



(12)

EUROPEAN PATENT APPLICATION

- (43) Date of publication:
29.05.2024 Bulletin 2024/22

(51) International Patent Classification (IPC):
D01F 1/10 (2006.01) D06M 15/277 (2006.01)
D06M 15/564 (2006.01) D06M 13/395 (2006.01)
D04B 1/16 (2006.01)

(21) Application number: 23383013.2

(52) Cooperative Patent Classification (CPC):
D06M 13/395; D01F 1/103; D04B 1/16;
D06M 15/277; D06M 15/564

(22) Date of filing: 03.10.2023

- (84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB
GR HR HU IE IS IT LI LT LU LV MC ME MK MT NL
NO PL PT RO RS SE SI SK SM TR
Designated Extension States:
BA
Designated Validation States:
KH MA MD TN

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(30) Priority: 03.10.2022 ES 202230848

(54)

PROCESS FOR OBTAINING A FABRIC AND OBTAINED FABRIC

(57) Unlike other existing fabrics which, in order for the outer and inner faces thereof to have different features, one hydrophilic and the other liquid-repellent, a fabric with a bilayer structure is required, the invention allows these features to be obtained in a single fabric layer, such that starting from 100% recycled polyester threads, with silver ions, in which the thread has a multifilament structure and a cross section with multiple channels along the longitudinal cross section thereof, the thread is subjected to a weaving process (2) in which a double-faced circular knitted fabric is made, having a "smoother" outer face, and an inner face with a three-dimensional "piqué"-type weave, subjecting the fabric to a process of thermosetting (3), washing (4), dyeing (5) and applying a bath (6) of a hydrophilic product, such that a stain-resistant product is applied to the outer face of the fabric using a roller (7) to finally subject the same to a second thermosetting phase (8).



FIG. 1

Description

TECHNICAL FIELD

[0001] The present invention relates to a method for obtaining a fabric which has the special particularity in that the outer and inner faces thereof have different features, such that the inner face thereof is completely hydrophilic, while the outer face is completely liquid-repellent.

[0002] It therefore provides a highly versatile fabric, by virtue of providing additional features to those previously described, such as elasticity, anti-wrinkle, antibacterial, quick drying, etc.

BACKGROUND OF THE INVENTION

[0003] In the scope of the practical application of the invention, processes are known for obtaining fabrics with hydrophilic features, as well as processes for obtaining fabrics with liquid-repellent properties.

[0004] However, the existence of a fabric that combines both properties is not known.

[0005] In the best of cases, a process is known in which a multi-layer fabric is obtained, involving an outer layer of a liquid-repellent fabric and an inner layer of a hydrophilic fabric, such that said two fabrics are sewn together forming a multi-layer structure.

[0006] Fabrics of this type are described in invention patents P200401889, P200931288, P 201031360 and WO11080368.

[0007] Obviously, this involves an extremely thick fabric, which does not provide enough comfort, is expensive, due to the large amount of material used in the same, and is too hot.

[0008] In short, the present invention aims to simplify the process for obtaining a fabric with multiple properties, such as oleophobicity, hydrophilicity, elasticity, anti-wrinkle, antibacterial, quick drying, durability and stain-resistant, and all by means of a novel, more economical process.

DESCRIPTION OF THE INVENTION

[0009] The method of the invention meets the technical challenges described above, allowing a single-layer fabric to be obtained with different properties on the inner and outer face thereof, specifically with hydrophilic properties on the inner face thereof and liquid-repellent properties on the outer face thereof, in addition to a series of additional features.

[0010] To do so, and more specifically, it is based on a thread made of 100% recycled, multifilament and antibacterial polyester, thanks to the incorporation of silver ions, a material that additionally provides antiviral properties.

[0011] The thread will have a section with multiple channels along the longitudinal section thereof. This

shape of the cross section creates grooves on the surface that help manage moisture and make it easier for the fabric to dry quickly.

