

## **RESEARCH OF METHODS FOR THE DEVELOPMENT OF KNITTED COATINGS FOR EXTENDING THE ASSORTMENT OF PRODUCTS OF DRESS AND COSTUME PURPOSE**

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### **ABSTRACT**

Improving the heat-shielding properties of this type of knitwear can be achieved by increasing the length of the pile, as well as the production of double-faced knitwear. It has now become obvious that, thanks to the development of a knitted fabric with double-sided pile, it is possible to significantly expand its area of application, replacing some pile fabrics. The possibilities of using double-sided plush knitted fabrics that have a beautiful appearance, a clear neck, high heat-shielding properties are diverse. From an economic point of view, knitting plush knitwear is advisable, since with the same consumption of raw materials, plush knitwear is thicker than other types of knitwear, and therefore has improved heat-shielding properties.

This article considers the problem of finding ways to knit plush knitted which would allow to reduce the jamming of the thread and ensure the normal process of knitting without increasing the diameter of the needle cylinder machine. Also as a result of the study revealed that in the method of plush knitwear production with the location of plush broaches on the front side provides higher heat-shielding properties of knitted fabric and products.

**Key words:** plated plush knit, thermal properties of products, plush sticking, based on the flat.

### **INTRODUCTION**

Plated plush knitwear recently found wide application for the manufacture of knitwear with high thermal properties. Unlike all types of knitwear, plated plush knitwear has such a structure that creates an increased volume. The plush surface is formed due to the elongated plush sticking, knitted together with the ground threads, as a result of which the plush sticking has a rather strong fixation in the ground. When processing high linear density yarns, a plush knit can be quite stable, able to maintain a high volume during operation for a long time, providing enhanced thermal properties of the product.

Other positive properties of a knitted fabric are its fluffiness and softness, which is very important in the manufacture of top, warm clothes and socks.

Plush fabrics are produced both woven and knitted depending on their purpose. It should be noted that woven plush (looped and split) is used for making dresses, warm outerwear, decorative items, etc. Compared with knitwear, woven plush has a more form-stable ground structure; however, its production methods are complex and therefore inefficient.

The structure and methods of making knitted plush have great advantages over the structure and methods of producing woven plush.

The advantages of the production of plush knitwear - ease of getting of both looped, and split plush and high performance equipment. In the manufacture of plush knitwear, it is easy to regulate the consumption of raw materials, the thickness of the knitwear by changing the length of plush sticking, and also to reproduce various patterns on the canvas, using raw materials with different properties and different colors.

In the manufacturing of products from plated plush knitwear eliminated the disadvantages that are in the manufacture of products from knitwear lined weave. Plated plush knitwear does not require napping, so it can be used in the production of piece goods, whereas the tucking process for piece products made of lined knitwear is difficult. In this regard, the field of application of plush knitwear is very wide. From it could be make warm linen and top products, coats and fur coats (faux fur), carpet, decorative products and products for technical purposes.

So, plush knitwear used for underwear should have high heat and hygroscopic properties. Knitwear, used for warm outerwear, is usually produced with an elongated pile (faux fur) and, in addition to high heat-protective properties, should have a firm fixing of plush loops in the ground structure and the pile location close to the normal.

Plush knitwear used for technical purposes, depending on the specific purpose, should have a certain density of the pile, high thermal properties or durable fixing of the plush thread in the ground structure.

## **MATERIALS AND METHODS**

In this work, we use the method of making a plush knit on the basis of the surface with the location of the plush broaches on the front side.

Plated plush knitwear by a combination of the elements of the basic weave can be obtained on the basis of the main, derived, patterned and combined weaves. In addition, plush knitwear can be slur and warp knitted. According to the method of arranging the plush sticking on the canvas, a plush knit can be with one-sided (front or back) and double-sided pile, in the form of the plush sticking, looped, split and fur. In addition, the knitwear of plush weaves can be smooth and patterned.

