

The development and application of superfine shaped acrylic fiber on Bedclothes

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Abstract. The paper use new environmentally friendly raw materials superfine shaped acrylic fiber as weft and silk as warp to design the weaves and patterns on fabric .The products designed is suitable for developing into bedclothes fabrics with good air permeability and thermal performance.

Introduction

With clothing culture worldwide prevalence and popularity, bedroom culture has quietly formed, monochromatic, fresh features a pale, back to nature and other fashion awareness has been imported textile products^[1]. On designing emphasis local and inherit and carry forward the traditional culture. The design of Chinese community should reflect themselves on the current design .If the design of bedclothes blindly pursuit nationalization and localization, it is not easy to be accepted by most people. So the nation's thing should combine to the nation's modern culture and it will be able to go further. Traditional elements and modern elements are in the pursuit of pure, generalization, honest, forthright emotions, which paved the way for a combination of traditional and modern art^[2].

1 Design Concept

1.1 Ideation

Usual bedding plays a vital role for people's everyday sleep. In order to create a comfortable sleeping environment for enjoying sleep, it is particularly important to choose comfortable bedding materials to keep warm and absorb sweat. Germany dralon ® Co. Ltd. produces superfine shaped acrylic fiber by dry spinning technology. It is a new concept of superfine shaped acrylic textile raw materials based on performance improvement and choosing the good to evil on conventional Acrylic fiber. The surface of fiber is smooth and cross section is dumbbell-shaped. The fiber is a new fiber material with fine, shaped performance and it is low-carbon environment, too. Fibers have the soft, stiffness, dry-breathable and good thermal performance. To ensure enough good quality of sleep, good thermal performance and moisture permeability the paper went to the weave and patterns design. The warp yarn is silk and the weft yarn is superfine shaped acrylic blended with viscose yarn. This fabric is not only able to meet the basic requirements for bedclothes, but also has good flexibility, anti- wrinkle properties and thermal performance and good dye-ability. In

addition, superfine shaped acrylic blended with other materials is almost no finishing and no deformation after washed.

From a distance one can see the color and can see flowers from the vicinity, so the color of bedding played a decisive role on the effect^[3]. Different tone gives people different psychological feelings. According to the consumption on the situation in previous years, the public will generally choose bedding with smarter and low purity color. And in this environment people is easier to relax and feel at ease. So fabric, pattern and color are indispensable three parts in the design process. In the choice of color warp yarn is beige and weft yarn colors are lavender and bluish purple. The effect of color combined is elegant, quiet and comfortable.

1.2 Design introduction

In modern time bedding has already been a new concept that it is multi-functional aspects of development from the basic utility functions gradually into decoration, landscaping, health care function. In today's rapid economic development people pay more attention to the spirit of enjoyment, hi-tech, environmentally friendly products. And they are increasingly being accepted by the people. Growth rings matched with different colors make people have a sense of depth and beauty. And then organize the ancient dress pattern elements and integrate with the natural growth rings. This has a fresh closing to nature and no shortage of modern breath. There is obvious texture on the growth rings and then the growth rings match with different color level. This situation makes the natural beauty all appearance and people feel comfortable as if surrounded by nature. Ancient dress of elements makes thick cultural flavor and this atmosphere can fully reflect the Chinese culture long lingering.

2 Design content

2.1 Fabric Design

(1) The process of fabric production

The warp: Materials testing—Dipping—Coning—Twisting—Stereotypes—Doubling—Twisting—Rewinding—Dyeing—Color inspection—Rewinding—Warping—Weaving

The weft: Materials testing—Rewinding—Dyeing—Color inspection—Rewinding—Weaving

(2) Fabric Parameters

Warp threads (1/22.2/24.4dtex 8T/cm • Z × 2) 7T/cm is made of silk (Beige), weft threads has two groups .one group is made of light blue blended yarn containing 50% acrylic and 50% viscose, and the density of blended yarn is 147.6dtex. Another group is made of in purple blended yarn containing 60% acrylic and 40% viscose, and the density of blended yarn is 147.1dtex. The warp density was 1100 /10 cm, and weft density was 580 /10 cm. Fabric organization is double weft fabric, weft color is blue purple and purple. The base organization is based on the two groups weft threads combined with 8 gold satin, one color is two groups of weft joint 16 sateen, the remaining surface organization is 16 sateen and change of organization, the inner layer adopts 3/1 right twill and 16 gold satin as well as change of tissue. Two groups of weft in warp to reconcile express the rich and transition of natural color feeling. Fabric surface shows a three-dimensional effect on bump, which rich a sense of hierarchy of fabric.

2.2 The design of pattern

According to the design inspiration, I find the right material, and then manufacture in jacquard loom. The main pattern is as figure 1 and the auxiliary pattern is as figure 2.



Figure 1 The main pattern



Figure 2 The auxiliary pattern

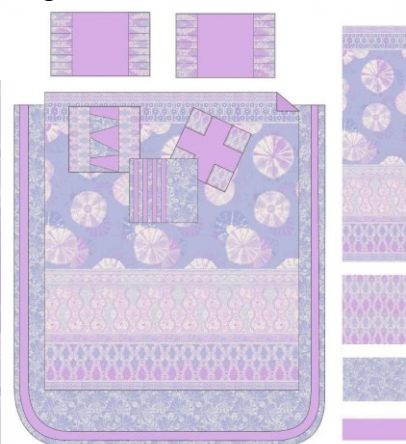


Figure 3 Simulation diagram of the overall effect of bedding

2.3 The overall effect of simulation

Simulation diagram of the overall effect of bedding is as the Figure 3. Now the bedding products involve three sets, four sets and even more. Six sets are more commonly used, which contain two pillows, two back cushions, a bed sheet and a quilt cover. The style of Jacquard products is simple and natural, so the target group is the youth while the style of printing works is youthful and fashion, whose target group is a young girl. Home is a warm harbor, and the bedroom is the most relaxing place at home. For the modern people with intense work, it is very important to choose a natural and comfortable bed products which could make you relax and feel very comfortable.

3 Real renderings



Figure 4 Real renderings

According to the design pattern above, the right fabric was manufactured by jacquard loom, showing as figure 4. Then the fabric was used to produce bed sheets, quilt cover, pillow, back

cushions. Finally, The appearance of product is luxurious, while the fabric not only has good affinity to skin but also has better flexibility and crease recovery, so it will has a large market in the high-end bedding product.

4 The conclusion

Based on the fact above, the fabric is made by the use of silk as warp and blended yarn of fine profiled acrylic fiber and viscose fiber as weft .The bedding products made of this fabric have bright color, elegant luster, good performance of warm and hygroscopicity .It could be used in high-grade bedding.

Supplementary

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