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DISPOSABLE BODY FLUID ABSORBENT ARTICLE

This invention relates to disposable body fluid absorbent articles such as sanitary napkins, disposable diapers or the like.

It is well known for such articles to provide a three-layered basic absorbent assembly comprising a topsheet, a backsheet and a liquid-absorbent core disposed between these two sheets. The topsheet is often made of a liquid-permeable nonwoven fabric or porous plastic film and the backsheet is often made of a plastic film having a breathability and water vapor permeability. Using the backsheet made of the above-mentioned material, stuffiness as well as skin eruption due to such article put on a wearer's body can be avoided. The plastic film having a breathability and water vapor permeability is well known, for example, from Japanese Laid-Open Utility Model Application (Kokai) No. Sho63-46119. The liquid-absorbent core is usually made of fluff pulp fibers or a mixture of fluff pulp fibers and polymer particles of high water absorptivity.

However, the three-layered absorbent assembly of well known art is disadvantageous in that the breathability desired to be maintained between a space in the proximity of

the wearer's skin and the exterior of the article through the backsheet is unacceptably deteriorated as the quantity of body fluid absorbed by the absorbent core increases. Particularly with the absorbent core containing therein polymer particles of high water absorptivity, absorption of body fluid causes gelation of polymer particles which causes, in turn, individual polymer particles to form a block among themselves or the individual polymer particles to cling to the pulp fibers. In any case, the breathability between the wearer's skin and the exterior of the article is thereby deteriorated. Solid excretion also may impede the breathability by covering the upper surface of the topsheet.

In view of the problem as has been described above, it is a principal object of the invention to provide a disposable body fluid absorbent article allowing a high breathability to be maintained even after body fluid has been discharged on the article.

The object set forth above is achieved, according to the invention, by a disposable body fluid absorbent article having an absorbent assembly comprising a liquid-permeable topsheet, a breathable and water vapor permeable backsheet and a liquid-absorbent core disposed between these two

sheets, said disposable body fluid absorbent article being characterized in that: said topsheet is substantially flat over said absorbent core; said absorbent assembly is intermittently formed with zones in which said absorbent core is absent between said topsheet and said backsheet; and, in said zones in which said absorbent core is absent, said backsheet is recessed toward said topsheet and intermittently bonded to an inner surface of said topsheet.

Preferably, said topsheet has a water repellent ability higher in said zones than in the remaining zone.

According to a variant of the invention, said article is a longitudinally larger sanitary napkin provided with a plurality of said zones extending transversely of said sanitary napkin and intermittently arranged longitudinally of said sanitary napkin so as to divide said absorbent core in a plurality of sections arranged longitudinally thereof.

Fig. 1 is a perspective view showing a sanitary napkin or menstruation pad as a specific embodiment of the invention as partially broken away;

Fig. 2 is a sectional view taken along a line II - II in Fig. 1;

Fig. 3 is a view similar to Fig. 1 showing another

embodiment of the invention; and

Fig. 4 is a sectional view taken along a line IV - IV in Fig. 3.

Details of a disposable body fluid absorbent article according to the invention will be more fully understood from the description of a sanitary napkin as a specific embodiment of the invention given hereunder in reference with the accompanying drawings.

Fig. 1 is a perspective view of a sanitary napkin or menstruation pad 1 as partially broken away and viewed from a rear side thereof intended to put against shorts or panty of a wearer. The sanitary napkin 1 is an absorbent assembly comprising a liquid-permeable topsheet 2, a breathable and water vapor permeable backsheet 3 and a liquid-absorbent core 4 disposed between these two sheets 2, 3. The topsheet 2 and the backsheet 3 are placed one upon another and bonded together along their portions extending outward beyond a peripheral edge of the absorbent core 4 by means of adhesive agent such as hot melt adhesive or under a heat-sealing effect of the topsheet 2 and/or the backsheet 3 so as to form a flexible flange 6.

Fig. 2 is a sectional view taken along a line II - II

in Fig. 1. The sanitary napkin 1 is provided in a transversely middle region thereof with a zone 7 in which the absorbent core 4 is absent between the topsheet 2 and the backsheet 3. In this zone 7, the topsheet 2 extends evenly in a plane common to the remaining zone but the backsheet 3 is recessed in the zone 7 and intermittently bonded to an inner surface 2A of the topsheet 2 so as to form a groove 11 extending longitudinally of the sanitary napkin 1. In other words, the topsheet 2 and the backsheet 3 are placed one upon another at a bottom 12 of the groove 11. In the specific embodiment shown by Figs. 1 and 2, the groove 11 has a width of 3 ~ 15 mm and a length corresponding to $1/8 \sim 6/8$ of a full length of the absorbent core 4.

The topsheet 2 of the sanitary napkin 1 is made of a liquid-permeable nonwoven fabric or porous plastic film.

