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TECHNOLOGY FOR THE DEVELOPMENT OF RING-WOOL AVROVA FABRICS

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ABSTRACT

In this article, the technological processes of preparing warp, ground and warp yarns in textile weaving during the development of new types of woolen avrova fabrics are covered.

Keywords. Avrova fabric, specific density of threads, winding density, libit avrband length, weaving loom, weft fibers, warp fibers, strand, bobbin.

INTRODUCTION

In the conditions of the market economy, one of the important issues of today is to saturate the domestic market of our country and increase the export potential by producing high-quality fabrics of a new type and structure. The new "Method of making ring-wool fabric" that allows to expand the range of fabrics and improve their consumption requirements has been protected in the "Technology of Textile Fabrics" department of the Tashkent Institute of Textile and Light Industry.

In the production of traditional feather fabrics, two systems of warp and one system of weft yarns are often involved. In this method, in textile production, one system of warp yarns serves for ground warp, and the second system of yarns serves for feather warp yarns. It is also possible that the technological processes of preparing wool yarns and ground yarns for weaving can be in the same sequence. In the current method of preparing warp yarns for weaving, the yarns are rewound into bobbins, then they are carded, weeded and threaded. Weft threads are rewound. Weaving is done on a loom, where the warp and weft threads are installed on the loom and the pile fabric is made. The production of ground warp threads can be similar to the existing and new method. In a new way, feather warp threads are made by the avrband method.

Figure 1 below shows the technological processes of making feather warp yarns:

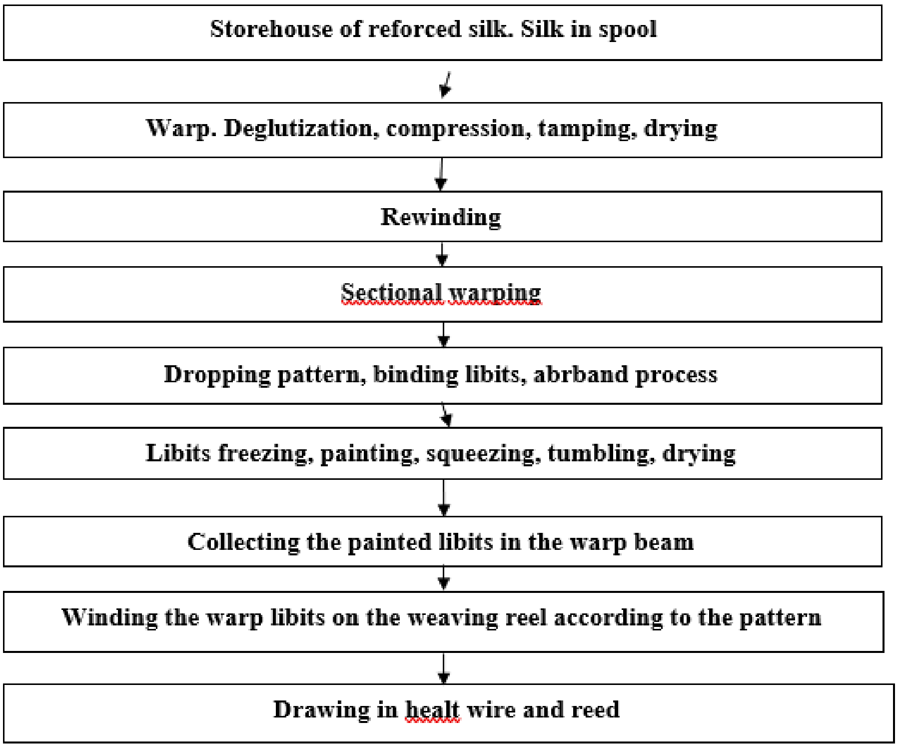


Figure 1. Technological processes of feather warp yarn production.

Figure 2 below shows the technological processes of preparation of weft yarns for feather fabric.

