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(54) PROCESS FOR OPTICAL BLEACHING OF A TEXTILE PRODUCT MADE FROM ANIMAL FIBERS AND TEXTILE PRODUCT TREATED ACCORDING TO THIS PROCESS

(57) The present invention relates to a process for bleaching into optical white tone textile products obtained from fibres of animal origin, not previously subjected to a bleaching treatment, pure or mixed between them, such as for example those of cashmere, wool, alpaca, vicuña, silk.

The process comprises preparing a bath, for treating the textile product, composed of an amount of water of at least 15 litres per 1000 grams of weight of the product to treat in the bath, of at least 75 grams of 90% hydrosulphite, of a solvent for removing fatty substances from animal fibres, in an amount of at least 15 grams and of at least 20 grams of an optical brightener compound.

According to the invention, the textile product must remain in the bath for a time comprised between 60 and 90 minutes, and the bath temperature, during the treatment of the product must not be higher than 60°C.

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Description

[0001] The present invention relates to a process for bleaching into optical white tone a textile product formed from fibres of animal origin, pure or mixed between them.

[0002] By animal origin, within the scope of the present invention, it is meant fibres, for example, of cashmere, wool, alpaca, vicuña, silk and the like.

[0003] By textile product to be treated, within the scope of the present invention, it is meant both the raw material, composed of fibres prepared for the spinning, called "TOPS" and the yarns obtained with the aforementioned fibres, as well as the fabrics obtained from the yarns.

[0004] In particular, the process according to the invention is intended for the treatment of yarns of animal origin, as specified above, in the form of extra-fine combed yarns with a count comprised between 50,000 Nm and 180,000 Nm.

[0005] Preferably, the process finds application in the treatment, to obtain the optical white tone, of textile products, obtained with the aforementioned fibres contained in the yarns for the indicated counts, ready to be manufactured into garments.

[0006] As is known, the tone called "optical white" is a colour with high brightness without tint, which reflects all the light it receives, the degree of which is measurable by means of a conventional spectrophotometric reading.

[0007] The obtainment of the "optical white" tone in the sector of fibres of animal origin, with the technologies currently known and used, provides for a preliminary bleaching treatment through the use of conventional chemical bleaching substances, which is followed by a second treatment in a bath containing brightening substances, also called optical brighteners, and stabilizing substances, acting as a catalyst, which allow the optical brighteners to interact with the fibres to achieve the desired "optical white" tone.

[0008] This known methodology, described for example in the examples reported in US 3,595,604 and also in US 3,984,399, involves high water consumption for the formation of the preliminary treatment bath and of the final treatment bath, high consumption of chemical substances, as well as not negligible costs for the disposal of the liquids used which are notoriously polluting.

[0009] Apart from the complexity of this known methodology, at present, it has the drawback of achieving minimal results, slightly higher than that of the classic white that characterizes the original raw fibre.

[0010] A further drawback, presented by this known technique comprising a preliminary bleaching and a subsequent treatment, in a different bath with brightening substance, consists in the fact that it is not in any case applicable to extra-fine combed yarns (from 50,000 to 180,000 Nm).

[0011] In fact, products made with very thin counts, such as those mentioned above, have the great drawback of being highly fragile, owing to the drying due to the preliminary whitening chemical treatments and, consequently, also at the end of the optical white treatment, are not usable for manufacturing garments. In accordance with a further known technique, described for example in US 3,598,810, the fibres of animal origin and the textile products obtained by means of the aforementioned fibres, although they have not been previously treated, however, in order to obtain the so-called "optical white" tone, are subjected to a process which involves the use of a high quantity both of stabilizing product and of brightening product.

[0012] In fact, per unit of weight of the product to be treated, for example for 1000 grams, in accordance with this known technique, it is necessary to use 2000 grams of stabilizing product, such as sodium hydrosulphite, to facilitate, in the bath, as a catalyst, the action of about 800 grams of brightener, or optical brightener, as can be deduced from example 14 of the US document mentioned above.

[0013] In accordance with the process according to the invention, however, for the same quantity of 1000 grams of product to be treated, i.e. fibres of animal origin, it has been found that a much smaller quantity is sufficient, equal to only 75 grams, of the same product, sodium hydrosulphite, stabilizer and catalyst, and only 20 grams of an optical brightening compound, with remarkable advantages of cost savings, while maintaining the possibility of obtaining high gradations in the scale of the "optical white" tones.

[0014] The object of the present invention is therefore to provide a process for obtaining the so-called "optical white" with a single treatment, on fibres ready for spinning, known with the term "TOPS", of animal origin, or on extra-fine combed yarns, obtained from these fibres, or, again, on woven products made with the aforementioned type and nature of yarns, without conventional whitening treatments being carried out on these products which, by weakening their resistance, would compromise their use in manufacturing garments.

[0015] A further object is to safeguard the softness of the hand, such as to remain exactly the same as that of a product not subjected to the process of the present invention.

