

Covering article for beds and similar, and method for the manufacturing thereof.

5 The present invention relates to a covering article for beds and similar, as well as to a method for the manufacturing thereof.

10 In the first place, the invention relates to a mattress cover; but, generally, it also relates to other covering articles for beds and similar, such as feather-beds, cushions, fillings therefore, covers, blankets, knit bed-carpets, and so on.

15 As is known, the aforementioned covering articles for beds easily form a place wherein organisms, such as house-mites and similar, can establish themselves.

20 House-mites, for example, feed on the fungi and on flakes of human skin which, as known, get into the bed-clothes.

In a lot of cases, the presence of such house-mites and similar organisms causes allergic reactions.

25 In the case of house-mites, it is the excretions which cause allergic reactions. Consequently, the house-mites have to be exterminated to prevent allergies.

30 The dust formed by the excretions of the house-mite, as well as the spores of the fungi are responsible for respiratory allergies and asthma attacks.

35 The solutions known up to now for the control of such house-mites are simple, but rather troublesome. They consist in airing the bed-clothes daily very thoroughly, eventually hoovering them, or washing the bed-clothes as

often as possible.

Fabrics, amongst others for covering articles for beds, which are treated with a bactericide and/or fungicide, as well as methods for the treatment during laundering, are a.o. known from the document GB-A-2.248.774, the document US-A-3.691.570, the document US-A-4.525.409, the document EP-A-0.113.254 and the document FR-A-2-015.989, as well as from the literature, more particularly from the chapter "Antimicrobial protection" from "Textile progress", part 22 (1992), No. 2/3/4, and from the article "Antimikrobielle Ausrüstung von Textilien für den Spitalbereich" from "Textilveredlung", part 26 (october 1991), No. 10.

In all these documents, principally the medical and nursing world is envisaged. Hereby, it is principally aimed at killing the microbes, bacteria, and fungi. There is, however, no solution offered which is efficient against house-mites, as this is no primary concern of the medical and nursing world. In respect to this, it has to be noted that the house-mite is an arachnide, which is a being which is not comparable to an insect, nor to a bacterium or fungus, and that, as a result of this, products which are intended as insecticides, do have little or no effect.

All known techniques show also an imperfect fixation which, above all, is due to the imperfect knowledge of the fixation itself.

The invention aims at a covering article for beds and similar, whereby the aforementioned problem is avoided and excluded.

To this aim, the invention consists of a covering article

for beds and similar which shows the characteristic that it is provided with an anti house-mite biocide fixed on the article.

- 5 The anti house-mite biocide comprises at least one acaricide as an active component.

Preferably, a biocide A is used which is available on the market under the denomination of "Amicide 90HP2".

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Preferably, according to the invention, for the acaricide use shall be made of a product based upon a natural extract of petals of chrysanthemums, more particularly pyretinoide.

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Contrary to permetrine, this extract is not subjected to a synthesis treatment. Therefore, it remains a naturally biodegradable product.

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Another aim of the invention consists in providing a covering article for beds whereby the aforementioned acaricide is provided at the fibers of the covering article in such a manner that an active working can be guaranteed for the service life of the fiber and therefore for the covering article. To this end, the anti house-mite biocide, more particularly the acaricide, is fixed at the covering article by means of a binding agent.

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Due to the fact that the biocide is fixed at the covering article by means of a binding agent, the advantage is obtained that the biocide is set free only very slowly and that a prolonged effect is guaranteed. There is also the advantage obtained that the covering article can be

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laundered very often, even dozens of times, without losing the efficiency of the biocide.

In the most preferred form of embodiment, use is made of a biocide which shows a bactericide, anti-fungus and acaricide activity as well. As a result of this, the possibility is obtained to take measures against the house-mites on two levels. On one hand, the development of fungi is counteracted thereby, these fungi are exterminated, respectively, in such a manner that the development of a culture medium for the house-mites is excluded. On the other hand, the house-mites are also directly controlled, in the larva stage as well as in the stage of adult house-mite. It is noted that fungi expel spores which, in their turn, also have a strong allergic effect and that, by their elimination, at the same time a second source of allergies is suppressed.