Unilateral paid plush knitwear, produced on the basis of the main weaves, is obtained by introducing a plush thread into the structure of a smooth surface, an eraser, or a worn smooth surface. In this knitwear, plush sticking can be formed both on the outer side and on the front side, but more often knitwear is produced with the arrangement of plush sticking on the wrong side. Fig. 1 shows the structure of the slur smooth plaid plush knitwear, obtained on the basis of the smooth surface, with the location of the plush broaches on the wrong side. Each row of knitwear consists of loops of ground 1, formed from a ground thread *a*, and plush loop loops 2, formed from a plush thread *b*. The skeletons of plush loops can be on the back or on the front side of the canvas, depending on the type of machines that produce knitwear.

In the presented sample, the loops of the ground are located on the wrong side and have a normal length of platinum arcs, and the skeletons of plush loops are located on the front side and have elongated platinum arcs that form a pile on the wrong side.

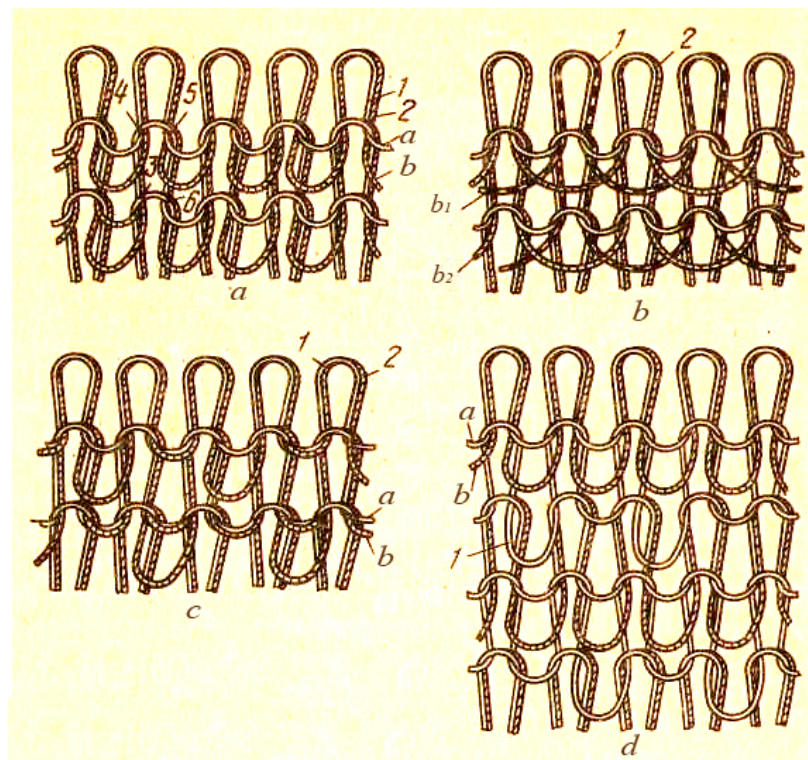


Fig. 1. The structure of knitwear type G/PIPO

The plush thread is knitted together with the primer in the loop and when the plush loop is pulled out of the knitwear structure in the event of rupture, it experiences friction about the loop of the ground in the skeleton along the entire line of contact. In addition, the plush loop will be at points 3 and 6 in contact with the loops that form the previous row and at points 4 and 5 with the loops forming the next row of knitwear. Plush knitwear without patterned effects has a smooth front and wrong side, since the cores of all the loops are formed from two threads - *a* and *b*. This knitwear has high thermal properties and is widely used for the manufacture of underwear, top and hosiery.

This paper [1] proposes a method for producing a plush knit on the basis of the smooth surface with the location of plush sticking on the front side. Knitwear is produced on the Malès car in the usual way, i.e. plush sticking is formed by using platinum with two necks on the machine. Translation of plush sticking from the wrong side to the front is practiced by using a jet of air. In this knitwear, plush sticking, pulled from the wrong side to the front side, will be shorter than that of a simple plush, as while dragging, a part of the plush sticking will remain on the wrong side. The formation of plush sticking on the front side can be used in the development of bilateral plush knitwear.

## RESULTS AND DISCUSSION

By the look of plush sticking, plush knitwear produced on the basis of the main weaves can be looped, split and fur [1].

