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(54) **FLOCKED FABRIC PRINTING**

Bedrucken von beflockten Geweben

PROCEDE D'IMPRESSION SUR DU TISSU FLOQUE

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Description

Background of the Invention

The present invention relates to improvements in printing fabrics such as flocked fabrics or velvets, although it is also applicable to other types of fabrics.

Velvets and flocked fabrics have a substrate with the fibers standing up from the substrate, which give the fabric a soft, luxurious, fluffy feel. These fibers also, however, cause problems when it comes to printing the fabric with a decorative pattern or other pattern. That is, since the top surface of the fabric has vertically extending fibers, it is difficult to thoroughly print the fabric without having grin through of the substrate and other undesirable attributes.

This has typically been alleviated by using a very high wet pick-up of dyes and print materials on the fabric in order to achieve thorough saturation of the fabric with the dyes and other print materials to be used. In a print, however, it is important to obtain registration between the various colors to be printed in the pattern, and this is made more difficult by the presence of the nap on the fabric. Where one color should end and the other begin cannot be as precisely defined on a napped fabric as a flat fabric.

As a result, it has become commonplace in printing fabrics of this type to use blotches as one of the colors of the print. A blotch will tend to be a predominant color in the print, constituting a background for the most part. Blotches can be either fitted or full, and the desirability of one or the other depends upon the nature of the pattern to be printed. Where the other colors of the pattern tend to be contiguous so that they are working together forming a contiguous print, a fitted blotch which covers all the other areas of the fabric is suitable. Where the pattern is more dispersed, a full blotch is used in which the printed and unprinted areas are overprinted by the blotch in order to obtain thorough coverage. In a full blotch, a resist is added to the print paste for the print pattern in order to prevent the blotch from fixing in the areas of the pattern. Then, when the fabric is washed following fixing, the excess dye from the blotch will be washed away.

However, some of the dye from the blotch will, inevitably, fix in the areas of the print, darkening the print and giving it a muted or muddy look. As such, prints on napped fabrics of this sort tend to be dark and the colors not particularly distinctly defined, due to some presence of the blotch.

It is known to apply a solid color dye to fabrics of this sort followed by application of a print pattern with a print paste having a discharge agent which takes away the "blotch" color and replaces it with the desired color in the area of the print. This is known as discharge printing, but still achieves only relatively muted shades. It is known in some circumstances to also apply a gold overlay while applying the discharge print paste, but such

gold overlay constitutes a thin, not strongly adherent top layer of gold to the tips of the fibers. The gold is, accordingly, not very wear-resistant. Furthermore, the cost involved in the two-step discharge printing is considerable.

Accordingly, there is a need in the art for a napped fabric having improved color brightness and distinctness in its print, and an improved process for manufacturing such fabric on a cost-effective basis.

DE-A-2358453 discloses a composition for coloring a textile substrate. The composition comprises a dispersion or emulsion of a pigment in a polyurethane latex adhesive, and is prepared by combining a urethane latex with a small amount of melamine or urea-formaldehyde resin, a suitable catalyst to cure the resin, a surfactant, a silicone emulsion and an alcohol. The pigment, dispersed in water, is then added. The silicone improves the hand of the finished material.

US-A-2308429 describes a technique for coating a flocked fabric. The coating reduces absorbency of the flock fibers so as to facilitate subsequent surface treatment using a coloring composition. The coating material has a base of suitable plastic or resin material and contains a slip agent and a pigment.

Summary of the Invention

The present invention fulfils the aforesaid need in the art by providing a fabric having colors with long wearing capabilities comprising a textile substrate, raised fibers on said substrate, an opaque particulate colorant adhering to said raised fibers and arrayed on said fabric to form portions of a printed pattern, a dye other than said opaque particulate colorant arrayed on said fabric in other portions of said printed pattern, and a melamine-latex binder composition which adheres said opaque particulate material to said fibers, and in which melamine and latex are cross-linked, and a resist to cause said other dye not to dye the fibers in the area of said melamine-latex binder composition. The fabric may be a flocked fabric, in which the raised fibers adhere to the substrate. Alternatively, the fabric can be a velvet fabric, in which the raised fibers extend from yarns in the substrate. Other napped fabrics may also be used.