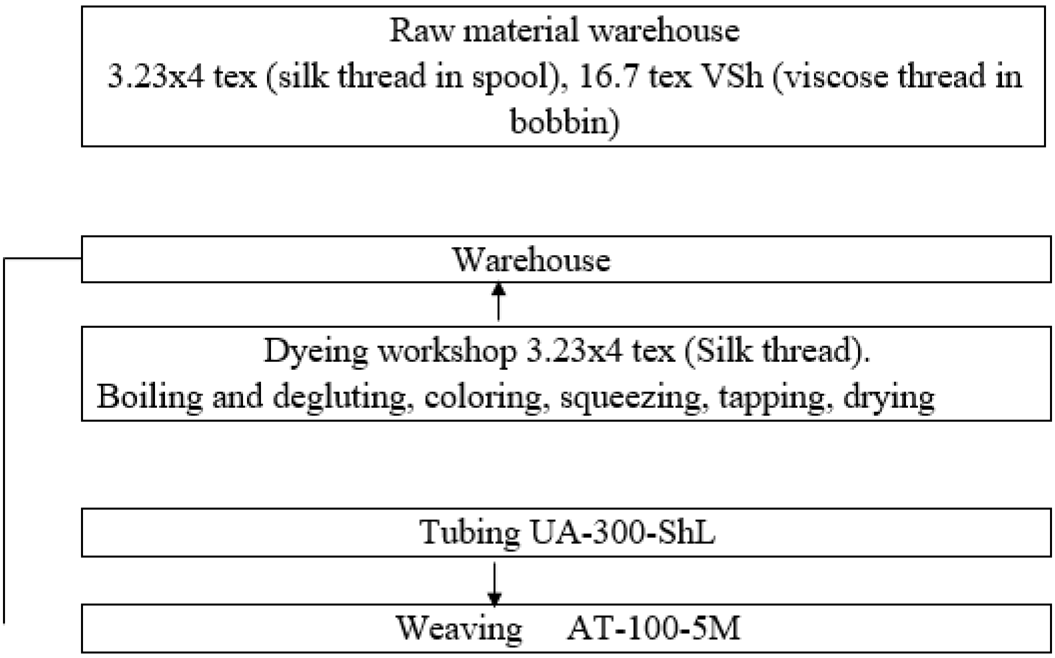


Figure 2. Technological processes of preparation of yarns of silk and viscose yarns for making feather fabrics.

Winding of Reinforced threads from a reel to a skein is done as follows. Boiled into cooked threads, it is wrapped in spools to be convenient for the next process for flour processing.

Reinforced silk threads are tied with cotton threads in three places. The linear density of these threads is 50 tex and the length is 20 cm, which prevents the threads from getting tangled. It also preserves the packaging structure during further processing. It is also possible to tie the spool with cotton threads on a special rack or spool wrapper.

The following are the main parameters for rewinding:

1. It is possible to set the size of the thread diameter checker cleaning control tool slot –A as follows:

$$A=\frac{(2,5\div 3,25)}{33,3}\sqrt{T} \quad \text{ёки } A=(2\div 2,5)\, d_{ип}; \qquad (1)$$

2. The tension of the thread during rewinding is determined as follows:

$$T=T_y+T_б+T_a \qquad (2)$$

In this case: T_b – tension created by the balloon; T_u – voltage generated from the conductors; Ta- the tension produced by the tensioning tool.

The voltage generated by the conductor can be determined by Euler's formula.

$$T=T_{1}e^{f\alpha}. \qquad (3)$$

Here: the voltage to the T_1-guide, s N; e-natural logarithm base is equal to 2, 718, f-the coefficient of friction of the thread with the guiding surface; a-the angle of thread coverage of the guide, in radians.

If there are several guides, then the value of α is equal to the sum of the angles of these guides. This tension leads Y.D. Yefremov to the following appearance in a dynamic state.

$$T=T_{1}e^{f\alpha}-mV^2(e^{f\alpha}-1) \qquad (4)$$

Here: m-thread mass in the thread-covered part of the guide; Linear density of V-yarn.

The tension created in the balloon. The tension created by the cylinder is calculated by the tension T_{ch}, the tension created at the largest radius of the cylinder T_r, and the tension at the top of the cylinder T_b :

$$T_b=T_{ch}+T_r \qquad (5)$$

S.P. Koryagin develops the theory of H.A. Rakhmatullin and recommends the following formula when twisting a thread in a coil and determining the tension force created in it:

$$T_p=T_{текс}V^2+\frac{Q}{2\sin \gamma o/2}$$

In which: linear density of T_{tex} yarn, in tex; B – the speed of the yarn when it is separated from the winding and the force resisting by clinging to the winding during winding; The force that resists sticking to the coil when twisting the Q-rope; the angle of the part of the go-yarn sticking to the package; In practice, it is difficult to find the resistance force Q in separating the thread from the winding analytically, so this force is determined experimentally.

N.P. Isakov expresses the tension Tr at the largest radius of the balloon as follows:

$$T_p=T_a e^{f\alpha}+m V_a^2+\frac{mV^{2mV_k^2}}{2}(r^2-R^2) \qquad (7)$$

Here: TR is the tension at the point where any radius of the cylinder is determined; V^2_a is the speed at which the thread is separated from the package; V^2_q – the linear speed of the yarn during rewinding; Ta is the force of resistance when separating the thread from the package;

f is the coefficient of friction between the winding and the tuft of the f-thread; a- the angle of covering the conical winding and the tuft with a piece of thread; m-mass of thread of a certain length; the distance from the point of r-rope separation from the tuft to the tuft axis; The radius of the R-balloon at any defined point.

