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SANITARY NAPKIN



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The present invention relates to sanitary napkins or menstruation pads for absorption and containment of body exudates.

Sanitary napkins are usually worn by fastening an adhesive zone provided on a rear surface of the napkin to a crotch region of an undergarment worn by a wearer.

The known napkin tends to slip down as the undergarment slips down and consequently the napkin is spaced from the wearer's vaginal orifice and the vicinal area. This may often cause undesirable leakage of body exudates.

In view of this problem, it is an object of the present invention to provide a novel sanitary napkin adapted to eliminate leakage of body exudates due to the foregoing cause.

According to the present invention, there is provided a sanitary napkin comprising a first member including a liquid-pervious topsheet, a liquid-impervious backsheet and a first liquid-absorbent core disposed between the topsheet and the backsheet and a second member including a substantially liquid-pervious and elastically stretchable/contractile sheets and a second liquid-absorbent core

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occupying a central zone of the second member and covered with the elastically stretchable/contractile sheets, wherein: the first and second members respectively have a longitudinal direction defining front and rear end portions thereof and a transverse direction defining opposite side edge portions, the second member being placed upon and joined under tension in the longitudinal direction to an upper surface of the first member at the respective front and rear end portions.

According to an embodiment of the present invention, the opposite side edge portions of the first member extend outward beyond the corresponding opposite side edge portions of the second member. In this embodiment, the second member has an elongation percentage of 5 - 50 % and a contractile force of 11.8 - 196.9 g/cm both in the longitudinal direction. Preferably, the presence of the second core causes the central zone of the second member to protrude upward.

Fig. 1 is a perspective view of a sanitary napkin constructed according to one embodiment of the present invention having partly cut away portions;

Fig. 2 is a perspective view of the sanitary napkin in a section as viewed along a line A-A in Fig. 1; and

Fig. 3 is a sectional view taken along a line B-B.

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Details of a sanitary napkin according to the present invention will be more fully understood from the description given hereunder with reference to the accompanying drawings.

Fig. 1 is a perspective view of a sanitary napkin 1 having partly cut away portions and Fig. 2 is a perspective view of this sanitary napkin 1 in a section as viewed along a line A-A in Fig. 1. Basically, the sanitary napkin 1 comprises a first member 2 and a second member 10 placed upon the first member 2. Placing the second member 10 under longitudinal tension, its longitudinally opposite end portions are joined to longitudinally opposite end portions of the first member 2 so that the second member 10 causes the first member 2 to be longitudinally curved downward as the second member 10 elastically contracts.

The first member 2 comprises a liquid-pervious topsheet 3, a liquid-impervious backsheet 4 and a first liquid-absorbent core 5 disposed between these two sheets 2, 3. The first core 5 may be bonded to an inner surface of at least one of the topsheet 2 and the backsheet 3, if it is desired. Portions of the topsheet 2 and the backsheet 3 extending outward beyond a peripheral edge of said first core 5 are placed upon and bonded to each other by means of a suitable adhesive agent or heat-sealing technique.

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The second member 10 comprises liquid-pervious and elastic sheets 11, 12 and a second liquid-absorbent core 13 disposed between these two sheets 11, 12. The second core 13 may be bonded to an inner surface of at least one of the two sheets 11, 12. Portions of these sheets 11, 12 extending outward beyond a peripheral edge of the second core 13 are placed upon and bonded to each other by means of a suitable adhesive agent or heat-sealing technique. The second core 13 occupies a central zone of the second member 10 between the elastic sheets 11, 12 and consequently the central zone of the second member 10 protrudes. The elastic sheet 11 covering a top surface of the second core 13 is formed in the central zone corresponding to the second core 13 with a plurality of liquid-pervious apertures 14.

The first member 2 and the second member 10 have longitudinally opposite end portions 6, 7 and 15, 16 and transversely opposite side edge portions 8, 17 and 9, 18, respectively. The end portions 6, 15 and 7, 16 are placed in front and rear bodies, respectively, of an undergarment worn by a wearer and extend transversely of the napkin. The transversely opposite side edge portions 8, 17 and 9, 18 extend longitudinally along transversely opposite side edge portions of a crotch region of the undergarment. In proximity

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of the central zone, the second member 10 has a transversely dimension smaller than the corresponding dimension of the first member 2 and the second core 13 also has a transversely dimension smaller than the corresponding dimension of the first core 5.

Placing the second member 10 under longitudinal tension, its longitudinally opposite end portions 15, 16 are joined to the longitudinally opposite end portions 6, 7 of the first member 2 on an upper surface thereof. Such operation of joining may be achieved by means of a known heat-sealing technique or the suitable adhesive agent. An elongation percentage between the front and rear end portions 15, 16 of the second member 10 is adjusted to lie in a range of 5 - 50 % and a contractile force generated from this elongated state is adjusted to lie in a range of 11.8 - 196.9 g/cm, preferably, in a range of 11.8 - 118.1 g/cm.

