

DESCRIPTION

TITLE OF THE INVENTION

Absorbent Article

5 Technical Field

[0001]

The present invention relates to an absorbent article comprising a gelatinous composition on the surface.

10 Background Art

[0002]

As the basic performance, including absorption performance, of absorbent articles, such as disposable
diapers, sanitary napkins, panty liners and incontinence
15 pads has continued to improve with technological
development over many years, problems such as leakage
after absorption of excreta such as urine and menstrual
blood have become less frequent, and currently there is a
demand for even higher performance, including a skin care
20 effect and a comfortable feel during wear. Such
absorbent articles with increased performance have been
proposed, including absorbent articles that have
increased liquid permeability and prevent skin eruption
by having lotions containing skin care components and the
25 like coated on the surface sheet.

[0003]

In PTL 1, for example, there is disclosed a
disposable absorbent article comprising a liquid-
impermeable back sheet, a liquid-permeable top sheet that
30 is bonded with the back sheet and includes an inner side
facing the inside of the article and an outer side facing
the skin of the wearer, when the disposable absorbent
article is worn, the top sheet having lotion on at least
a portion of the outer side of the top sheet, and an
35 absorptive core situated between the top sheet and the
back sheet, wherein the lotion is applied to the liquid-
permeable top sheet in the shape of a pattern composed of

multiple strips, the strips being separated by a plurality of regions to which the lotion has not been applied, and the pattern composed of multiple strips being a discontinuous pattern. Furthermore, according to PTL 1, the absorbent article having the lotion applied to the liquid-permeable top sheet in this manner exhibits a comfortable feel during wear, excellent liquid treatment properties and dryness.

[0004]

Also, PTL 2 discloses an absorbent article comprising a liquid-permeable surface sheet composed of a nonwoven fabric, a liquid-impermeable or water-repellent back sheet, and an absorbent body situated between the two sheets, wherein the surface sheet has a plurality of protrusions protruding toward the skin surface side of the wearer, the protrusions having internal spaces where the absorbent body side is open, the protrusions having a skin care agent applied onto both the skin-facing surface and the non-skin-facing surface at the tip sections, where the skin-facing surface has a greater amount of skin care agent per unit area than the non-skin-facing surface at the tip sections. According to PTL 2, the absorbent article to which the skin care agent has been applied can stably retain the skin care agent at locations that tend to move on the skin, and therefore an excellent and long-lasting skin care effect is exhibited.

Citation List

Patent Literature

[0005]

[PTL 1] Japanese Unexamined Patent Publication No. 2008-522772

[PTL 2] Japanese Unexamined Patent Publication No. 2012-143543

Summary of Invention

Technical Problem

[0006]

However the lotions or skin care agents used in the

absorbent articles of PTL 1 and 2 (hereunder referred to as "lotions") melt depending on the body temperature of the wearer or the temperature of excreta when the absorbent article is being worn, and therefore the melted lotion permeates to the non-skin side surface of the surface sheet and inhibits bonding with the core wrap sheet contacting the non-skin side surface of the surface sheet by hot-melt adhesives, such that the surface sheet and the core wrap sheet become separated and the absorption property as an absorbent article is reduced.

[0007]

It is therefore an object of the present invention to provide an absorbent article having a gelatinous composition coated on a surface sheet, the absorbent article having an excellent dryness property on the surface and an excellent liquid permeation property in the thickness direction, while also maintaining the bonded state between the surface sheet and core wrap sheet and having an excellent absorption property.

Solution to Problem

[0008]

The present invention relates to an absorbent article having an absorbent body comprising an absorbent core and a core wrap sheet enclosing the absorbent core, and a surface sheet located above a skin side surface of the absorbent body and bonded with the core wrap sheet by an adhesive, wherein the surface sheet is intermittently coated on the skin side surface of the surface sheet with a hydrophobic gelatinous composition that can maintain a gel state at 38°C. Since the gelatinous composition in the absorbent article of the invention can maintain a gel state at 38°C, when the absorbent article is being worn, the gelatinous composition does not melt by the body temperature of the wearer and does not permeate to the non-skin side surface of the surface sheet, and therefore it does not affect bonding by the adhesive between the surface sheet and the core wrap sheet, and the bonded

state can be stably maintained for prolonged periods.