With the help of this formula, it is possible to determine the tension at any point of the balloon. The first and second part of the formula is the indicated resistance force at the separation of the thread from the winding. The sum of the two components of the formula indicates the initial tension at the separation of the thread from the winding.

$$T_r = T_a e^{f\alpha} + m V^2_a \qquad (8)$$

The indicators in the last part of the above formula determine that the tension of the thread increases from the direction of the thread in the cylinder.

The maximum tension at the top of the balloon when R=0 is defined as:

$$T_б = T_a e^{f\alpha} + m V^2_a + m V^2_r r^2/2 \qquad (9)$$

The tension after the tensioning tool depends on the type of tensioning tools, the zones of the tools. Below, we determine the tension after the puck tensioner using V.T. Kostitsyn's formula: Wb f(efa +1)

$$T_п = T_1 e^{f\alpha} + \frac{W_б f(e^{f\alpha}+1)}{1+\sin\left(\frac{\alpha}{2}+\beta\right)} \qquad (10)$$

Here: T_p is the tension of the thread after the tensioning device; T_1 - thread tension up to the tensioning device; f – the coefficient of friction between the thread and the bushing; a-the angle of thread coverage of the bushing; W_b is the pressure force along the brake axis, depending on the mass of the brake disk and the braking force, sN; b-the angle that depends on the ratio between the bushing diameter d and the brake disc diameter D

$$\beta = \frac{d}{D} \qquad (11)$$

The result of the above formula can be 6 ÷ 8 % of the breaking strength of the thread.

The winding density of the thread on the bobbin:

$$\gamma = \frac{G}{V}, \text{ гр/см}^3 \qquad (12)$$

Here: G- weight of the thread in the package, gr; Volume of thread in V-wrap, cm3.

Linear speed of thread in rewinding. If the threads are wound parallel to the winding, then the rewinding speed is determined as follows:

$$V = \pi D_{o'r} n \qquad (13)$$

Here: $D_{o'r}$ is the average diameter of the winding; n - is the number of turns of the winding.

If the threads are wound in a crest winding, the speed of the thread movement is determined as follows:

$$V = \sqrt{V_б^2 + V_r^2} \qquad (14)$$

In this case, Vb is the speed of progress in re-winding the thread into the bobbin; iio+- thread allocator copy rate.

M-150-2, Avtokoner, Murata for equipment:

$$V_б = \pi d n_{bar} \qquad (15)$$

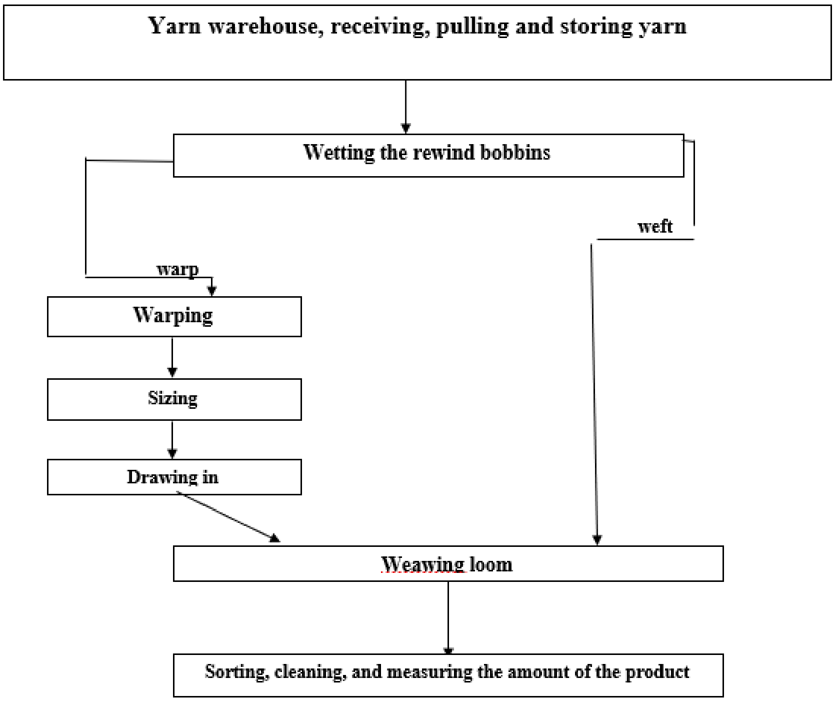
$$V_т = h n_{bar} \qquad (16)$$

Here: d-rewinding drum diameter; n_{bar} - the number of revolutions of the rewinding drum, min-1; - pitch of the drum screw groove, mm.

Now the formula can be written in the following form:

$$V = n_б \sqrt{(\pi d)^2 + h^2} \qquad (17)$$

On the loom, the thread for feather warp is installed on a special weaving reel. For the ground thread, the thread is prepared in a separate weaving reel and installed on the loom.



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