[0012] Using this thread, the weaving process is carried out, making a double-faced circular knitted fabric: a "smoother" outer face, and an inner face with a three-dimensional "piqué"-type weave.

[0013] This makes the fabric elastic and breathable.

[0014] Lastly, the fabric is subjected to a thermosetting process at a specific width and temperature, thus giving it the "anti-wrinkle" property.

[0015] After obtaining the fabric, the same is subjected to a washing or scouring phase, dyed and then subjected to a bathing process in a "hydrophilic" product, which makes the fabric highly moisture-absorbent.

[0016] Then, the fabric is subjected to a process of applying an stain-resistant product, which, instead of being applied by bathing, is carried out by roller application, which allows said product to be applied on only one of the two faces of the fabric.

[0017] Lastly, this finish is thermoset at a specific temperature and for a specific time to ensure that the product remains on the fabric for a long time, despite washing or use.

[0018] Lastly, with the fabric obtained, the corresponding garments are made, which have all of the following features:

- Internally hydrophilic.
- Externally stain-resistant.
- Antibacterial.
- Antiviral.
- Elastic.
- Anti-wrinkle.
- Breathable.
- Fast dry.
- Recycled.

DESCRIPTION OF THE DRAWINGS

[0019] To complement the description that will be provided below and for the purpose of helping to better understand the features of the invention according to a preferred practical embodiment thereof, a drawing is attached as an integral part of said description in which the following is depicted in an illustrative and non-limiting manner:

Figure 1 shows a block diagram of the different operational phases necessary for obtaining a single-layer fabric with different properties on both faces thereof, made in accordance with the object of the present invention.

PREFERRED EMBODIMENT OF THE INVENTION

[0020] In view of the figure shown, it can be seen how the process of the invention starts with an initial material (1), specifically 100% recycled polyester threads, in which the thread has a multifilament structure, meaning,

instead of a single thick thread, there are 47 very fine micro-threads.

[0021] This helps "air" get between them and they create a thermal barrier. Moreover, the fact that they are so fine makes the fabric very soft.

[0022] These threads include silver ions, present in all the material, both inside and outside the threads. In this way, an antibacterial effect is achieved, which remains, despite washing or the passage of time. This treatment, in turn, demonstrated that it has antiviral activity (95% of coronavirus is eliminated in 2 hours).

[0023] Another feature of the thread is its section with multiple channels along the longitudinal section thereof. This shape of the cross section creates grooves on the surface that help manage moisture and make it easier for the fabric to dry quickly.

[0024] Using this material, the weaving phase (2) is then carried out, in which a double-faced circular knitted fabric is made, having a smoother outer face, and an inner face with a three-dimensional "piqué"-type weave.

[0025] This makes it so the fabric is "elastic" (as it is a circular knitted fabric and not an openwork fabric), and the inner face improves "breathability" (thanks to this three-dimensional structure and the channels that are formed).

[0026] The fabric is then subjected to a first thermosetting process (3) at a specific width and at a temperature of 150°C for 1 minute and 10 seconds, and thanks to the type of material used (polyester) and the textile structure thereof, the fabric does not wrinkle. In this sense, soft and flexible cross-linkable polyurethane fibres that have optimal features for obtaining fabrics with anti-wrinkle properties can be used.

[0027] Once the fabric is manufactured, it is subjected to a washing process (4) (scouring), a dyeing process (5) and the application of a bathing process (6) (foulard-immersion) of a "hydrophilic" product, a product which, merely by means of example, is applied at a pressure of 3 bars with a fabric advance speed of 15 meters per minute.

[0028] In the washing process, aliphatic polyurethane is applied in an aqueous solution that provides a soft and elastic touch with excellent behaviour to wet treatments. In the same way, an anti-odour product can be applied.

[0029] With regard to the bathing process (foulard-immersion), a special hydrophilic polymer with high affinity to the PES fibre is applied.

[0030] In this way, the fabric is very moisture-absorbent.

