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(54) **METHOD FOR PRODUCING A TEXTILE WITH LOCAL ENHANCEMENT AND TEXTILE WITH LOCAL ENHANCEMENT**

(57) Provided are a method for producing a textile fabric (1) with local enhancement (4a, 4b), wherein the local enhancement is applied to the textile fabric (1) at locations located within precut positions (D, D1, D2) that are spaced-apart from each other by a distance (d1, d2) which may or may not be variable, wherein prior to the

application of the local enhancement (4a, 4b), a protective stabilizing film (5) is applied to the textile fabric (1) at least in parts of the regions of the textile fabric (1) that are located between two subsequent precut positions (D, D1, D2) and a textile fabric (1) produced by such a method.

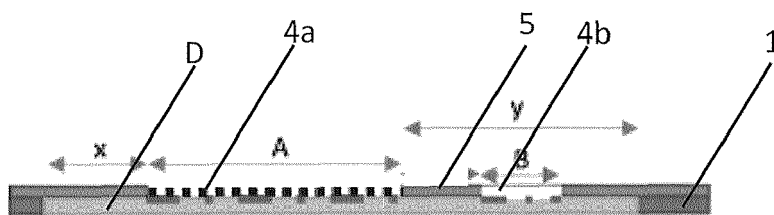


Fig.3c

Description

[0001] In many cases, it is desired to use textiles with local enhancements, such as printed or lighting patterns, which are to be created at distinct and well-defined positions of the fabric obtained from previous processing steps.

[0002] However, bearing in mind that most textiles are easily deformable, interactions that are necessary to create the local enhancement can expose the fabric to stress and induce local strains which in turn lead to distortion and deformation of the fabric and thus reduce the precision of the dimensional specification of the local enhancement on the final product.

[0003] Accordingly, the problem of the invention is to provide a method for producing a textile fabric with local enhancement that allows for a more precise dimensional specification of the local enhancement and to provide a textile fabric with more precisely located local enhancement.

[0004] This problem is solved by a method for producing a textile fabric with local enhancement that allows for a more precise dimensional specification of the local enhancement with the features of claim 1 and a textile fabric with the features of claim 11.

[0005] According to the method for producing a textile fabric with local enhancement according to this invention, the local enhancement is applied to the textile fabric at locations located within precut positions (i.e. predefined areas, which may also be called precut area, of the textile fabric panel or roll that is manufactured that will be used when the fabric is attached to a final product, especially during automated serial production of such products) that are spaced-apart from each other by a distance which may or may not be variable.

[0006] An essential feature of this invention is that prior to the application of the local enhancement, a protective stabilizing film is applied to the textile fabric at least in parts of the regions of the textile fabric that are located between two subsequent precut positions.

[0007] Potentially and preferably any kind of non stretchable film with a glue layer on one side can be used as protective stabilizing film. E.g., films from the family of PET (Polyether-terephthalat), PP (Polypropylen), PC (Polycarbonat) can be used, but potentially other kinds of 2D protective areas like textile or non-woven with a glue layer on one side, or other kind of sprayable, laminable fluid material that hardened and become a peelable film after a drying or reticulation (curing) step may be suited for this purpose.

[0008] Preferably, this protective stabilizing film is applied to the entire surface of the textile roll.

[0009] According to a preferred embodiment of the method, wherein a complete removal of the protective stabilizing film is performed after completion of the application of the local enhancement.

[0010] According to a variant, the protective stabilizing film is applied only outside of precut positions. This can

provide adequate positional stabilization while avoiding any interference with the application of the local enhancements. Even better positional stabilization can be obtained, however, if the protective stabilizing film is (also) applied inside of precut positions with the exception of areas of the precut positions in which local enhancement is applied.

[0011] The protective stabilizing film can also be applied first to the entire side of the textile fabric on which the local enhancement is performed and subsequently removed at least from areas in which local enhancement is applied prior to the application of the local enhancement.

[0012] In case of using a fluid applicable material that is hardened and becomes peelable after a certain drying/curing time, local area without protective stabilizing film on which local enhancement is performed, can be achieved using a mask that locally prevents the material to be applied on the textile surface.

[0013] According to an advantageous embodiment of the method, the protective stabilizing film is laminated onto the textile fabric using a press or rollers.