[0009]

In addition, since the hydrophobic gelatinous composition is coated intermittently on the skin side surface of the surface sheet composed of hydrophilic fiber and the like, coated regions of the hydrophobic gelatinous composition are formed on the skin side surface of the surface sheet while the interior of the surface sheet is hydrophilic, such that synergistic action between the hydrophobic water-repellent action in the coated regions and the hydrophilic water-absorbing action in the interior of the surface sheet can form a state where liquid excreta such as urine introduced onto the skin side surface of the surface sheet can be easily drawn into the interior of the surface sheet via the non-coated regions where the gelatinous composition has not been coated, thereby allowing the liquid drain away property of the surface sheet to be significantly improved while maintaining the liquid permeation property in the thickness direction. In addition, even when body pressure of the wearer is applied onto the surface sheet and liquid excreta that has permeated to the interior of the surface sheet migrates toward the skin side surface of the surface sheet, the presence of the hydrophobic gelatinous composition on the skin side surface of the surface sheet inhibits seepage of the liquid excreta to the skin side surface of the surface sheet, and can therefore effectively prevent liquid leakage of the liquid excreta that has already permeated into the interior. As a result, it is possible to obtain an absorbent article with an excellent dryness property on the surface while maintaining the liquid permeation property in the thickness direction of the absorbent article.

[0010]

Furthermore, since the gelatinous composition is not coated on the non-skin side surface of the surface sheet

and the gelatinous composition coated on the skin side surface of the surface sheet does not permeate to the non-skin side surface of the surface sheet, liquid excreta permeating from the skin side surface to the non-skin side surface of the surface sheet tends to easily diffuse in the in-plane direction of the surface sheet as it approaches the non-skin side surface, and therefore liquid excreta that has reached the non-skin side surface of the surface sheet while diffusing in the in-plane direction of the surface sheet can be absorbed into the absorbent core from wide regions through the core wrap sheet that is bonded to the non-skin side surface of the surface sheet, thereby allowing the absorption efficiency of the liquid excreta into the absorbent body to be further improved. As a result, it is possible to obtain an absorbent article with an excellent absorption property.

Advantageous Effects of Invention

[0011]

According to the invention it is possible to provide an absorbent article having an excellent dryness property on the surface and an excellent liquid permeation property in the thickness direction, while also maintaining the bonded state between the surface sheet and core wrap sheet and having an excellent absorption property.

Brief Description of Drawings

[0012]

[Fig. 1] Fig. 1 is a plan view of an absorbent article according one embodiment of the invention, in an extended state.

[Fig. 2] Fig. 2 is a partial cross-sectional view (schematic view) of a gelatinous composition-coated section of an absorbent article according to one embodiment of the invention, in the widthwise direction.

Description of Embodiments

[0013]

The absorbent article of the invention will now be explained in greater detail with reference to the accompanying drawings.

[0014]

5 Fig. 1 is a plan view showing an absorbent article according to one embodiment of the invention (a disposable diaper) in an extended state, and Fig. 2 is a partial cross-sectional view (schematic view) of the absorbent article according to one embodiment of the invention in the widthwise direction D_W of a section intermittently coated with a gelatinous composition. The disposable diaper 1 according to this embodiment of the invention, as viewed flat with the outer shape extended, has a long shape in the lengthwise direction D_L , the center section in the lengthwise direction D_L having an essentially narrow-neck hourglass shape (or reverse crown shape) toward the interior in the widthwise direction D_W . The absorbent article of the invention is not limited to such an outer shape, and it may have any shape which is longer in the lengthwise direction D_L such as, for example, a gourd shape, a quadrilateral shape such as rectangular, or an ellipsoid or elliptical shape. As shown in Fig. 1 and Fig. 2, the disposable diaper 1 of this embodiment has a layered structure comprising a liquid-permeable surface sheet 2 located above the skin surface side of the wearer in the thickness direction D_T , a liquid-impermeable back sheet 3 located above the side opposite the skin side (i.e. the non-skin side), and an absorbent body 4 situated between the surface sheet 2 and the back sheet 3, and also a pair of side sheet members 5 for formation of gather sections, located above the skin side surface of the surface sheet 2 with the surface sheet 2 sandwiched between them on its outer side in the widthwise direction D_W as viewed flat. Also, on the skin side surface of the surface sheet 2 there are a plurality of essentially straight linear coated regions 6 of the gelatinous composition (hereunder referred to as "linear

