

PATENT SPECIFICATION

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(54) SANITARY TOWEL

(71) We, KAO SOAP CO. LTD., a Japanese Company, of 1,1-chome, Nihon-bashi-Kayabacho, Chuo-ku, Tokyo, Japan, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:-

This invention relates to a sanitary towel for menses.

In general aspect, a conventional sanitary towel has a structure comprising an absorption layer consisting of fluff pulp or absorbent tissue, a waterproof layer to cover the lower surface and both sides of said absorption layer, and a nonwoven fabric enclosing the whole. Such a conventional fabric has a flat thin structure, whether there is used a wet-type nonwoven fabric or a dry-type one.

In addition, the nonwoven fabric is water-repellent because hydrophobic binders or hydrophobic fibers are used, at least in part. When such a prior art sanitary towel is worn, it assumes a bulging shape with a central part swollen relative to the sides, with the disadvantages that the discharged liquid tends to flow over the surface of the nonwoven fabric and leak away because of the flat surface of the fabric and the water-repellency thereof when the liquid is discharged rapidly. In order to prevent such leakage, there has been provided a sanitary towel, as described in Japanese Utility Model Publication No. 9600/1963, having short downy fibers applied to its surface. But such a sanitary towel has not found favour with users because the discharged liquid causes the surface to become soft and sticky and the short downy fibers tend to become removed during use.

This invention reduces the above disadvantages of conventional sanitary towels and relates to a novel sanitary towel using a bulky, low density nonwoven fabric which can easily allow discharged liquid to penetrate and become absorbed by the inner

regions of the towel.

In particular, this invention provides a sanitary towel comprising an absorption layer, a waterproof layer covering the lower surface and both sides of the absorption layer and a layer of nonwoven fabric covering the whole of the absorption and waterproof layers, the nonwoven fabric having a density from 0.01 g/cm³ to 0.07 g/cm³ and a thickness from 0.3 mm to 3 mm and comprising a blended mixture of rayon fibers and polypropylene fibers in a weight ratio from 90:10 to 30:70, which fibers are adhered to one another by partial fusion of the polypropylene fibers.

The nonwoven fabric contains rayon as a major component and in addition polypropylene fiber to increase the bulk of the fabric. The weight ratio of rayon to polypropylene fibers is preferably from 80:20 to 45:55.

If too much polypropylene fiber is used, the absorption rate of the sanitary towel decreases. The above-mentioned range is accordingly essential to this invention. The density of the nonwoven fabric is calculated from its thickness, measured when not under load. The thickness of the nonwoven fabric is preferably from 0.5 mm to 1 mm. The inter-adhesion of the fibers of the nonwoven fabric can be achieved by heat fusion of the polypropylene fibers contained therein. Since the nonwoven fabric of this invention consists only of fibers and does not contain a separate binder it is very bulky. The sanitary towel produced by using such a nonwoven fabric absorbs blood well into its surface, so that the absorption rate of blood is high. Further, the fibers of the nonwoven fabric are so loose that they cannot retain blood themselves so that the surface of the towel does not become sticky. The blood therefore easily penetrates into the inside part of the towel. Also, the nonwoven fabric is so elastic that it may have the additional advantage of being soft and comfortable to touch.

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In the sanitary towel using the above nonwoven fabric, there may be used conventional absorbents including ethylene oxide polymers such as polyethylene oxide, ethylene glycol polymers such as polyethylene glycol, acrylic polymers such as sodium, potassium, calcium or aluminum salt of polyacrylic acid, cellulose derivatives such as the sodium or calcium salt of carboxyethyl cellulose, hydroxyethyl cellulose, and hydroxypropyl cellulose, polyvinyl alcohol and natural polymers such as sodium, potassium, calcium or magnesium salts of alginic acid, guar gum, and xanthan gum. It is favourable to employ, in combination, fluff pulp, absorbent tissue, absorbent cotton and other hydrophobic polymers of a high absorption property as absorbers.

As the waterproof layer, there may be used conventional materials such as polyethylene film, polyvinyl alcohol film and waterproofed paper.

It is also advantageous to form a pile from rayon staples on the inside surface of the nonwoven fabric. The rayon staple pile may cover the whole of the nonwoven fabric or only a part thereof.

One sanitary towel embodying the invention is shown by way of example in the accompanying drawings, in which:

Figure 1 is an exterior view of the sanitary towel, and

Figure 2 is a cross-sectional view taken on the line X-X of Figure 1.

The towel shown comprises an absorption layer 2 formed of one of the absorbent materials mentioned above. The lower surface and the sides of the layer 2 are covered by a waterproof layer 3 formed of one of the waterproof materials mentioned above. The whole of the layers 2 and 3 are in turn covered by a layer 1 of loose, bulky

nonwoven fabric comprising a mixture of polypropylene fibers and rayon fibers adhered together by fusion of the polypropylene fibers, and in a weight ratio of from 90:10 to 30:70.

WHAT WE CLAIM IS:-

1. A sanitary towel comprising an absorption layer, a waterproof layer covering the lower surface and both sides of the absorption and waterproof layers, the nonwoven fabric having a density of from 0.01 g/cm³ to 0.07 g/cm³ and a thickness of from 0.3 mm to 3 mm and comprising a blended mixture of rayon fibers and polypropylene fibers in a weight ratio from 90:10 to 30:70, which fibers are adhered to one another by partial fusion of the polypropylene fibers.

2. A sanitary towel as claimed in Claim 1 wherein the absorption layer comprises fluff pulp, absorbent tissue, absorbent cotton or a highly absorbent hydrophobic polymer.

3. A sanitary towel according to Claim 1 or Claim 2 wherein the weight ratio of the rayon fibers to the polypropylene fibers is from 80:20 to 45:55.

4. A sanitary towel as claimed in any preceding Claim wherein the thickness of the nonwoven fabric is from 0.5 to 1 mm.

5. A sanitary towel as claimed in any preceding Claim wherein it further includes a rayon staple pile layer on the inside surface of the nonwoven fabric.

6. A sanitary towel according to Claim 1 and substantially as herein described with reference to the accompanying drawings.

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