Examples of suitable opaque particulate colorants are gold, bronze, pearlescent metals and titanium dioxide. The colorant adheres to the fibers strongly enough to show only very little wear after 15,000 cycles on a Wyzenbeek abrasion test.

In a particularly preferred embodiment, the dye is provided in a blotch, either fitted or full, which assures full coloration of the fabric. The resist, however, minimizes the fixing of the dye from the blotch in the areas of colorant. When the colorant is white, such as titanium dioxide, the whiteness counteracts color from the blotch which may fix, brightening the print.

In a particularly preferred embodiment, the fibers are dispersed-dyeable, and a disperse dye is included

in the opaque particulate colorant to dye fibers contacted by the opaque particulate colorant. This can be used with a blotch to good effect. When disperse dyes are used in the colorant with a blotch, the white particulate colorant lightens the fibers to counteract darkening caused by the blotch, so the color from the disperse dye is more apparent.

The invention also provides a process of printing a fabric having a textile substrate and raised fibers on said substrate to achieve a long wearing coloration of the fabric, the process comprising making up a print paste of an opaque particulate colorant and a latex-melamine binder composition including mixing the colorant, a latex solution, a melamine solution, a catalyst for the latex-melamine binder composition, and a resist which inhibits fixing of dyes which dye differently from the print paste from dyeing the fabric contacted by the print paste, applying the print paste to the fabric to form portions of a printed pattern in a wet-on-wet printing process which also includes applying dyes which dye differently than the print paste in the form of a blotch which covers at least some of the colorant, performing a fixing process on the dye which dyes differently than the print paste, and curing the latex-melamine binder system to adhere the opaque particulate colorant to the fabric. Preferably, the making up step includes mixing thickeners in the print paste in proportions to achieve a viscosity of about $15,000 \pm 3,000$ centipoise.

Typically, the curing step includes exposing the fabric to a temperature of at least about 149 degrees Celsius (300 degrees Fahrenheit) for at least about three minutes, although the curing is desirably correlated with the catalyst added.

The fixing step may take place between the applying and curing steps, or may follow curing.

Preferably the dyes which dye differently than the print paste are acid dyes, but other dyeing systems may be used.

In one embodiment the making up step includes adding a dye to the print paste. When the fibers are disperse-dyeable, the dye is preferably a disperse dye. The disperse dye is, of course, not affected by the resist added to the print paste which is effective to resist dyeing of the fibers with the acid dye.

Detailed Description of the Preferred Embodiments

The improved process and product of the subject invention are made possible by an improved print paste formulation which can strongly adhere opaque particulate colorant materials to the fibers of the fabric. The preferred formulation operates on the basis of a melamine-latex binder system, somewhat along the lines of other melamine binder systems used in the art in textile printing. However, the present formulation has been found to provide particularly strong wear-resistant properties for the particulate colorant on the flocked fabric.

A preferred melamine is the Cyres 963 melamine

resin solution available from American Cyanamid Co. of Bound Brook, NJ. A preferred acrylic latex solution is Hycar 26419 available from B.F. Goodrich Co. of Avon Lake, Ohio. These are generally blended in an aqueous solution with a carboxylated thickener-solution, preferably 957 Paste available from Polymer Industries, Div. of Morton-Thiokol of Greenville, SC. This three-component system is further combined with a catalyst for the latex melamine cross-linking necessary for the binder system, and a preferred catalyst is paratoluene sulfonic acid (PTSA), along with a resisting agent which is Thiotan TR, available from Sandoz Chemicals Corp. of Charlotte, NC. These components can be blended together with a white RA paste of titanium dioxide available from Mobay Co. of Rock Hill, SC, which serves as the opaque particulate colorant. If desired, an additional colorant, preferably a disperse dye, may be added to this paste, with the disperse dye being provided primarily to dye the disperse dyeable nylon or polyester fibers of the flocked fabric.

