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(54) Method for manufacturing a textile complex which serves as primary backing for tufted carpets, in addition to a carpet obtained thereby.

(57) The invention relates to a method for manufacturing a textile complex which can be used as substrate for the manufacture of tufted carpets.

The invention has for its object to offer a method for a textile complex which can be used as substrate for tufted carpets, and which in addition to meeting already existing requirements also satisfies the following requirements:

a) the product has as backing for tufted carpets a broad area of use and with a single product more stitch numbers and needle distributions can be achieved than with existing products.

b) the product possesses an excellent dimensional stability, i.e. the strength, stretch and shrink properties are the same in all directions.

c) the product gives a restful pile image.

d) the product can be used both as backing for tufted carpets and for coating and layering textile products, and can also serve as reinforcing material in all applications suitable for this purpose and for which a textile product is also suitable.

In order to achieve the above objects the invention proposes a method of the type referred to in the preamble which is characterized by the following steps:

(1) the provision of a first component comprising a flexible textile layer, and

(2) the mechanical connecting thereto of a structure consisting of at least one thread, fibre or the like.

EP 0 349 089 A1

Method for manufacturing a textile complex which serves as primary backing for tufted carpets, in addition to a carpet obtained thereby.

The invention relates to a method for manufacturing a textile complex which can be used as substrate for the manufacture of tufted carpets.

Such a product is for instance known from the Netherlands patent application NL-77.04148. The art described therein relates exclusively to fine-tufted carpets.

A number of developments can be discerned in the international carpet industry. Firstly there is a development towards carpets with a finer pile distributions, and as a consequence there is a greater demand for a primary backing suitable for these carpets. Secondly there is a desire within the carpet industry for a substrate which has an improved dimensional stability (i.e. the same strength, stretch and shrink properties in all directions), a good and restful pile image (also in the case of fine pile distributions) and which is also multi-purpose.

A possible answer to the first development is offered by finer woven materials; these woven materials possess more yarn and weft threads per unit of length. In addition to the fact that such a product is more expensive because of higher production costs it still also gives an insufficiently restful pile image in the case of very fine pile distributions. Furthermore the requirements stated in the second development are insufficiently fulfilled.

Another solution is that of making use of fibre fleeces FLWs (Fleece Locked Weave) and CLWs (Calander Locked Weave), a product described in the Netherlands patent application NL-77.04148.

Fibre fleeces FLWs and CLWs have a better pile image in the case of fine pile distributions and a better dimensional stability than woven substrates.

The dimensional stability of a backing is of prior importance if geometric patterns such as lines and rectangles occur in the tufted carpet. If there is insufficient dimensional stability, deformation of these patterns will result. The properties of a backing should for these and other reasons be the same in all directions. A fibre fleece possesses this dimensional stability. During the manufacture of a carpet with geometric patterns the backing has to have a certain stretch and elasticity. Fibre fleeces do not have sufficient stretch and elasticity and this can lead among other things to damage occurring.

Fibre fleeces, particularly in the case of threads with a linear density of more than 3000 dtex, moreover have an insufficient tuft-lock. This means that the hole resulting from penetration of the substrate by the tufting needle does not close up sufficiently after this penetration. The pile threads are therefore not held sufficiently firmly in place.

Fibre fleeces are furthermore unsuitable because their price is markedly higher than that of a woven substrate of FLW or a CLW.

FLWs and CLWs are unsuitable because their multi-purpose use is limited, and also because the pile image in the case of very fine tufted carpets is inadequate.

The invention has for its object to offer a method for a textile complex which can be used as substrate for tufted carpets, and which in addition to meeting already existing requirements also satisfies the following requirements:

a) the product has as backing for tufted carpets a broad area of use and with a single product more stitch numbers and needle distributions can be achieved than with existing products.

b) the product possesses an excellent dimensional stability, i.e. the strength, stretch and shrink properties are the same in all directions.

c) the product gives a restful pile image.

d) the product can be used both as backing for tufted carpets and for coating and layering textile products, and can also serve as reinforcing material in all applications suitable for this purpose and for which a textile product is also suitable.

In order to achieve the above objects the invention proposes a method of the type referred to in the preamble which is characterized by the following steps:

(1) the provision of a first component comprising a flexible textile layer, and

(2) The mechanical connecting thereto of a structure consisting of at least one thread, fibre or the like.

Step (2) can for instance be performed by a yarn knit process, while in appropriate circumstances a stitching or sewing process may be suitable.

In a further elaboration the method may be characterized by the following steps:

(3) the provision of at least one further component consisting of a flexible textile layer;

(4) the laying of the components onto each other;

(5) the mechanical connecting of the components to each other by means of step (2).

If desired an obtained complex can be densified by application of the following step:

(6) the subjecting of the complex obtained to a calander process.

The method according to the invention can be further characterized by the following step:

(7) the selection of the component(s) stated in (1), (2), (3) and (5) from the group to which belong:

- a woven material
- a substrate on the basis of a woven material
- a fibre fleece
- a substrate on the basis of a fibre fleece
- a thread system
- a complex consisting of at least two thread systems with preselected relative orientation
- a netting, for instance an extruded and bi-oriented netting.

