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The design and the development of shading jacquard fabrics for curtains

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Abstract. This research use a reasonable mix of materials and the structures to achieve highly shading performance of curtain fabrics. Choosing jacquard double layers structure and black passee as layer parallel with ratio of 2:1:1. Meanwhile, the thesis puts forward a pattern of the shading curtain fabrics. It has two series of color, the spring & the summer color and the autumn & winter color. To show the matching effect of the curtains, photos of indoor simulation by 3DMAX has made. Then the pattern samples were woven. Shading performance of samples were tested and analyzed. Finally a product simulation curtains were produced. Through the test of fabric shading, the shading rate is over 98%, which proves that they have good shading performance. And the average shading rate is over 99.4% which meet the full shading standard.

Introduction

Curtain fabrics have appropriate shading performance can fully show the characteristics of the comfortable, safe, elegant and generous. Has appeared on the market of shading sex curtain are mostly anti-glare coating fabric[1,2] and weaving shading fabric [3]. By contrast shading jacquard fabrics with double layers are processed without printing and coating which are environment friendly and can reduce the cost. At the same time, the pattern of double cloth will be more diversity which can satisfy the pursuit of comfort, health and environmental protection.

In the design of curtain fabric, pattern style, color collocation and design need to conform to the indoor style through artistic inspiration and rational thinking. Which can complement each other to build a harmonious aesthetic feeling [4]. At the same time, the curtain fabrics are offen changed by the seasons. The warm color department such as red and yellow are are chose in winter. The cool color department such as blue and green are offen chose in summer. With the frequency of use and replace gradually improved, curtain fabrics will lead to a broader market.

Combined with the market popular patterns and the international trend of color, this paper develop a shading curtain patterns. Each pattern is divided into summer and winter two color matching, and indoor simulation is made. At the same time, the pattern samples were woven and shading performance were tested and analyzed. By this way can provide a theoretical reference for shading jacquard curtain fabric product development.

Design

Design ideas. In order to improve the shading performance of curtain fabric, jacquard and dobby are composed as the weaving machinery. The double layer structure is chose to increase the fabric tightness and thickness [5]. General requirements of double-layer structure curtain fabric is

that warp yarn density must be exquisite and weft yarn must be straightforward. Mainly through colorful weft yarn shows designs and patterns. Therefore it not only has good shading performance, has aesthetic feeling at the same time. In addition, also need to consider raw material factors of the curtain fabric such as cost, quality and supply [6]. Color , pattern and style matching is very important to design curtain fabric. Color matching design include the following factors that is the color led, the color contrast and the color modulation. Pattern matching design include followings that is matching design with the same color motif, matching design on the basis of contrast color, matching design with certain color but different tone, matching design on monogram, matching design with repetitive patten and matching design with plus-minus pattern [7].

Inspiration. Facing the pressure of modern life we seek spiritual sustenance to achieve peace of mind and body. Pattern inspiration comes from the Middle East. It is a common regular permutation, in the form of bar rules to stretch the height of the curtain fabric, also increase household indoor space. In addition, deformation patterns of the artistry of flowers is the main elements. Through the density of arrangement, It creates a quiet and peaceful life environment. Grey and blue as the spring & the summer color let us gradually relax in the restless life. Orange department as the autumn & winter color show a warm feeling with the soft winter sun. Draft design of pattern and color is shown in Fig. 1 and Fig. 2.

