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OPTIMIZATION OF STRUCTURE OF TERRY FABRIC

Neuskikh V., docent, c.t.s., Kviatkousky D.
Vitebsk State Technological University, Vitebsk, the Republic of Belarus

The purpose of the work is definition of optimum structure of terry fabric for decrease in consumption of the loop warp and quality improvement. The studies were performed in the design of towels "Assol", produced from cotton yarn 25 tex × 2 in the warp and 29 tex in the weft in a production environment of company «Rechitsa textil».

To form hinge-weave yarns in any complexity based systems two threads are used - looped and ground that may be located in the tissue at a predetermined ratio – 1:1, 1:2, 2:2. Loopy fabric consists of two weaves – a weave of a ground warp with weft and an weave of a loopy warp with the same weft.

In modern terry fabrics with bilateral loopy effect on one of the parties the effect of the pile at the expense of cutting loops is created. Height of a loop is formed by the size gauss – distance from a fabric edge to the first laid the weft thread after surf through which both are nailed to the edge of the weft yarn forming element weave. We investigated influence of a type of the fixing weave and ratio of warp threads on formation of cutting loopy effect and structural parameters of fabric.

For formation of a uniform loopy surface it is necessary to have as often as possible loopy tufts (cutting loops) that semi-rep on a warp 1/2 is provided with fixing of a loopy warp in ground fabric on a weave. Use of an arrangement of threads of a warp at the ratio 1:1 (one ground, one loopy) promotes the best fixing of pile.

On the basis of theoretical design of loopy effect in terry fabric, according to schemes of structural fixing of a loopy thread, analytical expressions for determination of length of threads of the ground and loopy fabric going for formation

of a loop and calculation of their actual runner length are established. It is defined that the wave arrangement of threads in a loopy weave corresponds to about IX order of a phase of a structure at which threads a weft settle down practically at one level.

Length of a loopy thread in a loop of L_n (mm) depends on the gauss size of H formed at a soft battening, diameters of a thread a weft of d_y and loopy warp of $d_{o.n}$:

$$L_n = H + \pi\,(d_y + d_{o.n}) + d_y\,.$$

Length of the element of fabric created by one loop of l_{mk} (mm) is defined according to geometrical model of loopy effect.

$$l_{mk} = R_y \cdot d_y + d_{o.n} + 2\,d_{o.2}\,,$$

where R_y – repeat on a weft of a loopy weave.

As at a rigid battening of a thread a weft move on strongly tense threads of a ground warp, there is an insignificant shift and threads of a loopy warp that influences height of the formed loop.

Loop height of B (mm) is determined by a formula:

$$B = (L_n - \pi\,(d_y + d_{o.n})\,/\,2\,.$$

Runner length of the loopy warp (%) forming loopy effect

$$a_{o.n} = \frac{(H + \pi\,(d_y + d_{o.n}) + d_y - R_y \cdot d_y - d_{o.n} - 2d_{o.2}) \cdot 100}{H + \pi\,(d_y + d_{o.n}) + d_y}\,.$$

On the basis of the received theoretical dependences optimum structural characteristics of the Assol terry towels developed from a cotton yarn 25 tex × 2 in a warp and 29 tex in a weft are defined. The size of towels is 50 × 90 cm. Density of threads on a warp – 257 threads / 10 cm, on a weft – 190 threads / 10 cm, fabric weight – 365 g, the size of an runner length of a loopy warp – 300%, loop height – 4 mm.

PILOT STUDIES OF PARAMETERS OF THE STRUCTURE OF SEMI-LINEN COSTUME FABRICS

Samutsina N., associate professor, Kazarnovskaya G., associate professor
Vitebsk State Technological University, Vitebsk, the Republic of Belarus

For the last years keen interest of consumers in natural fabrics in clothes, including linen has been noted. The Republic of Belarus holds worthy position in terms of output and the amount of export of linen materials in the world market.

Linen is a peculiar brand according to which this fiber can justly be associated with our country. The linen household range needs to be updated due to formation of new structures of fabrics.

Proceeding from it, relevance of creation of competitive textile materials on the basis of flax is obvious. It will lead finally to increase in import substitution and