τ^A	274	190	150	525	116	133

Below are given graphics withsome indicators of values of the second table.

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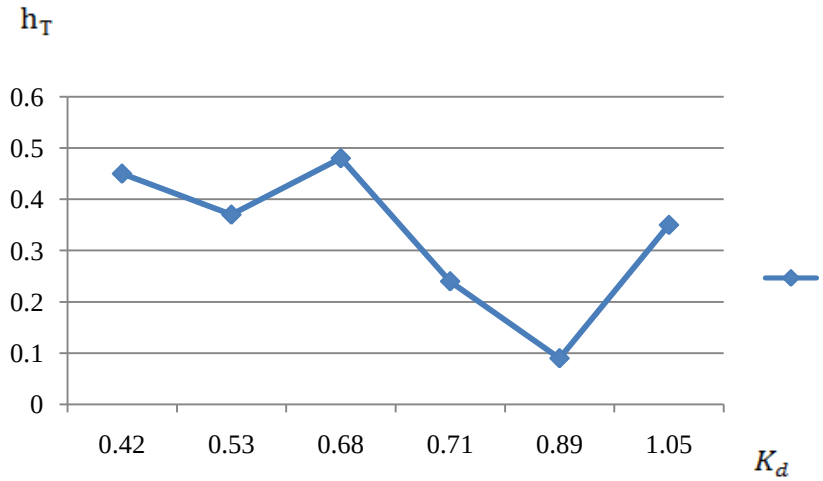
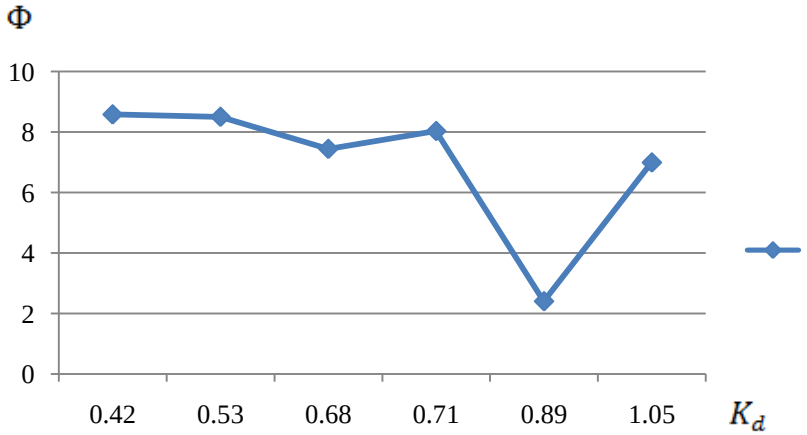


1-Graphic affecting to warp wave height of K_d coefficient diameter.

How little is the coefficient diameterK_d ,wave height of warp should be as high as it.Because, how small $K_d$is it, weftyarnshould be relatively large towarp yarn.For this reason we can show coefficient of diameter and type of shroud, that means, 1-variant-atlas 8/3, 2–variant scratching and in the 1–variant diameter of coefficient is little.In the 3rd and 6thvariant the reason for the fact that the above mentioned wave height of warp is not coincide with "Coefficient of diameter legality", can be explained that amount ofyarndiameter ofwarp and weftis the largest.The reason for the lacking wave height of warp of the khanatlasin the 4th variant, can be explainedthat coefficientof diameter relatively largeand amount of yarn diameter is the smallest than the others.(here weaving atlas 8/3).In the 5thvariant,wave height of warp is suitably small for "Coefficient of diameter legality".But, here the structure of fabricyarn is suitable for 2-3 phase. 6th variant is not suitable for wave height of warp "Coefficient of diameter legality", it means it can be explained that amount of yarndiameter of wave height is small from 3-variant and it is large from 4-5 variant.From graphic analysis, we can see coefficient diameter of wave height of warp. Types of weaving, amount of yarn diameter of warp and weft and affect yarn sequences of the phase structure.

IV. CONCLUSION AND FUTURE WORK

In conclusion, if the structure of the yarn is similarbut weaving is different, that linen is relatively to atlas 8/3 and coefficient diameter is small, wave height of warp will be higher.If we look weft wave height of $K_d$from 2-table according to the theory"Coefficient of diameter legality",coefficient of diameter increase together with the wave height.



2- Graphic affect of$K_d$to the structureof phase.

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To conclude, if thickness of weftyarn is higher from warpyarn, it will get improved to 8-9 phase.That it means wave height of warpyarn will be higher and warpyarn will be on the surface of the fabric.Such situation is very proper case in manufacturing adras. If ikat (abrband) ornaments of warpyarn are more on the surface of fabric, the decoration of them will be higher.From the analysis given above, 3-new versions recommended for production are wavelengths of adras and 1-2 varieties of warp silk are larger than adras wavelengths.Being between 7-8 phase of phase order of the 3-variant also means not to be difficulty in producing with loom.Adras fabrics producing do not study theoretically.The main aim of our research work was scientifically to prove formation of bright and dull adras and it was achieved.

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