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coated regions") which are regions where the gelatinous composition described below has been coated, extending in the lengthwise direction D_L of the disposable diaper 1 and aligned in the widthwise direction D_W .

5 **[0015]**

 In the absorbent article of the invention, the gelatinous composition is a hydrophobic gelatinous composition that can maintain a gel state at 38°C. The gelatinous composition to be used in the absorbent
10 article of the invention will now be explained in further detail.

[0016]

 [Gelatinous composition]

 The gelatinous composition to be used in the
15 absorbent article of the invention is not particularly restricted so long as it can maintain a gel state at 38°C and is hydrophobic, and it may be a composition containing a styrene-based elastomer and a hydrocarbon oil, for example, although preferably a composition
20 containing a styrene-based elastomer, a hydrocarbon oil and a silicone oil is used. Of these, the gelatinous composition is most preferably a composition comprising 100 parts by mass of a styrene-based thermoplastic elastomer mixture (A), having a molecular weight
25 dispersity (M_w/M_n) of 1.25 to 1.60 and containing a styrene-based thermoplastic elastomer (A1) composed of a triblock or more block copolymer with a weight-average molecular weight of 100,000 or greater and less than
30 composed of a triblock or more block copolymer with a weight-average molecular weight of 180,000 or greater and 300,000 or less, in a mass ratio of (A1)/(A2) = 95/5 to 50/50, with 500 to 4800 parts by mass of a hydrocarbon oil (B) having a kinematic viscosity of 5 to 50 mm^2/s at
35 37.8°C and 20 to 60 parts by mass of a silicone oil (C) having a kinematic viscosity of 50 to 200 mm^2/s at 25°C.

[0017]

The styrene-based thermoplastic elastomers (A1, A2) used in the gelatinous composition are triblock or more block copolymers comprising a polystyrene-based hard segment and soft segment, preferably block copolymers having two or more block components consisting of styrene-based hard segments in the molecular chain, and more preferably block copolymers wherein the block components at least at both ends of the molecular chain are block components consisting of the aforementioned styrene-based hard segment. There are no particular restrictions on the polystyrene-based hard segment, and for example, it may be a polystyrene-based polymer, such as polystyrene, poly(α -methylstyrene), poly(o-methylstyrene), poly(m-methylstyrene) or poly(p-methylstyrene). There are also no particular restrictions on the soft segment, and for example, it may be a polyolefin-based polymer, such as polyethylene, polypropylene, polybutylene, polybutadiene or polyisoprene.

[0018]

The copolymer used as the styrene-based thermoplastic elastomer (A1, A2) is not particularly restricted so long as it is a triblock or more styrene-based block copolymer, and examples include styrene-butadiene-styrene block copolymer (SBS), styrene-ethylene-butylene-styrene block copolymer (SEBS), styrene-isoprene-butylene-styrene block copolymer (SIBS), styrene-isoprene-styrene block copolymer (SIS), styrene-ethylene-propylene-styrene block copolymer (SEPS), styrene-ethylene-ethylene-propylene-styrene block copolymer (SEEPS), and combinations of any two or more thereof. Preferred among these are styrene-ethylene-butylene-styrene block copolymer (SEBS), styrene-ethylene-propylene-styrene block copolymer (SEPS) and styrene-ethylene-ethylene-propylene-styrene block copolymer (SEEPS), from the viewpoint of retentivity of

the gel state after coating onto the surface sheet

(especially the retentivity at 38°C), gel hardness and elongation. When diblock copolymers are used as the styrene-based thermoplastic elastomers (A1, A2),

