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(54) **FABRIC ESPECIALLY SUITABLE FOR CLOTHING, BAGS AND ACCESSORIES FOR CLOTHING, FOOTWEAR OR PARTS THEREOF**

(57) An improved fabric comprising a base and a coating; said fabric comprises as to the coating part

* 15%-70% cork,

* 1%-15% acrylic resin, and possibly

* 1%-25% polyurethane resin,

where the percentages are expressed by weight of the improved fabric; a process for its production and items made from said improved fabric.

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Description

[0001] The present invention relates to a fabric, which can be waterproof, typically although not exclusively suitable for clothing, bags and accessories for clothing, footwear or parts thereof. It can also be used in the field of interior or exterior furnishings, as a fabric for the interior coating of cars, yachts, tenders, trains and means of transport in general.

[0002] As is known, the sectors mentioned above, in particular the clothing, bags, clothing accessories and footwear sectors are sectors (industries) where fashion changes constantly and the quality standards of the fabrics used are often very high, as the users and/or the reference public are very demanding in claiming products and applications that are at the same time performing (in terms of life-cycle duration), sustainable - in terms of low environmental impact.

[0003] In these sectors mentioned above, lightweight, multipurpose, crease-resistant, innovative in appearance, flexible, practical, comfortable and durable, easily washable, stain-resistant, possibly insulating from a thermal point of view and possibly waterproof fabrics are often required.

[0004] It is often difficult to produce fabrics that have all the characteristics that fashion requires in the sectors indicated above and which are listed above.

[0005] Indeed, crease-resistant fabrics are often produced which are also waterproof, but which are relatively unattractive in appearance. Otherwise, fabrics that are innovative in appearance are produced, but not very practical or not very flexible.

[0006] Otherwise, the fabrics made are flexible, but are not crease-resistant and are therefore, during use, not very suitable and therefore not suitable for use in some especially formal environments.

[0007] All these are not negligible drawbacks which are difficult to overcome in order to have a fabric that has predominantly, if not, solely advantageous aspects.

[0008] A new improved fabric has surprisingly been found which overcomes all the drawbacks discussed above and can be advantageously and easily produced through the process according to the invention.

[0009] It is pointed out that the process of the invention is also advantageous: indeed many processes known in the art, such as the one described in IT1412994, provide for a manual deposition on a fabric panel (e.g. 1 square meter) of the dispersion (compound) based on cork, in fact an artisanal system that requires enormous spaces to allow the drying of the fabric with the applied dispersion (compound) based on cork, material plus enormous times linked to the drying process, more spaces, only by way of example to deposit and dry 50 m² of fabric panels would require at least 500 m² of shed for 48-36 hours of drying.

[0010] The state of the known art influences at a qualitative level the performance from production batch to batch, which is not uniform; in addition, the fabric made

with the aforementioned patent has poor flexural strength and low abrasion resistance, as well as being very expensive due to the fact that it requires qualified personnel, large covered spaces and therefore very high fixed costs.

A first object of the present invention is:

an improved fabric comprising a base and a coating, said fabric being characterised in that it comprises as to the coating part

- * 15%-70% cork,
- * 1%-15% acrylic resin, and possibly
- * 1%-25% polyurethane resin,

where the percentages are expressed by weight of the improved fabric.

[0011] All the percentages specified above and specified below are percentages by weight, unless otherwise defined.

[0012] The "fabric" according to the present invention consists of a base and a coating.

[0013] The "base" is typically made of natural fibres, including organic fibres such as cotton, linen, hemp, wool, regenerated leather fibres also in mixed compositions or synthetic fibres such as polyamide, polyester, polyethylene, polypropylene, polyurethane also in mixed compositions; wherein the natural and synthetic fibres can also be recycled. Said fibres are typically in specific quantities.

[0014] Said base has two faces and at least one of the two faces has the coating, which is applied according to the process for production described below.

[0015] The "coating" is made of cork and acrylic resin in specific quantities, and possibly of polyurethane resin in specific quantities. The fabric contains 15%-70% cork, 1-15% acrylic resin and possibly 1%-25% polyurethane resin, which are part of the coating. The cork is preferably between about 20% and about 70%, more preferably between about 40% and about 65%.

[0016] The acrylic resin is preferably between about 1% and about 10%, more preferably between about 1% and about 9%.

[0017] Possibly, the polyurethane resin if present is preferably between about 1% and about 15%, more preferably between about 2% and about 10%.

[0018] It is precisely the specific amount of cork, which is typically in granules, and the specific amount of acrylic resin and possibly polyurethane resin that make the fabric particularly flexible, practical, comfortable, elastic and durable, as well as the processing of the components.

[0019] The cork is typically in granules and is preferably ground, but it can also be in other shapes such as small spheres.

[0020] When the cork is in granules, it has a grain size between about 0.3 mm and about 1 mm.

[0021] When the cork is in the form of small spheres, these small spheres have a diameter between about 0.3 mm and about 1 mm.