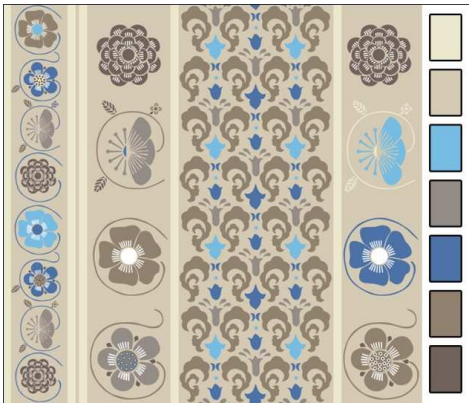


Fig. 1 Color combinations of curtain pattern in spring and summer

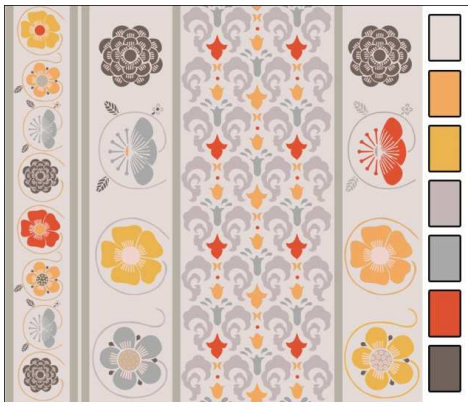


Fig. 2 Color combinations of curtain pattern in autumn and winter

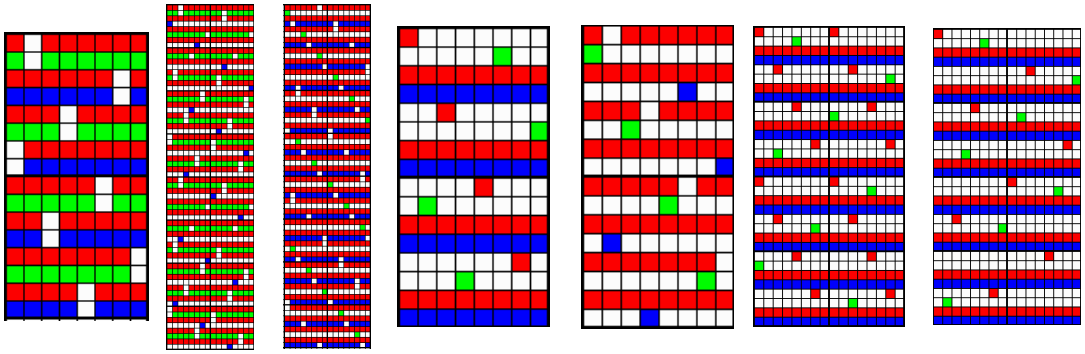
Specifications. Specifications of fabric process design is shown in Tab.1.

Tab. 1 Specifications of fabric process design

name of article	shading jacquard fabrics for curtains
Finished product specifications	Outside fabric width：282cm； Inside fabric width：280cm； end spacing：150 /cm； density of weft：76 /cm
warp material （A warp yarn: B warp yarn=1：1）	83.3dtex /36F DTY polyester yarn （top beam ） 83.3dtex/36F DTY polyester yarn（underneath beam）
weft material （A weft yarn: B weft yarn: C weft yarn = 2:1:1）	A weft yarn：166.7dtex/48F DTY polyester yarn（black） B weft yarn：333.3dtex/72F FDY polyester yarn（red） C weft yarn：333.3dtex /72F FDY polyester yarn（white）
Weaving specifications	width in outside reed：302.63cm； width in inside reed：300.8cm
Weaving machinery	3104 needles Electronic jacquard machine；
Post-processing technology	colored-and-weaved fabric：Open-width finalize the design

Design draft. Layer weaves with center stitching is used and the black weft yarn is placed in the inner layer of fabric, which play a role of covering light [8]. The inner organization is eight sateen. Surface pattern is determined by the different organizations which are formed by warp and weft interlacing. Design draft of front organization is shown in table 2.

Tab. 2 Design draft of front organization

color number	1	2	3	4	5	6	7
front organization							

EP file, effect drawing and end product. EP file of the patten is shown as Fig. 3. The thesis has also made photos of indoor simulation by 3DMAX to show a real effect of the interior design, which are shown in Fig. 4 and Fig. 5. Photos of shading jacquard fabrics for curtains are shown in Fig. 6 and Fig. 7.