[0014] To obtain optimal positional information, according to a preferred embodiment of the method the location of the precut position is monitored with physical indexation, a camera monitoring system and/or a laser monitoring system.

[0015] The local enhancement can be created by addition of material, like printed inks, local induction of plastics or rubbers or welding of pattern pieces.

[0016] Alternatively or additionally, in other embodiments the local enhancement may also be created by surface modification, e.g. brought about by cutting or etching with a laser or UV radiation, heat radiation or conduction, sandblasting, application of chemical agents or mechanically using blades and/or tools.

[0017] Positional control may be improved even further if the fabric is fabricated with stiffer mesh areas that are created at the border of and/or inside the precut positions.

[0018] The textile fabric of the invention is produced by the method according to the invention.

[0019] Next, the invention is explained using figures that illustrate specific embodiments of the invention. The figures show:

Fig. 1 A schematic overview over a production line for producing a fabric with local enhancement,

Fig. 2a a cross section of a single future precut area,

Fig. 2b an example for a local enhancement based on the addition of material within the precut area,

Fig. 2c an example for a local enhancement based on a surface treatment,

Fig. 3a a cross section of a single future precut area

as obtained after a first intermediate step of an embodiment of the invention,

Fig. 3b a cross section of a single future precut area as obtained after a second intermediate step of an embodiment of the invention, and

Fig. 3c a cross section of a single future precut area as obtained after a third intermediate step of an embodiment of the invention.

[0020] Figure 1 shows a schematic overview over a production line 10 for producing a textile fabric 1 with local enhancement. A textile manufacturing machine 2 provides the textile fabric 1, typically from yarns which have been created from fibers as an output. This fabric is moved in the warp direction indicated by the double arrow, e.g. pulled by a motorized axis which winds the final product to a textile roll 3, thus inducing a well-defined strain on the textile fabric.

[0021] Especially if the textile roll 3 is to be processed automatically, future precut areas D1, D2 comprising the local enhancement that are separated by a separation distance d1, d2 are prepared at defined positions of the length of the fabric that forms the textile roll 3. The thus defined positional information allows a further machine (not shown) which processes the textile roll 3 and applies the precut areas including the local enhancement in a reproducible way to the product for which the fabric with the local enhancement is used. More specifically, in this way it can be achieved that the local enhancement is oriented in an identical way for each product produced by this further machine.

[0022] Fig. 2a shows a cross section through the fabric 1 of a single future precut area D. The side facing upwards in figures 2a-c and Figures 3a-c is the A-side, i.e. the side of the fabric that will be visible on the final product, whereas the side facing downwards in these figures is the B-side, i.e. the side of the fabric that will not be visible on the final product.

[0023] As shown in Figure 2b and 2c, in a defined area A, which is located within the future precut D, more precisely beginning at a distance x from its left boundary and ending at a distance y from its right boundary, a local enhancement 4a, 4b is added at some position of the production line 10. In figure 2b, the local enhancement 4a is based on the addition of material within the precut area, as is the case, e.g., when printing techniques are used to create the local enhancement 4a. In figure 2c, a local enhancement 4b is created without material addition, but rather by removing material, which can be realized, e.g. by application of laser radiation, UV radiation, sandblasting or plasma treatment. Of course, it is also possible to create a local enhancement using a mixture of techniques based on addition and removal of material, respectively.

[0024] Figures 3a to 3c illustrate subsequent intermediate stages during execution of an embodiment of the

invention. In Fig. 3a, a cross section of a single future precut area or precut position D of the textile fabric 1 is shown after a protective stabilizing film 5 has been formed on the A-side, which is the side that is visible in the final product. This can be done by laminating using rollers or a press in a processing step after the manufacturing machine 2 has finished processing the textile fabric 1.

[0025] In order to prevent any adverse interference with the application of the local enhancements 4a, 4b the protective stabilizing film 5 is then removed at least in the areas A, B, where the local enhancements 4a, 4b are to be applied, which leads to the intermediate product shown in figure 3b.

[0026] Then, the local enhancements 4a, 4b are applied, leading to the intermediate product illustrated in figure 3c. During this application, the stabilizing protective film 5 limits strains that are induced during the application process effectively and thus achieves significantly improved positional stability of the local enhancements 4a, 4b.