Finally, the invention relates to a textile complex obtained by application of a method as specified above.

The invention will now be elucidated with reference to a number of examples. See examples (A)-(E).

Following below is an explanation of the examples.

As a result of combining different components it becomes possible that a better solution is offered to meet the requirements stated at the beginning of this patent application than is possible with existing substrates. In complex (A) the length and breadth thread system ensures strength in two directions. In complex (B), (C), D) and (E) this is accomplished through respectively a netting, a strip weave and a leno-weave.

The thread system resulting from the yarn knit process and the connection this thread system makes between the different components improve the dimensional stability and the strength properties in all directions.

Pile image improvement is brought about by making use of a fleece and by improving the dimensional stability. The needling process of the knitting operation also gives an improvement in the pile image because the complex becomes softer and more flexible; as a result fewer needle deviations occur during tufting.

It has been found in practice that the yarn knit-thread system improves the tuft-lock to a significant extent.

Tests assessed by independent persons skilled in the art demonstrate that for a single substrate both the range of the needle distributions and of the stitch number are increased.

In complex (D) no use is made of a fleece. Tests have shown that the finer needle distribution (E12) used in the yarn knit process has a good influence on the multi-purpose usability and the pile image.

If as binder thread for the yarn knit a thread that can be dyed is chosen the dye susceptibility of the whole substrate can be improved.

Examples

Complex Number	Complex structure	Weight structure	Needle distribution	Binding type	Method of manufacture
A.	1, Breadth threads 60 threads/10cm 2. length threads 72 threads/10cm 3. fibre fleece 4. Binder thread	1. 23 g/m^2 2. 27 g/m^2 3. 50 g/m^2 4. 30 g/m^2	E 18	double-tricot	Manufacturing takes place on a yarn knit machine with insert of thread in width direction. Connecting of the components is carried out by the thread system resulting from the yarn knit process
B.	1. Netting, extruded and reinforced in two directions 2. Fibre fleece 3. Binder thread	1. 30 g/m^2 2. 60 g/m^2 3. 20 g/m^2	E 8	double-atlas	The components netting and fibre fleece are fed to a yarn knit machine. Connecting is carried out by the thread system resulting from the yarn knit process
C.	1. Fibre fleece 2. Netting, extruded and reinforced in two directions 3. Fibre fleece 4. Binder thread	1. 40 g/m^2 2. 40 g/m^2 3. 30 g/m^2 4. 20 g/m^2	E 6	double-atlas	The components fibre fleece, netting and fibre fleece are fed to the machine in a manner such that a sandwich construction results. Connecting takes through the thread system resulting from yarn knit process
D.	1. Strip weave 2. Binder thread	1. 95 g/m^2 2. 35 g/m^2	E 12	fabric-tricot	The woven material is reinforced through the thread system of the yarn knit process
E.	1. Fibre fleece 2. Leno-weave 3. Fibre fleece 4. Binder thread	1. 30 g/m^2 2. 45 g/m^2 3. 40 g/m^2 4. 20 g/m^2	E 8	double-atlas	Method of manufacture the same as that for complex C. A leno-weave is however chosen instead of a netting

Claims

1. Method for manufacturing a textile complex, for example a substrate for tufted carpets **characterized by** the following steps:

(1) the provision of a first component comprising a flexible textile layer, and

(2) the mechanical connecting thereto of a structure consisting of at least one thread, fibre or the like.

2. Method as claimed in claim 1, **characterized in that** step (2) is performed by a yarn knit process.

3. Method as claimed in claim 1, **characterized in that** step (2) is performed by a stitching or sewing process.

4. Method as claimed in any of the foregoing claims, **characterized by** the following steps:

(3) the provision of at least one further component consisting of a flexible textile layer;

(4) the laying of the components onto each other;

(5) the mechanical connecting of said components to each other by means of step (2).

5. Method as claimed in any of the foregoing claims, **characterized by** the following step:

(6) the subjecting of the obtained complex to a calander treatment.

6. Method as claimed in any of the foregoing claims, **characterized by** the following step:

(7) the selection of the component(s) from the group to which belong:

- a woven material
- a substrate on the basis of a woven material
- a fleece
- a substrate on the basis of a fleece
- a thread system
- a complex consisting of at least two thread systems with preselected relative orientation
- a netting, for instance an extruded and bi-oriented netting.

7. Complex obtained with a method as claimed in any of the foregoing claims.

8. Tufted carpet with a primary backing manufactured with a method as claimed in any of the foregoing claims.

European Patent Office

EUROPEAN SEARCH REPORT

Application Number

EP 89 20 1729

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.4)
A	GB-A- 930 237 (CANADIAN CELANESE) * Claims 1,2 * ---	1,6-8	D 05 C 17/00 D 04 H 13/00 D 04 B 21/14
A	US-A-4 096 302 (CONWED) * Claim 1 * ---	1,6-8	
A	US-A-4 140 071 (DU PONT) * Claims 1,2,4 * ---	1,6-8	
A	US-A-4 026 129 (STERNLIEB) * Claim 1 * -----	1-3	

TECHNICAL FIELDS SEARCHED (Int. Cl.4)

D 05 C
D 04 H
D 04 B

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	06-10-1989	CATTOIRE V.A.

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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