The backsheet 3 is made of plastic film having a appropriate breathability as well as a water vapor permeability. The breathability is preferably 20 ~ 1500 sec/100 cc, more preferably of 25 ~ 1000 sec/100 cc as measured according to Japanese Industrial Standard (JIS) P-8177 and the water vapor permeability is preferably 700 ~ 30,000 g/m²/24 hr, more preferably 1,000 ~ 25,000 g/m²/24 hr as measured according to JIS Z-0208. The plastic film having

such breathability and water vapor permeability is well known, for example, from Japanese Laid-Open Utility Model Application (Kokai) No. Sho63-46119.

The absorbent core 4 is made of fluff pulp fibers or a mixture of fluff pulp and polymer particles of high water absorptivity.

At the bottom 12 of the groove 11, the topsheet 2 and the backsheet 3 are intermittently bonded together by means of adhesive agent such as hot melt adhesive or under heat-sealing effect of the plastic material constituting these sheets. To avoid a significant loss of the breathability as well as the water vapor permeability desired for the topsheet 2 and the backsheet 3, these sheets 2, 3 are preferably bonded together so that the area over which they are intermittently bonded together should be 5 ~ 30 % of the entire area of the bottom 12. The intermittent bonding may be carried out optionally in various forms such as dots, stripes, rings or network. If such bonding is carried out in the form of dots, each of these dots should have an area preferably less than 1 mm². If such bonding is carried out in the form of stripes, each of these strips should have a width preferably less than 1 mm.

The topsheet 2 preferably has a water repellent ability

higher in the zone 7 and in the proximity thereof than in the remaining zone.

With the sanitary napkin 1 constructed as has been described above, the zone 7 in which the absorbent core 4 is absent provides a breathability higher than in the remaining zone even though the sanitary napkin 1 is in contact with the wearer's skin. Owing to such high water repellent ability, the zone 7 of the topsheet 2 effectively repels body fluids discharged thereon to maintain a desired breathability.

Figs. 3 and 4 are respectively a view similar to Fig. 1 and a sectional view taken along a line IV - IV in Fig. 1, showing another embodiment of the invention. According to this embodiment, the sanitary napkin 1 is formed with three zones 7 in which the absorbent core 4 is absent and these three zones 7 define three grooves 11, respectively. These three zones 7 and the corresponding grooves 11 extend transversely of the sanitary napkin 1 and divide the absorbent core 4 in four sections intermittently arranged longitudinally of the sanitary napkin 1. With such construction, the sanitary napkin 1 can be easily curved with the topsheet 2 lying inside, as indicated by imaginary lines in Fig. 4, so as to improve a fitting to the wearer's body.

It should be understood that the invention is not

limited to the embodiments shown by Fig. 1 and 3 particularly with respect to the configuration of the zone(s) 7 in which the absorbent core 4 is absent. For example, it is possible without departing from the scope of the invention to provide the absorbent core 4 with a plurality of zones 7 extending longitudinally of the core 4. It is also possible to such zone(s) 7 each presenting a circular or rectangular shape as viewed in its plan view.

The disposable body fluid absorbent article according to the invention advantageously provides a high breathability between the wearer's skin and the exterior of the article since the liquid-permeable topsheet and the backsheet having high breathability as well as high water vapor permeability are intermittently bonded together in the zone(s) in which the liquid-absorbent core is absent in order to prevent the initial breathability of these sheets from being significantly deteriorated.

With the arrangement such that the topsheet has a water repellent ability higher in the zone(s) in which the absorbent core is absent than the remaining zone, the high breathability of the zone(s) can be maintained even after the discharge of body fluids has occurred.

When the invention is implemented in the form of the

sanitary napkin provided with the zone(s) extending transversely of the sanitary napkin in which the absorbent core is absent, breathability as well as skin-fitting of the sanitary napkin can be improved.



WHAT IS CLAIMED IS:

1. A disposable body fluid absorbent article having an absorbent assembly comprising a liquid-permeable topsheet, a breathable and water vapor permeable backsheet and a liquid-absorbent core disposed between these two sheets, said disposable body fluid absorbent article being characterized in that:

said topsheet is substantially flat over said absorbent core;

said absorbent assembly is intermittently formed with zones in which said absorbent core is absent between said topsheet and said backsheet; and

in said zones in which said absorbent core is absent, said backsheet is recessed toward said topsheet and intermittently bonded to an inner surface of said topsheet.

2. A disposable body fluid absorbent article according to Claim 1, wherein said topsheet has a water repellent ability higher in said zones than in the remaining zone.

3. A disposable body fluid absorbent article according to Claim 1 or 2, wherein said article is a longitudinally larger



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sanitary napkin provided with a plurality of said zones extending transversely of said sanitary napkin and intermittently arranged longitudinally of said sanitary napkin so as to divide said absorbent core in a plurality of sections arranged longitudinally thereof.