[0027] Subsequently, the stabilizing protective film 5 may be removed, e.g. peeled off.

Reference numerals

[0028]

1	textile fabric
2	manufacturing machine
3	roll
4a, 4b	local enhancement
5	protective stabilizing film
10	production line
A, B	area
D, D1, D2	precut position
d1, d2, x, y	distance

Claims

1. A method for producing a textile fabric (1) with local enhancement (4a, 4b), wherein the local enhancement is applied to the textile fabric (1) at locations located within precut positions (D, D1, D2) that are spaced-apart from each other by a distance (d1, d2) which may or may not be variable,
characterized in that prior to the application of the local enhancement (4a, 4b), a protective stabilizing film (5) is applied to the textile fabric (1) at least in parts of the regions of the textile fabric (1) that are located between two subsequent precut positions (D, D1, D2).
2. The method according to claim 1, wherein the protective stabilizing film (5) is formed using a material chosen from the family of PET (Polyetherterephthalates), PP (Polypropylenes) or PC (Polycarbonat).

3. The method according to claim 1, wherein the protective stabilizing film (5) is formed using a textile or non-woven layer.
4. The method according to claim 1, wherein the protective stabilizing film (5) is formed using a sprayable, laminable fluid material that is hardened and becomes a peallable film after a drying or reticulation (curing) step.
5. The method according to claim 4, wherein a local area without protective stabilizing film on which local enhancement is performed is created by using a mask that locally prevent the material to be applied on the textile surface.
6. The method according to one of claims 1 to 5, wherein a complete removal of the protective stabilizing film (5) is performed after completion of the application of the local enhancements (4a, 4b).
7. The method according to one of claims 1 to 6, wherein the protective stabilizing film (5) is applied only outside of precut positions (D, D1, D2).
8. The method according to one of claims 1 to 6, wherein the protective stabilizing film (5) is applied inside of precut positions (D, D1, D2), but not in areas (A, B) of the precut positions (D, D1, D2) in which local enhancements (4a, 4b) are applied.
9. The method according to one of claims 1 to 4, wherein the protective stabilizing film (5) is applied to the entire side of the textile fabric (1) on which the local enhancement (4a, 4b) is performed and subsequently removed at least from areas (A, B) in which local enhancement (4a, 4b) is applied prior to the application of the local enhancement (4a, 4b).
10. The method according to one of claims 1 to 9, wherein the protective stabilizing film (5) is laminated onto the textile fabric (1) using a press or rollers.
11. The method according to one of claims 1 to 10, wherein the position of the precut position (D, D1, D2) is monitored with physical indexation, a camera monitoring system and/or a laser monitoring system.
12. The method according to one of claims 1 to 11, wherein the local enhancement (4a, 4b) is created by addition of material.
13. The method according to one of claims 1 to 11, wherein the local enhancement (4a, 4b) is created by surface modification.
14. The method according to one of claims 1 to 13, wherein the textile fabric (1) is fabricated with stiffer mesh areas that are created at the border of and/or inside the precut positions (D, D1, D2).
15. A textile fabric (1) produced by the method according to one of claims 1 to 14.