[0016] Finally, not least object is to present a highly ecological treatment with a reduction in the quantities to be disposed of the chemicals used.

[0017] This and other objects which may appear from the following description are achieved by a method for obtaining the optical white on textile products obtained from fibres of animal origin which is characterized in accordance with claim 1 set forth below.

[0018] The invention will now be further described with reference to some examples of its practical implementation, referred to by way of non-limiting example.

Example 1

[0019] A quantity of 10 kg of cashmere fibres prepared for spinning (TOPS) were placed in a treatment contain-

er, for bleaching into optical white tone, in which there was a bath consisting of 150 litres of water to which 750 grams of 90% hydrosulphite (ALBITE F), a solvent for the elimination of fatty substances from animal fibres (GP BIOWASH) in the measure of 150 g and a quantity of brightening product (UVITEX BHT) equal to 200 grams were added. The bath temperature was maintained at a temperature of 60 ° C and the pH at about 7, i.e. at a substantially neutral value.

[0020] The immersion of the product in the bath was maintained, with stirring of the same, for 60 minutes.

[0021] After this time, the product was extracted from the bath and subjected to a cold wash. Finally, the product was subjected to spinning for the production of an extra-fine combed yarn with a T count of 120,000 Nm.

[0022] The fabric obtained with the aforementioned yarn has a high degree of optic white tone and a high tear resistance, making it suitable for manufacturing high quality garments.

Example 2

[0023] No.100 bobbins with 1Kg each of extra-fine combed yarn, with a T count of about 80,000 Nm, consisting of cashmere and silk fibres, were subjected to a treatment for bleaching into optical white tone, with continuous immersion in a bath consisting of 1500 litres of water containing 7500 grams of 90% hydrosulphite (ALBITE F) a solvent for the elimination of fatty substances from animal fibres (GP BIOWASH) in the measure of 1500 g and a quantity of brightener product (UVITEX BHT) equal to 2000 grams. The bath temperature was maintained at a temperature of 60°C and the Ph at about 7, a substantially neutral value.

[0024] The permanence of the product in the bath, with stirring of the same, lasted 90 minutes after which, the bobbins, extracted from the bath, were subjected to a washing in water at a temperature below 60°C.

[0025] A fabric was produced with the yarn which fabric was found to have a good tone of optical white, with high mechanical strength, which allowed manufacturing high quality garments.

Example 3

[0026] A piece of fabric of animal origin fibres (cashmere) produced with an extra-fine combed yarn, with a count of approximately 180,000 Nm, with a total weight of 100 Kg, was subjected to the optical white bleaching procedure with immersion in a bath having the composition indicated in the previous example 2. The permanence in the bath lasted for a time comprised between 60 and 90 minutes, with the bath temperature maintained at 60°C and with a substantially neutral Ph.

[0027] After extraction from the bath, the piece of fabric was washed in cold water. It was found that the fabric had a high degree of optic white tone as well as a conventional tear resistance such as to allow the use thereof for manufacturing garments of excellent quality and durability.

Claims

1. A method for bleaching into optical white tone textile products obtained from fibres of animal origin, not previously subjected to a bleaching treatment, **characterized in that** it comprises:

   - preparing a bath, for treating the textile product, composed of an amount of water of at least 15 litres per 1000 grams of weight of the product to treat in the bath, of at least 75 grams of 90% hydrosulphite, of a solvent for removing fatty substances from animal fibres, in an amount of at least 15 grams and of at least 20 grams of an optical brightener compound,
   - leaving the product in the bath for a period of time between 60 and 90 minutes,
   - keeping the bath temperature, during the treatment of the product at a level not higher than 60°C.

2. The method according to claim 1, **characterized in that**, after extracting the product from the bath, it comprises cold washings of the product.

3. The method according to claim 1, wherein the said textile product to submit to treatment into the said bath, is composed of fibres of animal origin, prepared for the spinning, so-called TOPS, without having received a bleaching treatment.

4. The method according to claim 1, wherein the said textile product to submit to treatment into the said bath, is composed of extra-fine combed yarns of animal origin which have not yet received any bleaching treatment.

5. The method according to claim 4, wherein the count of said extra-fine combed yarns is comprised between Nm 50,000 and Nm 180,000.

6. The method according to claim 1, wherein the said textile product to submit to treatment into the said bath, is composed of a fabric made of said extra-fine combed yarns of animal origin which have not yet received any bleaching treatment.

7. The method according to any one of claims 1 to 6, **characterized in that** it comprises the step of keeping the bath at a substantially neutral Ph value.

8. A textile product with optical white tone, obtained with the method according to any one of claims 1 to 7, and wherein the said fibres of animal origin, pure

or mixed between them, include those made of cashmere, wool, alpaca, vicuña, silk.

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EUROPEAN SEARCH REPORT

Application Number
EP 20 15 5094

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A	* claims 1-4 *	1-7	
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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	23 June 2020	Barathe, Rainier

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 20 15 5094

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