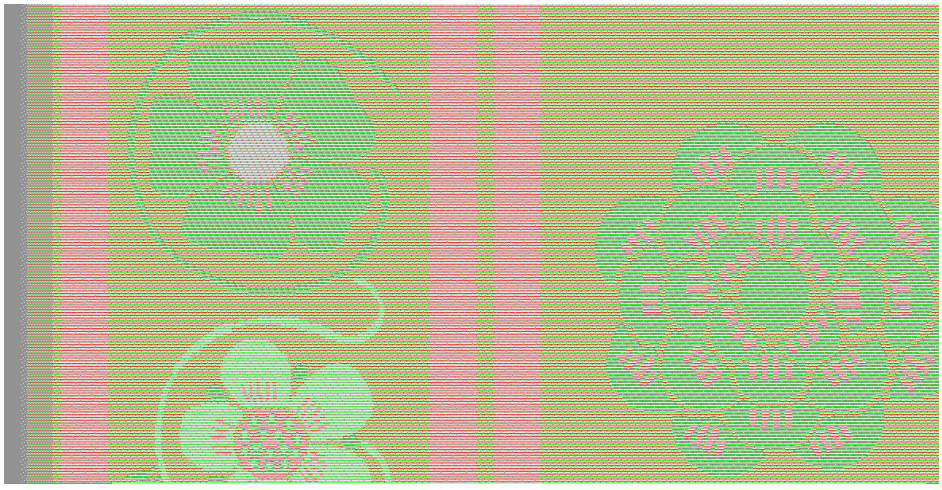


Fig. 3 EP file of the patten

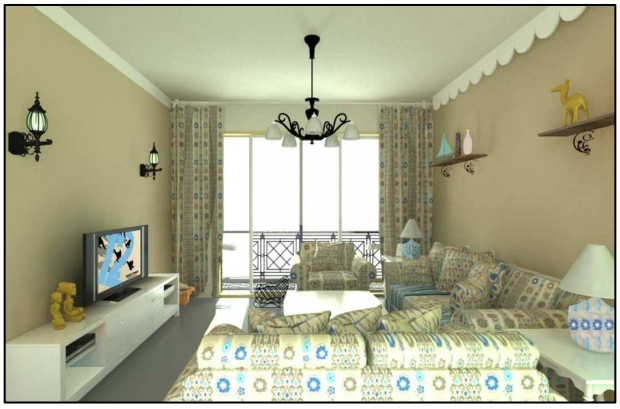


Fig. 4 Effect drawing of bedroom simulation in spring and summer

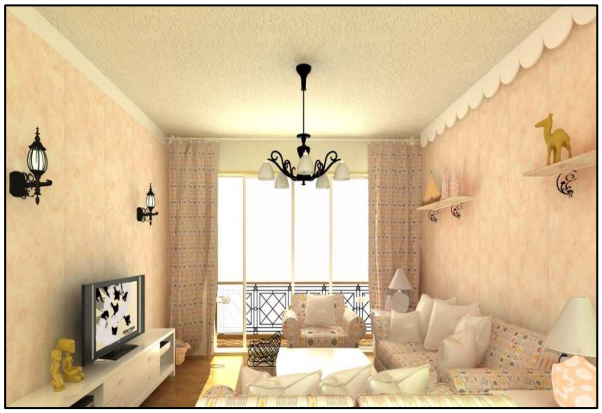


Fig. 5 Effect drawing of bedroom simulation in autumn and winter

Fig. 6 The product of curtain (I)

Fig. 7 The product of curtain (II)

Conclusions

In this study, choosing double layer structure and back weft as layer parallel are effective to achieve highly shading performance of curtain fabrics. Shading performance of samples was tested and analyzed. It concludes as follows. The shading rate is over 98%, which proves that they have good shading performance. When the fabric color is darker, the average shading rate is over 99.4% which meet the full shading standard.

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