[0022] The cork, as to chemical-physical characteris-

tics, has good elasticity, impermeability to liquids and air, does not wear easily, is also natural and non-toxic, is a good thermal insulator and is very light as well as it has various other peculiarities, such as a high resilience. Optionally, said improved fabric can comprise pigments, dyes, and the like.

[0023] Pigments or dyes (white, red, black, blue, grey, yellow, light blue, red, green, lilac, pink and similar) can be used to ensure that the coating remains unchanged; indeed, cork, if not dyed, can have different colours when dry or wet.

[0024] Said pigments or dyes are commercially known.

[0025] This results in an improved fabric with the chosen colour, not subject to alterations of any kind.

[0026] Said improved fabric has a thickness between 1 mm and 3 mm and furthermore the coating (by weight) is applied on the base (surface) according to the following ratio:

$$0.750 \text{ kg} \pm 200 \text{ grams} / 1 \text{ m}^2$$

[0027] This ratio ensures optimum performance of the coating and the fabric as a whole.

[0028] A subject of the present invention is also an improved fabric having a flexibility from 50,000 to 150,000 *Bally* cycles.

[0029] This flexibility has been determined by means of laboratory tests, in particular *Bally* equipment.

[0030] A further subject of the present invention is an improved fabric having a resistance to abrasion with a result of slight abrasion after 51,200 Martindale cycles.

[0031] This abrasion resistance was determined by means of laboratory tests, in particular the Martindale method.

[0032] Tests of colour fastness to artificial light were also carried out through an equipment with xenon arc lamp and it was proved that after a 48-hour exposure, the fabric of the present invention, when dyed, has a very high light fastness, having no colour variation.

[0033] In a preferred aspect of the invention, the composition of said fabric is:

- * 40-65% cork,
- * 1-9% acrylic resin,
- * 20-40% cotton;
- * 2-10% polyurethane resin.

[0034] In a further preferred aspect of the invention, the composition of said fabric is:

- * 40-65% cork,
- * 1-9% acrylic resin,
- * 20-40% polyamide,
- * 10-40% polyurethane
- * 2-10% polyurethane resin.

[0035] The first composition on a cotton basis can have

a weight of 950 gr/m², and the second one on a microfibre base (polyamide and polyurethane) can have a weight of 1,250 gr/m².

[0036] The process for producing the improved fabric of the invention follows.

[0037] The process too for producing the improved fabric of the invention is completely advantageous and overcomes all the drawbacks reported above, as previously highlighted; it is also industrially producible and allows to reduce costs (in terms of processing times, handling, number of people involved in production, etc.).

[0038] The present invention also relates to a process for producing said improved fabric, which is a continuous process (so-called "roll to roll") characterized by the following steps:

- winding by base roll winding system;
- arrangement of the base on a conveyor belt, so that the roll with the base can be unwound and loaded on said conveyor belt;
- rotary or in-line spraying of the base or spraying of the base with other techniques for continuous spraying on flat surfaces;
- execution of a first spraying on the base using a spraying system, through a liquid dispersion containing cork, typically in granules, water, acrylic resin and polyurethane resin in a quantity between 50-150 grams per square metre;
- drying of the base thus sprayed in a drying oven, preferably ventilated, where the oven of 8 metres in length has a temperature of 80-170°C and dries at a rate spread of 2 to 4 linear metres per minute with a drying time per each square metre of about 2-4 minutes to obtain the base coated with a first layer of coating where the temperature and the drying speed can also be different, depending on the length of the oven;
- execution of at least a second spraying, like the first, as described above;
- drying of the base thus sprayed in the drying oven, as defined above, with a drying time per each square metre of about 2-4 minutes to obtain the base coated with a second layer of coating;
- execution of any further spraying and drying to obtain the desired coating result;
- execution, if desired, of sanding of the external surface of the fabric thus obtained;
- winding by a roll winding system of the improved fabric thus obtained.

[0039] Preferably the sprays in the process are more than two.

[0040] Typically, the spraying pressure is preferably between about 0.8 bar and about 1.5 bar, more preferably between about 0.9 bar and about 1.2 bar and even more preferably between about 0.9 bar to 1 bar.

[0041] Drying can also take place at a speed of 2 linear meters per minute with a temperature of 100°C and at a

speed of 3 linear meters per minute with a temperature of 150°C.

[0042] The drying time is related to the speed of the conveyor belt of the drying oven and the temperature of the drying oven.

[0043] The following items are also object of the present invention, made with the improved fabric of the present invention selected from:

- shoes or uppers or parts of shoes,
- a garment such as a skirt, an overcoat,
- a bag or a body bag,
- a wallet or the outside of a wallet,
- a label or inserts to be applied to garments.

[0044] The subject of the present invention is also one of the following items, made through the improved fabric of the present invention selected from:

- a blanket,
- a carpet,
- a lining,
- a seat,
- a saddle,
- a seat cover,
- a steering wheel,
- a canvas,
- a towel.