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For the bactericide and fungicide activity, use is preferably made of 4-chloro-3-methyl phenol, orthophenyl phenol, and glycol ether.

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The aforementioned binding agent can be of different kind. Hereby, use can be made of a product which is already used for other purposes or of a product which is applied exclusively for the fixation of the biocide.

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In the latter case, preferably a binding agent is applied which consists of a product based on acryl, more particularly based on perfluorated acrylic compounds.

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According to another characteristic of the invention, a binding agent can be used which is water-repellent and oleophobic. This binding agent also provides a protection against UV rays and against the mordant aspect of detergents.

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According to the invention, also a melamine formaldehyde resin can be added to the binding agent, as a result of

which the obtained layer meets the requirements in a more optimum manner.

Additional other products can also be added to the
5 binding agent, such as, for example, products which enhance the laundering and dry-cleaning resistance.

Preferably, the biocide is fixed on the article by means of a binding agent dried by means of a thermal drying
10 process, whereby this thermal drying can be realized by heating as well as freeze drying.

According to a preferred form of embodiment, one starts with an covering article which is composed of a
15 substrate and a fur layer applied thereupon. The use of such fur layer in combination with the application of the biocide offers the advantage that a large contact surface is obtained whereupon the biocide can be fixed by means of the binding agent.

20 At the same time, a double effect is created thereby, namely, on one hand, a first effect on the bottom of the material, where the house-mite prevails, and, on the other hand, also at the surface in order to prevent that
25 the house-mite settles there. On the bottom, preferably a higher concentration is used than on the fibers.

In the case of a covering article of this type, according to the invention, the biocide can either be
30 applied exclusively on the fibers of the fur layer, or exclusively on the substrate, or as well on the fibers as on the substrate.

In the case that a covering article is concerned which
35 itself is already provided with a coating layer, such as an appret, for example, for making this article

watertight, the biocide can be mixed with the material of which this coating layer consists, in such a manner that the material of the coating layer works as a binding agent.

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For a coating layer, in this cases can be chosen from materials from the following series: a watertight synthetic material; latex; a mixture of acrylic resins and polyurethane resins; a mixture of acrylic resins.

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In the case that a covering article is concerned which is composed at least partially of fibers, such as, for example, the aforementioned fur, these fibers preferably are provided with the aforementioned biocide prior to the composition of the article. Hereby, it is obtained that the biocide is incorporated in the article in an optimum manner.

According to a preferred form of embodiment, the covering article is a knitted article, but can also be commercialized as a woven or tufted fabric.

In first instance, the invention proves its value in the case of a mattress cover and/or a so-called inlay sheet which can be provided on top of the sheet, and/or an anti bed-sore fleece, also called anti-decubitus spread, and/or a bedspread. In fact, the population of house-mites is always the largest in these articles, and in first instance in such inlay sheets, as well as in anti bed-sore fleeces, at least if no special measures are taken to control the house-mites.

Consequently, in an optimum form of embodiment, the mattress cover according to the invention consists of a sheet, with well-defined dimensions, of the aforementioned article formed by a substrate and a fur

layer, which, as mentioned before, is provided with a biocide. However, this does not exclude that the invention can be realized in combination with other kinds of mattress covers, for example, without fur layer and/or
5 with a basic layer based on wool or cotton instead of synthetic material.

In the case of cushions and bedspreads, including bedspreads made of fur, it is preferred that the filling
10 as well as the tick are realized in accordance with the invention.

It is noted that the articles according to the invention, apart from the domestic use, have an additional value for
15 the use in hospitals, in homes for aged people, and hotels, due to the additional hygienic aspect connected with the invention.

Finally, the invention also relates to a method for the
20 manufacturing of a covering article, which consists of a pretreatment of the fibers and the fixation of these fibers on a substrate, in such a manner that these fibers form a fur layer, with the particularity that the fibers, during their pretreatment, are also treated with a
25 biocide, whereby this biocide is fixed on the fibers by means of a binding agent.