Preferably, the Hycar 26419 is made up in a solution so that it forms a soft polymer, that is with T_g of about -30. In the process, the latex solution is added to the thickener and mixed together. Then, the melamine solution is added, followed by the catalyst. Then, the viscosity is checked and if too low, additional thickener is added to raise the viscosity to $15,000 \pm 3,000$ centipoise. This is followed by the addition of the resisting agent and the titanium dioxide. Agitation continues for 5 minutes or so to assure thorough mixing. A further viscosity check is undertaken and an additional thickener is added if necessary to raise the viscosity. This thickener is desirable for its good hysteresis properties, such that under a shear, it will readily flow and then return quickly to a viscous state. This characteristic is very helpful in screen printing, so that the print paste will be readily applied to the fabric, but then not migrate once it is applied.

The print paste described above is used for one or more colors in a multi-color wet-on-wet printing process, such as a rotary screen or flatbed printing process. Suitable apparatus for carrying out the process is commonly available in the textile industry, such as equipment available from Johannes Zimmer Maschin of Klagenfurt, Austria. If desired, multiple stages of the printing operation may be provided with a print paste according to this formulation or only one color may be with this formulation, with other stages being provided with more conventional print paste. Desirably, a last stage provides a blotch coverage, either a fitted blotch or a full blotch. Particularly with a full blotch, the resist agent which has been added to the print paste should be selected to resist fixation of the dyestuff of the blotch.

The fabric, having had the dyestuff applied in its patterns according to the various stages of the printing apparatus and the blotch, is then dried to reduce further migration of dyes. Depending on the nature of the other dyes applied, either the fabric is cured or fixed. When

the other dyes are acid dyes and other dyes suitably fixed by steaming, it is desirable to steam the fabric to fix those dyes. The resist in the print paste described above will prevent substantial fixation of the dyes from the blotch in the area of the print paste. Following fixation of those dyes, the print paste described above can be cured by exposure to dry heat at about 300-305 degrees Fahrenheit for three minutes. The curing causes the cross-linking of the melamine and latex to securely bond the particulate colorant to the fibers of the flocked fabric. The melamine and latex will support higher temperatures and cure faster, typically temperatures up to 350 degrees Fahrenheit, but such hot temperatures can have deleterious effects on the fibers, so that slower fixation at the lower temperature is preferred. The proportion and nature of the catalyst added will also affect the curing rate.

The fabric is desirably cured by passing through a tenter frame operating at a high enough temperature, so its residence time is effective to achieve curing of the binder system.

The cured fabric is then scoured to remove unfixed dye, including soaping in an alkali treatment. The fabric is then provided with a durable softener, preferably an amino functional silicone, followed by brushing with a nylon bristle brush to raise and smooth the nap.

It has also been found that the curing step can precede fixing.

In another preferred embodiment, the print paste binder system is made up of a hydroxy propyl methyl cellulose (HPMC), such as Methocel K4MS, available from Dow Chemical Co. of Midland, Michigan, a hydroxyethyl cellulose (HEC) such as QP300 available from Union Carbide Corp. of South Charleston, West Virginia. The preferred catalyst is again PTSA along with 92% water, to make a stock paste. This stock paste is made by first adding the HPMC and HEC to the water slowly under medium agitation. Then aqueous ammonia is added to raise the pH to 9.0 +/- .5 followed by the addition of the melamine resin and the catalyst.

To this stock paste is then added a metallic liquid in a pearlescent pigment. Suitable pigments are pearlescent particles available from EM Industries of Hawthorne, NY. Metals such as particulate gold or bronze available for M.R. Booth of Ashland, Massachusetts may also be used.

This print paste can be used like the other, although it desirably is applied as the last color or just before the blotch in the wet-on-wet process, so that the print paste is not adulterated with other materials. This enhances the brilliance of the metallic material being applied.

One of the advantages of use of the 957 thickener is that when its pH is 9 or so, it is highly viscous, as desired for its role as a print paste. When dried, however, its pH drops to about 2, which helps to fix the acid dye in the nylon.

