superior airflow and greater bond strength over the bedding product disclosed in EP2209405B1.

The present invention relates to a hermetically sealed infection control bedding product as claimed in claim 1 and a method of manufacture of a hermetically sealed infection control bedding product as claimed in the independent method claim of the appended claims. Preferred features are also claimed in the dependent claims appended hereto.

Detailed Description

The invention will now be described more particularly with reference to the accompanying drawings, in which are shown, by way of example only, three embodiments of a pillow in accordance with the present invention.

The embodiments shown in the drawings comprise an infection control pillow but of course, it is to be understood that a pillow is provided as an example only, and that many other infection control bedding products are within the scope of the present invention.

In the drawings:

Figure 1 is a plan view of the inside of a pillow relating to all the embodiments of the present invention;

Figure 2 is an exploded view of the layers of materials included in the first embodiment of the infection control bedding product of the present invention;

Figure 2A is a schematic diagram of the layers of the components with an exploded view showing the glue dots applied to the strengthening layer as shown in Figure 3(iii) and Figure 3 (iiia)

Figure 3a is a schematic view of the pillow of the first embodiment including the filter medium in accordance with the present invention;

Figure 3b is a sectional view along the line A- A of Figure 3a and showing a detailed construction of the filter medium of the first embodiment prior to welding.

Figure 4 is a schematic view of the pillow of the first embodiment including the filter medium after High Frequency (HF) welding;

Figure 4b is a sectional view along the line B-B of the filter medium shown in the first embodiment in Figure 3(a) showing the construction of the filter medium after welding;

Figure 4c is an electron microscope image of the interface between the filter medium/pillow cover fabric, following welding;

Claims

1. A hermetically sealed infection control bedding product such as a pillow, duvet, mattress, cushion or such like having a hermetically sealed cover and having a resiliently deformable filling material, comprising a vent means in the hermetically sealed cover, characterised in that the vent means comprises a filter medium including a filter membrane for the removal of particles of microbial size of 0.03 microns or greater and wherein the filter medium also comprises a strengthening layer of material for providing mechanical strength to the filter medium wherein the filter medium also comprises an adhesive layer whereby the filter medium allows air flow therethrough but is substantially impermeable to liquid while maintaining a barrier to particles of microbial size; wherein the adhesive layer is formed from a plurality of dots of adhesive applied to the strengthening layer .

2. A hermetically sealed infection control bedding product as claimed in claim 1 wherein the layer of strengthening material included in the filter medium, comprises a material providing mechanical strength, and preferably comprises a thermoplastic material.

3. A hermetically sealed infection control bedding product as claimed in claim 1 or claim 2 wherein the vent further includes a gasket adapted to ensure that edges of the vent joined to the cover of the infection control product are sealed and impermeable to liquid.

4. A hermetically sealed infection control bedding product as claimed in claim 3 wherein the gasket is of dimensions corresponding to the dimensions of the aperture in the cover of the infection control product into which the vent is located.

5. A hermetically sealed infection control bedding product as claimed in claim 3 or claim 4 wherein the gasket is manufactured of the same material as the cover of the infection control product.

6. A hermetically sealed infection control bedding product as claimed in claim 1 wherein the filter membrane includes means for substantially preventing liquid ingress, while allowing air to permeate, said means being provided by the filter membrane comprising a hydrophobic material or oleophobic material.

7. A hermetically sealed infection control bedding product as claimed in claim 6 wherein the filter membrane is manufactured of an oleophobic expanded PTFE membrane including a backing support optionally, the backing support being formed of non-woven material.

8. A hermetically sealed infection control bedding product as claimed in any one of the preceding claims wherein the filter membrane comprises a bacteriological filter so as to prevent the ingress of bacteria to an interior of the cover.

9. A hermetically sealed infection control bedding product as claimed in claim 8 wherein the filter membrane is adapted to block passage of particles having a

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size of 0.03 microns or greater.

10. A hermetically sealed infection control bedding product as claimed in any one of the preceding claims wherein the cover of the infection control bedding product such as a pillow is manufactured of polyurethane coated polymeric material, for example polyurethane coated nylon.

11. A hermetically sealed infection control bedding product as claimed in any preceding claim wherein an aperture is formed in the cover of the product and is adapted to receive the vent.

12. A hermetically sealed infection control bedding product as claimed in claim 11 wherein the aperture in the cover of the infection control product is located so that the seam of the filter medium and aperture is not integral with any perimeter seam of the cover of the infection control product.

13. A hermetically sealed infection control bedding product as claimed in claim 8 wherein the filter membrane is adapted by having a pore size of between 0.2 and 4 microns.

14. A method of manufacture of a hermetically sealed infection bedding product such as a cushion, pillow, duvet, mattress or such like, comprising the steps of:
a) providing a filter membrane
b) providing a strengthening layer
c) providing a cover of the bedding product, the cover having an aperture adapted to receive the filter membrane and strengthening layer; and
d) adhering the layers a), b) and the cover c) together by applying adhesive in the form of a plurality of dots on the surface of the strengthening layer which faces the filter membrane,
(e) Applying heat so that when heat is applied, the layers are sealed together and are impermeable to liquid, whereby
the filter membrane and strengthening material are bonded together with the cover of the infection control bedding product, at an aperture in the cover so as to provide a vent in the infection control bedding product.

15. A method of manufacture as claimed in claim 14 wherein a gasket manufactured of thermoplastic material is provided between steps b) and c) and the gasket is also bonded together with the filter membrane and the strengthening layer, to the cover of the product; optionally wherein the gasket is manufactured of the same material as the cover of the product.

16. A method of manufacture as claimed in claims 14 to 15 wherein the layers are affixed together by bonding; optionally wherein the bonding is carried out by gluing or welding.

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