In a very practical form of embodiment, the mixture of binding agent and biocide is sprayed onto the fibers
30 during their carding.

In a particular form of embodiment, the fibers treated with biocide are conserved, after the treatment with the aforementioned mixture, for a well-defined period of time
35 in closed receptacles. As a result of this, the biocide, respectively the binding agent, can adhere to the fibers

in an optimum manner.

5 In a preferred form of embodiment of the method, the back side of the substrate is provided with a biocide by mixing this biocide with a coating material and applying it together with the coating material on the back side, and/or providing the biocide on the fabric of the substrate previously to the application of the coating layer, appret or coating.

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With the intention of better showing the characteristics of the invention, in the following, by means of example only, without any limitative character, a preferred form of embodiment of a production process of a covering
15 article of the invention is described, with reference to the sole accompanying drawing which schematically represents the production process.

20 Hereby, a production process is concerned for the manufacturing of mattress covers 1, which are composed of a substrate 2 and a fur layer 3 attached thereto.

For the fur layer 3, one starts with a supply 4 of fibers 5, preferably synthetic fibers. These fibers 5 can be
25 delivered in bales.

Subsequently, the fibers are subjected to various pretreatments. In the block diagram of the figure, these are represented by the blocks 6, 7 and 8.

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In the first step, represented by block 6, the fibers are dyed.

35 In the step represented by block 7, the fibers 5 are drawn apart a first time and possibly mixed with fibers from other supplies. Hereby, the so-called "pickering" is

concerned.

According to a variant, the aforementioned steps can be replaced by a supply of fiber hanks, whereby the fiber
5 hanks are cut to small fibers of a well-defined length.

In the step which is represented by block 8, the fibers 5 are drawn apart still better, by means of a card treatment.

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According to the invention, the fibers 5 are treated during carding, preferably sprayed on, with a mixture 9 of binding agent with biocide. The biocide, which is an anti house-mite biocide, is dosed according to a ratio of
15 0,4 to 0,6 weight percent of the whole.

Subsequently, the treated fibers are intermediately stocked in closed receptacles 10, for example, in sacks.

20 Subsequently, a continuous band 11 is formed, consisting of the substrate 2 and the fur layer 3.

In the represented example, to this end a knitting machine 12 is used. In this knitting machine 12, a
25 substrate 2 is knitted from a supplied material 13, for example, synthetic knitting yarn, and the aforementioned fibers 5 are systematically fixed therein by knitting.

Subsequently, on the back side 14 an appret is applied.
30 This takes place, for example, by providing appret agents 15 in a device 16, for example, by means of an automatic doctor blade mechanism, on the back side and subsequently fixing this appret agent 15 by drying in a kiln 17.

35 According to the invention, in this step a second addition of biocide takes place, more particularly by

mixing the latter with the appret agent 15, for example, also with a ratio of 0,4 to 0,6 weight percent, or by spraying the biocide onto the substrate or, thereby, the fabric, prior to the application of the appret agent 15.

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In a station 18, the article can be subjected to various aftertreatments, such as polishing, combing and cutting the fibers 5 of the fur layer to an equal height.

10 After the cutting to suitable length and/or width, sheets 19 are obtained which either are directly suitable as mattress covers or shall be further provided with accessories, such as fixation loops and similar.

15 The present invention is in no way limited to the form of embodiment described by means of example and represented in the figure, however, such covering article can be realized in various forms and dimensions without leaving the scope of the invention.

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So, for example, in the case of a pillow, with a fur covering, the fibers can be sprayed exclusively.

Claims.