One of the advantages of the HPMC for use with the gold printing is that as it dries, its viscosity increases,

which helps to raise the gold to the surface of the fibers so that it stands out and is more visible. This is to be contrasted with the role of most other thickeners which lose viscosity as they are heated and would tend to permit the gold to drop down toward the substrate where it would be less visible. Additionally, HPMC and HEC do not dry out rapidly on the printing screens, so that they do not lose their consistency over an extended printing run.

The following formulation has been found to be desirable as a stock paste for gold printing (all percentages by weight):

0.5% methocel K4MS
3.5 % QP 300
3.0 % Cyrez 963
0.5% PTSA 10% solution
92% water

Desirably, this stock paste is mixed 50/50 with the Hycar 26419 to make the print paste. The print paste may be combined in a 80:20 proportion with metallic liquid to make the print paste.

An alternative stock solution for gold printing is as follows:

4.0 Kg (8.8 lbs.) QP300
0.5 Kg (1.1 lbs.) HPMC
2.0 Kg (4.4 lbs.) Cyrez 963
1.0 Kg (2.2 lbs.) PTSA 10% solution
92.3 Kg (203.5 lbs.) water

This stock solution can be blended with the gold and the Hycar 26419 in the range of 9.1-20 Kg (20-44 lbs.) of gold, 44.9-40 Kg (99-88 lbs.) of stock and 44.9-40 Kg (99-88 lbs.) of 26419.

The same stock solution can be used for the titanium dioxide printing using a formulation of 20 Kg (44 lbs.) of titanium dioxide, 34.9 Kg (77 lbs.) of stock, 34.9 Kg (77 lbs) of 26419, and 10 Kg (22 lbs.) of Thiotan resist.

For the printing of colors, 84.8 Kg (187 lbs.) of stock can be combined with 10 Kg (22 lbs.) of 26419, 5 Kg (11 lbs.) of titanium dioxide and the amount dyestuff as desired to make a print paste.

The relative portions of the melamine latex binder and colorant compared with the thickener will affect the hand of the finished product. If desired to make a distinctly stiff hand, as may be desired to simulate embossed outline lines in the patterned fabric, a formulation of 20% titanium dioxide and 50% binder, along with approximately 30% thickener can be used. A softer hand is obtained with a 5% titanium dioxide, 10% binder and 10% resist formulation. The resist material tends to provide softness as well as resisting properties.

The fabric made according to the present invention is very wear-resistant and suitable for use as upholstery fabric. The fabrics printed with the gold have been tested in a Wyzenbeek tester for up to 15,000 cycles with only

very little wear being experienced.

The printing screens used with the above formulation will, of course, be dependent upon the particulate size being used, although there has been found that a 60 mesh screen is suitable for printing with the titanium dioxide, but the gold or pearlescent materials require about a 40 mesh screen.

The binder system of the present invention has been used with conventional pigmented materials with limited success. Apparently the pigments appear not to be bound to the fabric as strongly as the opaque particulate colorants.

One particularly preferred embodiment of the invention uses various positions of the printing mechanism to print various colors. Each color is provided by the print paste in which the titanium dioxide provides whiteness to the fibers. A disperse dye in each print paste penetrates the nylon fibers of the fabric to dye them a color which is highlighted by the adhered titanium dioxide. This provides a much brighter and luminous print, even when an overprint of blotch follows.

Typically, by the time the fabric has gone through all of the stages of the printing mechanism, it has 100-180% wet pickup.

The fabrics printed according to this invention are readily washable and dry-cleanable.

The effects obtainable with the invention are distinguishable from those obtained with the prior art. In a prior art fabric printing process coloration was applied to the fabric in conventional fashion, and the thus dyed fabric was discharge printed with discharge print paste and gold. In the resulting printed fabric the background coloration was muted, diffuse and not particularly distinctive. This does result in a highlighted gold, but it is an expensive procedure to make such a second application to already dyed fabric.