[0031] In a later phase, a stain-resistant product is applied using a roller (7), this time not by bathing (foulard-immersion), which applies the stain-resistant product on one of the faces of the fabric, which will ultimately be the outer face thereof.

[0032] This stain-resistant product consists of the joining of 3 components: an oleophobic and hydrophobic stain-repellent product, another product that fixes this stain-resistant product to the fabric, an isocyanate, and lastly a thickening product that gives the mixture of the

3 products a suitable viscosity so that it can spread well throughout the fabric, but prevents the product from penetrating the inside of the fabric.

[0033] More specifically, the hydrophobic product will materialise into a water-repellent product based on fluorocarbon or non-ionic perfluoro acrylate for synthetic and natural fibres and the mixtures thereof.

[0034] A blocked isocyanate will be used for joint use with fluorocarbon resins that provide resistance to washing, and a thickener in inverse emulsion.

[0035] More specifically, the isocyanate is in a proportion of 20 g/l, the fluorocarbon in a proportion of 200 g/l and the thickener in a proportion of 10 g/l.

[0036] This process, along with the improvement in moisture absorption (hydrophilicity) from the previous step, is what ensures that the fabric has properties on both faces.

[0037] Lastly, the fabric is subjected to a second thermosetting phase (8) at a temperature of 150°C for one minute to ensure that the product remains on the fabric for a long time despite washing or use.

[0038] Obtained from this process is a 100% recycled polyester-based fabric obtained, in which a multifilament thread with silver ions made up of 47 micro-threads, a cross section with multiple channels along the longitudinal cross section thereof, with a smooth outer face and an inner face with a three-dimensional pattern, in which a hydrophilic product is embedded, and which, on the outer face thereof, incorporates a coating of a stain-resistant product.

Claims

1. A method for obtaining a fabric, **characterised in that** it defines the following operational phases:

- a) It is based on a material (1), consisting of 100% recycled polyester threads, with silver ions, in which the thread has a multifilament structure and a cross section with multiple channels along the longitudinal cross section thereof.
- b) The thread is subjected to a weaving process (2), in which a double-faced circular knitted fabric is made, having a "smoother" outer face, and an inner face with a three-dimensional "piqué"-type weave.
- c) The fabric is subjected to a first thermosetting process (3).
- d) The fabric obtained is subjected to a process of washing (4), dyeing (5) and applying a foulard-immersion bath (6) of a hydrophilic product, aliphatic polyurethane.
- e) A stain-resistant product made from an oleophobic and hydrophobic product, an isocyanate, and a thickening product are applied to the outer face of the fabric using a roller (7).
- f) The fabric is lastly subjected to a second ther-

mosetting phase (8).

2. The method for obtaining a fabric, according to claim 1, **characterised in that** the stain-resistant product includes an oleophobic and hydrophobic product made of fluorocarbon that is in a proportion of 200 g/l, an isocyanate that is in a proportion of 20 g/l, and a thickener that is in a proportion of 10 g/l. 5
3. The method for obtaining a fabric, according to claim 1, **characterised in that** in the bathing process (6), an anti-odour product is additionally added. 10
4. A fabric, **characterised in that** it is made of 100% recycled polyester, which involves a multifilament thread with silver ions, with a cross section with multiple channels along the longitudinal cross section thereof, with a smooth outer face and an inner face with a three-dimensional weave, a fabric in which a hydrophilic product is embedded, the outer face of which incorporates a coating of a stain-resistant product. 15 20
5. The fabric, according to claim 4, **characterised in that** the stain-resistant product includes an oleophobic and hydrophobic product made of fluorocarbon that is in a proportion of 200 g/l, an isocyanate that is in a proportion of 20 g/l, and a thickener that is in a proportion of 10 g/l. 25 30
6. The fabric, according to claim 4, **characterised in that** 47 micro-threads form the multifilament thread. 35 40 45 50 55



FIG. 1

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- WO 11080368 A [0006]