- 1.- Covering article for beds and similar, characterized
5 in that it is provided with an anti house-mite biocide
which is fixed on the article.
- 2.- Covering article according to claim 1, characterized
10 in that the biocide, as an active component, comprises at
least one acaricide.
- 3.- Covering article according to claim 1 or 2,
characterized in that the active component comprises at
15 least an extract formed of the petals of chrysanthemums.
- 4.- Covering article according to claim 3, characterized
in that the active component comprises natural
pyrethinoids.
- 20 5.- Covering article according to any of the foregoing
claims, characterized in that the biocide comprises
active components which, besides the acaricide activity
thereof, also provide in a bactericide and anti-fungus,
respectively fungicide, activity.
- 25 6.- Covering article according to claim 5, characterized
in that the biocide comprises 4-chloro-3-methyl phenol,
orthophenyl phenol, and glycol ether.
- 30 7.- Covering article according to any of the foregoing
claims, characterized in that the biocide is fixed on the
article by means of a binding agent.
- 35 8.- Covering article according to any of the foregoing
claims, characterized in that the binding agent consists
of a product based on acryl, more particularly based on

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perfluorized acrylic compounds.



9.- Covering article according to claims 7 or 8,
characterized in that the biocide is fixed by means of a
5 binding agent which is dried by means of a thermal drying
process, either by means of heating or by means of freeze
drying.

10.- Covering article according to any of the foregoing
10 claims, characterized in that it consists of a substrate
(2) and a fur layer (3).

11.- Covering article according to claim 10, character-
ized in that the biocide is provided at least on the
15 fibers (5) of the fur layer (3).

12.- Covering article according to claim 10 or 11,
characterized in that the back side (14) is provided with
a coating layer, whereby the biocide is mixed with the
20 material, more particularly the appret agent (15), of
which this coating layer consists, in such a manner that
the material of the coating layer functions as a binding
agent.

25 13.- Covering article according to claim 12, character-
ized in that the coating layer consists of a material,
chosen from the following series: a watertight synthetic
layer; a mixture of acrylic resins and polyurethane
resins; a mixture of acrylic resins.

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14.- Covering article according to any of the claims 10
to 13, characterized in that the biocide is provided at
the front side, more particularly on the fibers of the
fur layer (3), as well as on the back side (14).

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15.- Covering article according to any of the foregoing

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claims, which at least partially is composed of fibers,
yarns or similar, characterized in that it comprises
fibers and/or yarns which are provided with the
aforementioned biocide prior to the composition of the
5 article.

16.- Covering article according to any of the foregoing
claims, characterized in that it is a knitted or woven
article.

10 17.- Covering article according to any of the foregoing
claims, characterized in that is consists of a mattress
cover (1) and/or inlay sheet and/or anti bed-sore fleece
and/or bedspread.

15 18.- Method for the manufacturing of a covering article
for a bed, more particularly a mattress cover (1), an
anti bed-sore fleece, an inlay sheet and/or a bedspread,
according to any of the claims 10 to 17, consisting in
20 the pretreatment of fibers (5) and the attachment of
these fibers (5) on a substrate (2), in such a manner
that the aforementioned fibers (5) form a fur layer (3),
characterized in that the fibers (5) during their
pretreatment are also treated with a mixture (9) of
25 biocide and binding agent.

19.- Method according to claim 18, characterized in that
the fibers (5) at least are carded during their
pretreatment and that the mixture (9) is sprayed onto the
30 fibers (5) during carding.

20.- Method according to claim 18 or 19, characterized in
that the fibres (5) treated with biocide are conserved,
immediately after the treatment with the aforementioned
35 mixture (9), during a well-defined period of time in
closed receptacles (10) before being attached to the

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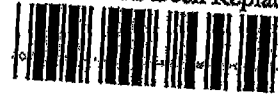
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substrate (2).

21.- Method according to claim 18, 19 or 20,
characterized in that the back side (14) of the substrate
5 (2) also is provided with a biocide, and that this takes
place by mixing the biocide with a coating material, more
particularly an appret agent (15), and applying the
latter, together with the coating material, onto the
substrate (2) or applying it on the fabric of the
10 substrate (2), respectively spraying it thereupon, prior
to the application of the coating material.

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