A fabric was made in accordance with the invention in which white lines in the pattern were applied using a white print paste as described above and the coloration was applied with conventional print paste, all in a single pass through a rotary screen printer. The resulting pattern was muted, but was highlighted by the strong opaque particulate colorant lines put down using the present invention. This provided a brilliant look to the otherwise muted fabric. In addition, the particulate material as adhered to the fibers caused them to have a slightly different texture than the other surface of the napped fabric to provide an interesting tactile effect, as well as the visual aesthetics.

Another fabric made in accordance with the invention was printed with a generally black blotch and overprinted in a wet-on-wet process with a relatively random gold spatter, using a gold print paste as described above. This resulted in a bold looking fabric with the black background being highlighted with the brilliant gold surface. A strip of the fabric was subjected to 15,000 cycles in a Wyzenbeek abrasion test: almost no change in the gold pattern was observed. The actual

fabric did show some wear, but still the degree of wear was quite minimal, illustrating the strong binding of the gold particulate material to the fibers.

Yet another fabric was made in accordance with the invention, all of the pattern print pastes having been made using formulations in accordance with the invention, with a black blotch of conventional formulation. The coloration of flower petals and leaves in the applied pattern was made using a white print paste according to the invention, dyed with disperse dyes to dye the fibers to which the white is adhered. The resulting coloration was much more brilliant and sharp than the corresponding coloration in the aforementioned fabric made according to the prior art process.

Another fabric was made in accordance with the invention, all of the coloration being made using the invention, but with a conventional black blotch. Again, the white printing formulations according to the invention as described above was used at various stages in the wet-on-wet machine, with disperse dyes to provide the color in the pattern. This was overprinted with a black blotch of conventional formulation. The result was a striking print in which line detail of the colors was discernible. The print had strong coloration and brilliant color, unlike the muted and diffuse colors of the aforementioned prior art prints.

As can be appreciated, the invention provides numerous possibilities for effecting brilliant new print colors for velvets, flocks and other napped fabrics, with or without a blotch overprint.

Claims

1. A fabric having colors with long wearing capabilities comprising a textile substrate, raised fibers on said substrate, an opaque particulate colorant adhering to said raised fibers and arrayed on said fabric to form portions of a printed pattern, a dye other than said opaque particulate colorant arrayed on said fabric in other portions of said printed pattern, and a melamine-latex binder composition which adheres said opaque particulate material to said fibers, and in which melamine and latex are cross-linked, and a resist to cause said other dye not to dye the fibers in the area of said melamine-latex binder composition.
2. A fabric as claimed in claim 1 wherein said fabric is a flocked fabric in which said raised fibers adhere to said substrate.
3. A fabric as claimed in claim 1 wherein said fabric is a velvet fabric in which said raised fibers extend from yarns in said substrate.
4. A fabric as claimed in claim 1 wherein said opaque particulate colorant is selected from the group con-

sisting of gold, bronze, pearlescent metals and titanium dioxide.

5. A fabric as claimed in any preceding claim wherein said fibers are disperse-dyeable and a disperse dye is included in said opaque particulate colorant to dye fibers contacted by said opaque particulate colorant. 5
6. A fabric as claimed in any preceding claim wherein said fibers colored by said opaque particulate colorant are stiffened by said colorant and/or said binder composition. 10
7. A fabric as claimed in any preceding claim wherein said latex is acrylic. 15
8. A process of printing a fabric having a textile substrate and raised fibers on said substrate to achieve a long wearing coloration of the fabric, the process comprising 20
making up a print paste of an opaque particulate colorant and a latex-melamine binder composition including mixing the colorant, a latex solution, a melamine solution, a catalyst for the latex-melamine binder composition, and a resist which inhibits fixing of dyes which dye differently from the print paste from dyeing the fabric contacted by the print paste, 25
applying the print paste to the fabric to form portions of a printed pattern in a wet-on-wet printing process which also includes applying dyes which dye differently than the print paste in the form of a blotch which covers at least some of the colorant, 35
performing a fixing process on the dye which dyes differently than the print paste, and curing the latex-melamine binder system to adhere the opaque particulate colorant to the fabric. 40
9. A process of printing as claimed in claim 8 wherein said making-up step includes mixing thickeners with the colorant, the latex solution, the melamine solution, the catalyst, and the resist in proportions to achieve a viscosity of about 15,000 +/- 3000 centipoise. 45
10. A process as claimed in claim 8 or claim 9 wherein said blotch is a full blotch. 50
11. A process as claimed in any of claims 8 to 10 wherein said fixing process takes place between the applying and curing steps. 55
12. A process as claimed in any of claims 8 to 10 wherein said curing step takes place between said apply-