The pile frequency of the plush knit, obtained on the basis of the smooth surface, is equal to 1. This means that each loop of the ground corresponds to one plush sticking paper solves the problem of finding such knitting techniques for plush knitwear, which would

reduce the pinching of the thread and ensure the normal knitting process without increasing the diameter of the needle cylinder of the machine. For this purpose, it was recommended several variants of the structure of a plaid plush knit on the basis of the smooth surface, one of which is a flip-flop, the structure of which is shown in Fig. 1, b. Plush loops 1 and 2 are formed from bi-BG plush threads alternately through a hinge column, so plush sticking connect the cores of the plush loops through a needle. Plush loops are fixed in the structure of the ground in the same way as in the usual plush knitwear. Flip flops can be either complete or incomplete. In full reversible plush (see Fig. 1, b), each row is formed from three threads (two plush and one ground), and in the incomplete row - from two threads (plush and ground). The number of plush sticking in full reversing plush is equal to the number of ground loops in knitwear, and in incomplete those two times less.

In the incomplete reversible plush, the plush loops in the knitwear structure can be arranged along hinge columns (without shearing) or in a checkerboard pattern (with a shearing).

The disadvantages of incomplete reversible plush are uneven thickness of knitwear as a result of alternating cores of loops of one and two threads and lower thermal properties compared to ordinary plush, due to the reduced density of the pile on the surface of the canvas. But the consumption of raw materials in the production of such knitted fabric is much less than in the development of the usual plush knitwear.

The advantages of a full reversible plush compared to incomplete are the uniform thickness of the cloth, twice the thickness of the pile, the best thermal properties, and in comparison with the usual plush knitwear - the reduction of pinching of the plush thread during cooking. The disadvantage of making a full reversible plush is the increased length of the loop-forming system.

Another option: plush knitwear, developed on the basis of the surface, where the plush thread forms the cores of the loops on all the needles in a row, and plush broaches - through the needle (Fig. 1, c). This knitwear was called combined plush knitwear. Each row of it consists of loops of ground formed by thread a, and plush loops 2 formed by plush thread B. In such knitwear in those places where the plush sticking is not formed, the plush thread is tied into the structure of the ground as usual. Thus, the plush loop turns tied together with the dirt one in the skeletons of two loops. Combined plush has more solid fixing plush sticking in the structure of the ground than in the above considered plush variants. However, since plush sticking are formed through a looped column, this knitwear has lower thermal properties [2].

In order to increase the stability of the looped structure and reduce the consumption of raw materials in [3], it is recommended to produce a plush knit on the basis of the smooth surface when alternating a plush looped row with a smooth one. In this knitwear, plush sticking are formed through a looped row, i.e. in one loop stitch, the plush thread is knitted with a ground one and forms plated loops, and in the next row the plush thread is knitted with a ground one and forms plush loops.

Another type of knitwear of this type is plush knitwear, in which the plush rows alternate with smooth ones; at the same time the smooth looped row can be formed only from one ground thread or plush. The disadvantages of such knitwear: lower thermal properties compared with the usual plush knitwear, the appearance of transverse stripes on the canvas due to the presence in the structure of the knitwear smooth looped rows.

In order to improve the quality of knitwear by increasing the thickness of the plush cover in [3, 4], it is proposed to produce a plush knit fabric on the basis of the smooth surface, in which smooth rows, knitted from a single ground thread, form plush sticking in some areas. The structure of this type of knitwear is shown in Fig. 2, d. Knitwear consists of plush and

smooth looped rows. The plush row is formed from a plush thread b and a ground thread a, and a smooth row is formed from a single ground thread a.

### **CONCLUSION**

The presence of elongated sticking in some areas of the smooth looped row increases the thickness of the plush cover and increases thermal properties of the knitwear. But it should be noted that due to the absence of the second connecting thread in the second loop stitch, the elongated looped sticking *l* formed from the second ground thread will easily pass into the skeleton of the loop, forming enlarged loops in the canvas. Therefore, this method of producing soft knitwear cannot be recommended to improve thermal properties of the knitwear, it can be used to create a patterned effect on the canvas.

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