Fig. 3 is a sectional view of the sanitary napkin taken along a line B-B in Fig. 1, as the second member 10 is released to contract. With the napkin 1 of such construction, a contractile force of the second member 10 causes the first member 2 to be longitudinally curved downward against a rigidity of the first member 2 as the napkin 1 is unpacked before its actual use. Thereupon, the second member 10 extend

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practically in horizontal direction between the front and rear end portions 15, 16 of the elastic sheets 11, 12 and tends to be spaced upward from the topsheet 3 of the first member 2 except the front and rear end portions 15, 16 of the elastic sheets 11, 12.

With the napkin 1 put on a wearer's body, the first and second members 2, 10 normally being kept entirely in contact with each other are placed against the wearer's crotch zone. However, the first member 2 may be spaced from the wearer's crotch zone if the undergarment on which the napkin 1 is fastened unintentionally slips down. Even in such situation, the central zone of the second member 10 remains in contact with the wearer's crotch zone and the second core 13 of the second member 10 effectively absorbs body exudates. In consequence, there is no apprehension that leakage of body exudates might occur. An amount of body exudates which has not been absorbed by the second core 13 is reliably absorbed by the first core 5 of the first member 2 underlying the second member 10.

While various types of material are available for the elastic sheets 11, 12 forming the second member 10, the material to be used is preferably selected from a group including an apertured sheet obtained by subjecting a elastic

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film mixed with synthetic rubber to a laser-, heat emboss- or slit widening-treatment, a spun bond nonwoven fabric or a melt blown nonwoven fabric both of synthetic rubber, a laminate of elastic material and nonwoven fabric, etc. The second core 13 is transversely dimensioned to be preferably in a range of 10 - 60 mm, more preferably in a range of 20 - 40 mm. The second core 13 is longitudinally dimensioned to be preferably 50 mm or more. The second core 13 preferably has a thickness of 10 - 15 mm. Both the first and second cores 5, 13 preferably contain superabsorptive polymer particles and a content density and/or an absorption rate thereof is preferably higher in the second core 13 than in the first core 5. Preferably, a zone of the second member 10 occupied by the second core 13 has its cross-section which progressively protrudes from the side edges toward the middle and has a softness more significant than a zone of the first member 2 occupied by the first core 5.

The longitudinally opposite end portions 15, 16 of the second member 10 are joined to an upper surface of the topsheet 3 over its portions extending outward beyond a peripheral edge of the first core 5. In this case, the end portions 15, 16 of the second member 10 to be joined to the upper surface of the topsheet 3 may be accurately placed upon the corresponding

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end portions of the first core 5 to facilitate the latter 5 to be longitudinally curved downward under a contractile force of the second member 10. The first core 5 may be intermittently bonded to the topsheet 3 in order to avoid an apprehension that the topsheet 3 and the first core 5 might be spaced from each other as the first member 2 is longitudinally curved downward.

With the novel sanitary napkin, leakage of body exudates is reliably avoided even when the undergarment worn by a wearer slips down during use of the napkin and the first member is spaced from the wearer's crotch zone. This is ensured by the unique arrangement that the second member is always elastically spaced upward from the first member so as to be placed against the wearer's crotch zone. In addition, the first and second members are adapted to be relatively movable in the longitudinal direction as well as in the transverse direction, particularly in the transverse direction of the napkin. Accordingly, the second member is reliably held to be placed against the wearer's crotch zone even when the first member transversely moves together with the undergarment, and thereby leakage of body exudates due to such transverse movement of the first member is prevented from occurring.

WHAT IS CLAIMED IS:

1. A sanitary (1) napkin comprising a first member (2) including a liquid-pervious topsheet (3), a liquid-impervious backsheet (4) and a first liquid-absorbent core (5) disposed between said topsheet (3) and said backsheet (4) and a second member (10) including a substantially liquid-pervious and elastically stretchable/contractile sheets (11, 12) and a second liquid-absorbent core (13) occupying a central zone of said second member (10) and covered with said elastically stretchable/contractile sheets(12), wherein:

said first and second members (2,10) respectively have a longitudinal direction defining front and rear end portions (6,15 and 7,16) thereof and a transverse direction defining opposite side edge portions (8,17 and 9,18), said second member (10) being placed upon and joined under tension in said longitudinal direction to an upper surface of said first member (2) at said respective front and rear end portions (6,15 and 7,16).

2. A sanitary napkin (1) according to Claim 1, wherein said opposite side edge portions (8,9) of said first member (2)

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extend outward beyond the corresponding opposite side edge portions (17,18) of said second member (10).

3. A sanitary napkin (1) according to Claim 1, wherein said second member (10) has an elongation percentage of 5 - 50% and a contractile force of 11.8 - 196.9 g/cm both in said longitudinal direction.

4. A sanitary napkin (1) according to Claim 1, wherein the presence of said second core (13) causes said central zone of said second member (10) to protrude upward.