ing step and the fixing process.

13. A process as claimed in any of claims 8 to 12 wherein said curing step includes exposing the fabric to a temperature of at least about 149 degrees Celsius (300 degrees Fahrenheit) for at least about three minutes.
14. A process as claimed in any of claims 8 to 13 wherein said making-up step includes adding a dye to the print paste.
15. A process as claimed in claim 14 wherein said fibers are disperse dyeable and wherein said dye added in said making-up is a disperse dye.
16. A process as claimed in any of claims 8 to 15 wherein said applying step includes applying the print paste to the fabric in a screen printing operation, with the screens having holes at least as large as the holes in a 40 mesh screen.
17. A process as claimed in any of claims 8 to 15 wherein said wet-on-wet printing process is selected from the group consisting of rotary screen printing and flatbed printing.

Patentansprüche

1. Gewebe mit Farben mit einer langen Abnutzungsbeständigkeit, das ein textiles Substrat, aufgeraute Fasern auf dem Substrat, ein opakes teilchenförmiges Färbemittel, das auf den aufgerauhten Fasern haftet und so auf dem Gewebe angeordnet ist, daß es Bereiche eines gedruckten Musters bildet, einen anderen Farbstoff als das opake teilchenförmige Färbemittel, der auf dem Gewebe in anderen Bereichen des gedruckten Musters angeordnet ist, und eine Melamin-Latex-Bindemittelzusammensetzung, die das opake teilchenförmige Material auf den Fasern anklebt, und worin Melamin und Latex vernetzt sind, und ein Abdeckmaterial umfaßt, damit der andere Farbstoff nicht die Fasern in dem Gebiet der Melamin-Latex-Bindemittelzusammensetzung färbt.
2. Gewebe nach Anspruch 1, worin das Gewebe ein Flockgewebe ist, in dem die aufgerauhten Fasern auf dem Substrat haften.
3. Gewebe nach Anspruch 1, worin das Gewebe ein Samtgewebe ist, in dem sich die aufgerauhten Fasern von Garnen in dem Substrat erstrecken.
4. Gewebe nach Anspruch 1, worin das opake teilchenförmige Färbemittel aus der Gruppe ausgewählt wird, die aus Gold, Bronze, perlmutterglän-

zenden Metalle und Titandioxid ausgewählt werden.

5. Gewebe nach einem der vorstehenden Ansprüche, worin die Fasern mit einem Dispersionsfarbstoff färbbar sind und ein Dispersionsfarbstoff in dem opaken teilchenförmigen Färbemittel zur Färbung der Fasern enthalten ist, die mit dem opaken teilchenförmigen Färbemittel in Kontakt stehen.

6. Gewebe nach einem der vorstehenden Ansprüche, worin die durch das opake teilchenförmige Färbemittel gefärbten Fasern durch das Färbemittel und/oder die Bindemittelzusammensetzung versteift werden.