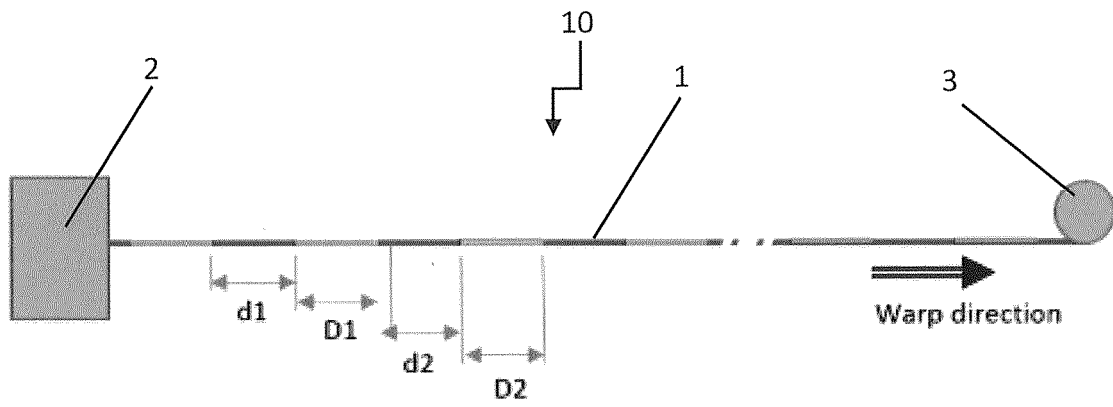


Fig.1

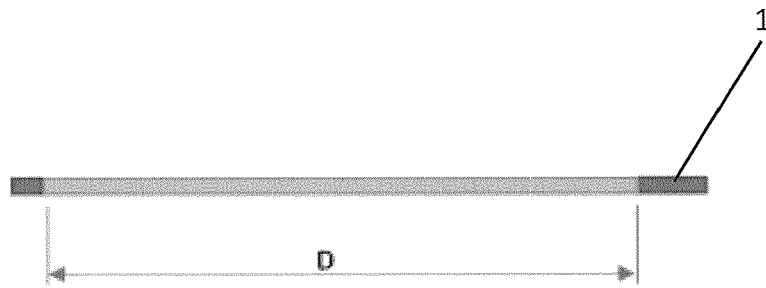


Fig.2a

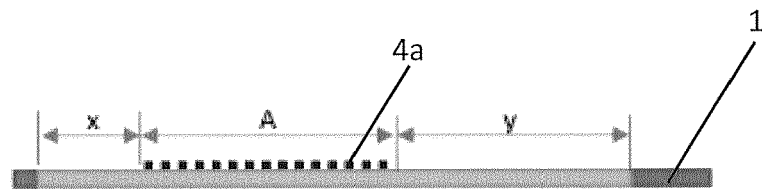


Fig.2b

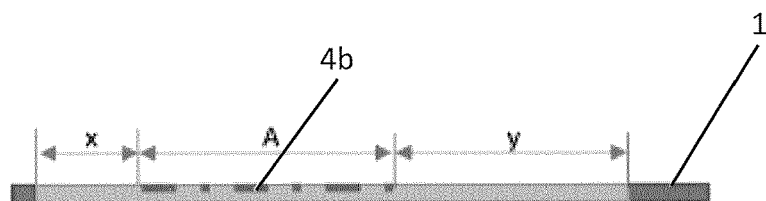


Fig.2c

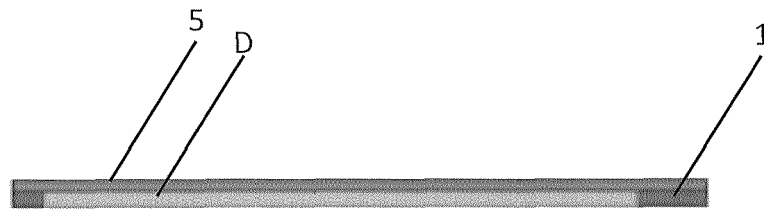


Fig.3a

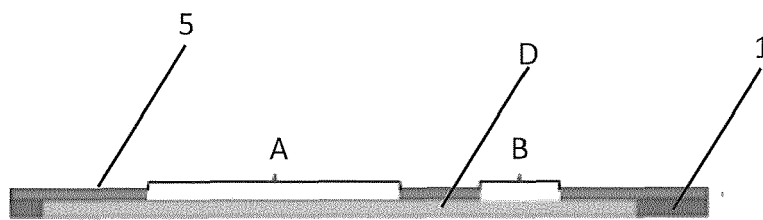


Fig.3b

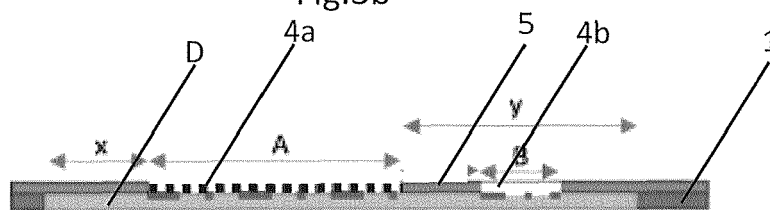


Fig.3c