[0045] The following example illustrates the invention

EXAMPLE

[0046] A cotton base in roll of dimensions 140 cm (useful height) X 100 linear meters is unrolled by a roller and placed on a conveyor belt. Said base is sprayed by a nebulization pressure of about 1 bar with a dispersion with the following recipe: liquid dispersion containing cork, typically in granules, water, acrylic resin and a polyurethane resin. The so coated base is then transported to a drying oven having a temperature of 150°C and a drying speed of 3 linear meters per minute for a time of about 2-4 min.

[0047] The base thus coated and dried is subjected to a second spraying with the same procedure indicated above. Said further coated base is subjected to a second drying with the same procedure indicated above.

[0048] They proceed with further spraying and relative drying to obtain the improved finished fabric.

Claims

1. An improved fabric comprising a base and a coating, said fabric being **characterised in that** it comprises as to the coating part

* 15%-70% cork,

* 1%-15% acrylic resin, and possibly

* 1%-25% polyurethane resin,

where the percentages are expressed by weight of the improved fabric.

2. The improved fabric according to claim 1, wherein the base is typically made of natural fibres, including organic fibres such as cotton, linen, hemp, wool, regenerated leather fibres also in mixed compositions or synthetic fibres such as polyamide, polyester, polyethylene, polypropylene, polyurethane also in mixed compositions; wherein the natural and synthetic fibres can also be recycled.

3. The improved fabric according to claims 1-2, wherein the cork is preferably between about 20% and about 70%, more preferably between about 40% and about 65%.

4. The improved fabric according to any of the claims 1-3, wherein the acrylic resin is preferably between about 1% and about 10%, more preferably between about 1% and about 9%.

5. The improved fabric according to any of the claims 1-4, wherein the polyurethane resin if present is preferably between about 1% and about 15%, more preferably between about 2% and about 10%.

6. The improved fabric according to claim 1, wherein the cork in each blend is typically in granules and is preferably ground, or in other forms such as small spheres.

7. The improved fabric according to claim 6, wherein, when the cork is in granules, it has a particle size between about 0.3 mm and about 1mm.

8. The fabric according to claim 6, wherein, when the cork is in the form of small spheres, said small spheres have a diameter of between about 0.3 mm and about 1mm.

9. The improved fabric according to the preceding claims, further comprising pigments, dyes.

10. The improved fabric according to the preceding claims, having a thickness of between 1mm and 3mm.

11. The improved fabric according to the preceding claims, wherein the coating (by weight) is applied to the base (surface) in the following ratio: 0.750 kg \pm 200 grams/1 m²

12. The improved fabric according to the preceding claims, having a flexibility of 50,000 to 150,000 *Bally*

cycles.

13. The improved fabric according to the preceding claims, having an abrasion resistance with light abrasion result after 51,200 Martindale cycles.

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14. The improved fabric according to claim 1, wherein the fabric composition is

- * 40-65% cork,
- * 1-9% acrylic resin,
- * 20-40% cotton;
- * 2-10% polyurethane resin

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15. The improved fabric according to claim 1, wherein the fabric composition is

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- * 40-65% cork,
- * 1-9% acrylic resin,
- * 20-40% polyamide,
- * 10-40% polyurethane
- * 2-10% polyurethane resin

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16. A continuous process **characterised by** the following steps:

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- winding by base roll winding system;
- arrangement of the base on a conveyor belt, so that the roll with the base can be unwound and loaded on said conveyor belt;
- rotary or in-line spraying of the base or spraying of the base with other techniques for continuous spraying on flat surfaces;
- execution of a first spraying on the base using a spraying system, through a liquid dispersion containing cork, typically in granules, water, acrylic resin and polyurethane resin in a quantity between 50-150 grams per square metre;
- drying of the base thus sprayed in a drying oven, preferably ventilated, where the oven of 8 metres in length has a temperature of 80-170°C and dries at a spread rate of 2 to 4 linear metres per minute with a drying time per each square metre of about 2-4 minutes to obtain the base coated with a first layer of coating where the temperature and the drying speed can also be different, depending on the length of the oven;
- execution of at least a second spraying, like the first, as described above;
- drying of the base thus sprayed in the drying oven, as defined above, with a drying time per each square metre of about 2-4 minutes to obtain the base coated with a second layer of coating;
- execution of any further spraying and drying to obtain the desired coating result;
- execution, if desired, of sanding of the external surface of the fabric thus obtained;

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- winding by a roll winding system of the improved fabric thus obtained.

17. One item chosen from:

- shoes or uppers or parts of shoes,
- a garment such as a skirt, an overcoat,
- a bag or a body bag,
- a wallet or the outside of a wallet,
- a label or inserts to be applied to garments made through the improved fabric according to claims 1-15.

18. One item chosen from:

- a blanket,
- a carpet,
- a lining,
- a seat,
- a saddle,
- a seat cover,
- a steering wheel,
- a canvas,
- a towel,

made through the improved fabric according to claims 1-15.



EUROPEAN SEARCH REPORT

Application Number

EP 22 02 0253

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			TECHNICAL FIELDS SEARCHED (IPC)
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The present search report has been drawn up for all claims			
Place of search		Date of completion of the search	Examiner
The Hague		28 October 2022	Blas, Valérie
CATEGORY OF CITED DOCUMENTS			
X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

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5 This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
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