7. Gewebe nach einem der vorstehenden Ansprüche, worin der Latex acrylisch ist.

8. Verfahren zum Bedrucken eines Gewebes mit einem textilen Substrat und aufgerauhten Fasern auf dem Substrat, um eine lange Tragefärbung des Gewebes zu erzielen, wobei das Verfahren umfaßt:

Herstellen einer Druckpaste aus einem opaken teilchenförmigen Färbemittel und einer Latex-Melamin-Bindemittelzusammensetzung, das das Mischen des Färbemittels, einer Latexlösung, einer Melaminlösung, eines Katalysators für die Latex-Melamin-Bindemittelzusammensetzung und eines Abdeckmittels umfaßt, das die Fixierung von Farbstoffen, die anders färben als die Druckpaste, auf dem Gewebe und ein Färben des Gewebes verhindert, das mit der Druckpaste in Kontakt steht,

Aufbringen der Druckpaste auf das Gewebe zur Bildung von Bereichen eines gedruckten Musters in einem Naß- auf Naß-Druckverfahren, das auch das Aufbringen von Farbstoffen, die anders färben als die Druckpaste, in Form eines Flecks umfaßt, der zumindest einen Teil des Färbemittels abdeckt,

Durchführen eines Fixierverfahrens auf dem Farbstoff, der anders färbt als die Druckpaste, und

Härten des Latex-Melamin-Bindemittelsystems, um das opake teilchenförmige Färbemittel auf dem Gewebe anzukleben.

9. Verfahren zum Bedrucken nach Anspruch 8, worin der Herstellungsschritt das Mischen von Verdickungsmitteln mit dem Färbemittel, der Latexlösung, der Melaminlösung, dem Katalysator und dem Abdeckmittel in Anteilen umfaßt, daß eine Viskosität von etwa 15.000 +/- 3.000 Centipoise erreicht wird.

10. Verfahren nach Anspruch 8 oder 9, worin der Fleck ein voller Fleck (full blotch) ist.

11. Verfahren nach einem der Ansprüche 8 bis 10, worin das Fixierverfahren zwischen dem Aufbringungs- und Härtungsschritt stattfindet.

12. Verfahren nach einem der Ansprüche 8 bis 10, worin der Härtungsschritt zwischen dem Aufbringungs- und dem Fixierverfahren stattfindet.

13. Verfahren nach einem der Ansprüche 8 bis 12, worin der Härtungsschritt das Aussetzen des Gewebes an eine Temperatur von mindestens etwa 1490°C (300°F) für mindestens etwa 3 Minuten umfaßt.

14. Verfahren nach einem der Ansprüche 8 bis 13, worin der Herstellungsschritt das Zugeben eines Farbstoffes zu der Druckpaste umfaßt.

15. Verfahren nach Anspruch 14, worin die Fasern mit einem Dispersionsfarbstoff färbbar sind und worin der in dem Herstellungsverfahren zugegebene Farbstoff ein Dispersionsfarbstoff ist.

16. Verfahren nach einem der Ansprüche 8 bis 15, worin der Aufbringungsschritt das Aufbringen der Druckpaste auf das Gewebe in einem Siebdruckverfahren umfaßt, wobei die Siebe Löcher aufweisen, die mindestens so groß sind wie die Löcher in einem Sieb mit der Maschenweite 40.

17. Verfahren nach einem der Ansprüche 8 bis 15, worin das Naß-auf Naß-Druckverfahren aus der Gruppe ausgewählt wird, die aus Rotationssiebdruck und Flachbettdruck besteht.

Revendications

1. Tissu en couleurs pouvant durer longtemps, comprenant un substrat textile, des fibres dressées sur ce substrat, un pigment opaque en particules qui sont collées à ces fibres dressées et qui sont disposées sur ledit tissu en un réseau de façon à former certaines parties d'un motif imprimé, un colorant autre que ledit pigment opaque en particules, disposé en réseau sur ledit tissu en d'autres parties dudit motif imprimé, et une composition de liant à base d'un latex et de mélamine, qui colle les particules de pigment opaque aux fibres et dans laquelle le latex et la mélamine sont réticulés, ainsi qu'un agent de réserve qui empêche ledit autre colorant de colorer les fibres dans la zone où se trouve ladite composition de liant à base de latex et de mélamine.
2. Tissu conforme à la revendication 1, dans lequel le-

dit tissu est un tissu floqué où lesdites fibres dressées sont collées audit substrat.

3. Tissu conforme à la revendication 1, dans lequel ledit tissu est un tissu de velours où lesdites fibres dressées partent de fils dudit substrat.

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4. Tissu conforme à la revendication 1, dans lequel ledit pigment opaque en particules est choisi parmi l'or, le bronze, les métaux nacrants et le dioxyde de titane.

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5. Tissu conforme à l'une des revendications précédentes, dans lequel lesdites fibres peuvent être teintées par un colorant dispersé et ledit pigment opaque en particules contient un colorant dispersé qui teint les fibres qui entrent en contact avec des particules de ce pigment opaque.

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6. Tissu conforme à l'une des revendications précédentes, dans lequel lesdites fibres colorées par le pigment opaque en particules sont raidies par ce pigment et/ou par ladite composition de liant.

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7. Tissu conforme à l'une des revendications précédentes, dans lequel ledit latex est un latex acrylique.

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8. Procédé permettant d'imprimer un tissu qui comporte un substrat textile et des fibres dressées sur ce substrat, de manière à obtenir une coloration durable de ce tissu, ledit procédé comprenant :

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la préparation d'une pâte d'impression contenant un pigment opaque en particules et une composition de liant à base d'un latex et de mélamine, laquelle préparation comporte le fait de mélanger le pigment, une solution de latex, une solution de mélamine, un catalyseur destiné à la composition de liant à base de latex et de mélamine, et un agent de réserve qui empêche des colorants qui teignent autrement que la pâte d'impression d'être fixés et de teindre le tissu qui entre en contact avec la pâte d'impression, l'application de la pâte d'impression sur le tissu, de manière à former des parties d'un motif imprimé, selon un procédé d'impression mouillé-sur mouillé, cette étape comportant aussi l'application de colorants qui teignent autrement que la pâte d'impression, sous la forme d'une impression couvrante qui recouvre au moins une partie du pigment, la réalisation d'une opération de fixage des colorants qui teignent autrement que la pâte d'impression, et le durcissement du système de liant à base de latex et de mélamine, de manière à coller au tissu le pigment opaque en particules.

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9. Procédé d'impression conforme à la revendication 8, dans lequel ladite étape de préparation comporte le fait de mélanger, avec le pigment, la solution de latex, la solution de mélamine, le catalyseur et l'agent de réserve, un agent épaississant en une proportion telle que le mélange résultant présente une viscosité d'environ $15\,000 \pm 3\,000$ centipoises.

10. Procédé conforme à la revendication 8 ou 9, dans lequel ladite impression couvrante est une impression couvrante totale.

11. Procédé conforme à l'une des revendications 8 à 10, dans lequel ladite opération de fixage a lieu entre lesdites étapes d'application et de durcissement.

12. Procédé conforme à l'une des revendications 8 à 10, dans lequel ladite étape de durcissement a lieu entre ladite étape d'application et l'opération de fixage.

13. Procédé conforme à l'une des revendications 8 à 12, dans lequel ladite étape de durcissement comporte le fait d'exposer le tissu à une température d'au moins environ 149°C (300°F) pendant un laps de temps d'au moins environ 3 minutes.

14. Procédé conforme à l'une des revendications 8 à 13, dans lequel ladite étape de préparation comporte le fait d'ajouter un colorant à la pâte d'impression.

15. Procédé conforme à la revendication 14, dans lequel lesdites fibres peuvent être teintées par un colorant dispersé et ledit colorant ajouté au cours de l'étape de préparation est un colorant dispersé.

16. Procédé conforme à l'une des revendications 8 à 15, dans lequel ladite étape d'application comporte le fait d'appliquer la pâte d'impression sur le tissu au cours d'une opération d'impression au cadre, effectuée avec une toile dont les mailles sont au moins aussi grandes que celles d'une toile de 0,42 mm de vide de maille (40 mesh).

17. Procédé conforme à l'une des revendications 8 à 15, dans lequel ledit procédé d'impression mouillé-sur mouillé est choisi parmi l'impression au cadre rotatif et l'impression plane.