5 interaction (π - π stacking) of the styrene-based hard segments is weakened, and therefore retentivity of the gel state after coating onto the surface sheet

(especially the retentivity at 38°C), gel hardness and elongation may not be adequately obtained. Since the

10 styrene-based thermoplastic elastomer has a mesh-like network structure formed by a plurality of aggregate domains created by interaction of the styrene-based hard segments, and olefin-based soft segments linked to the

plurality of aggregate domains, it exhibits a function as an elastic solid while being able to maintain a gel state even under temperature conditions of body temperature

15 (about 35°C to about 38°C). Also, presumably such a mesh-like network structure allows suitably controlled release of the oil solution described below (that is, the hydrocarbon oil (B) and silicone oil (C)), while providing a retaining function.

[0019]

Also, the block copolymer contains preferably 10 to 50 mass% of a styrene-based block component and 50 to 90

25 mass% of an olefin-based block component, even more preferably 15 to 40 mass% of a styrene-based block component and 60 to 85 mass% of an olefin-based block component, and most preferably 18 to 35 mass% of a

styrene-based block component and 65 to 82 mass% of an olefin-based block component. If the proportion of the styrene-based block component is less than 10 mass%, the amount of styrene-based block component forming the aggregate domains will be reduced, making it difficult to form the aforementioned mesh-like network structure by

35 the styrene-based thermoplastic elastomer. If the proportion of the styrene-based block component is

greater than 50 mass%, on the other hand, the amount of olefin-based block component that retains the oil solution will be reduced, resulting in a smaller amount of oil solution that can be retained and a larger amount of aggregate domains formed by the styrene-based hard segments, and therefore the gel applied onto the surface sheet will be hard, potentially creating discomfort or unpleasantness for the wearer when the absorbent article is worn.

[0020]

The styrene-based thermoplastic elastomer mixture (A) comprises a mixture of two different styrene-based thermoplastic elastomers (A1, A2) with different weight-average molecular weights. Of the two different styrene-based thermoplastic elastomers (A1, A2), one styrene-based thermoplastic elastomer (A1) (hereunder also referred to as "low-molecular-weight styrene-based thermoplastic elastomer (A1)") has a weight-average molecular weight in the range of 100,000 or greater and less than 180,000, and preferably in the range of 100,000 to 150,000. If the weight-average molecular weight is less than 100,000, the gel hardness and elongation after application onto the surface sheet will be reduced, potentially interfering with the flexibility of the surface sheet. The other styrene-based thermoplastic elastomer (A2) (hereunder also referred to as "high-molecular-weight styrene-based thermoplastic elastomer (A2)") has a weight-average molecular weight in the range of 180,000 or greater and 300,000 or less, and preferably in the range of 220,000 to 280,000. If the weight-average molecular weight exceeds 300,000, the surface of the gel will tend to exhibit a tack property after application onto the surface sheet, potentially creating a sticky feel or unpleasant feel for the wearer when the absorbent article is worn.

[0021]

The styrene-based thermoplastic elastomer mixture

(A) has a dispersity (that is, a ratio of weight-average molecular weight (M_w) and number-average molecular weight (M_n) (M_w/M_n)) in the range of 1.25 to 1.60, and preferably in the range of 1.35 to 1.55. If the dispersity is less than 1.25, the physical properties of the gelatinous composition will be no different from using a simple styrene-based thermoplastic elastomer, and therefore the gel elongation after application onto the surface sheet may be insufficient and the flexibility of the surface sheet may be impaired. If the dispersity exceeds 1.60, on the other hand, the difference in cooling solidification time between two different styrene-based thermoplastic elastomers (A1, A2) will result in non-uniformity of the gel after it has been applied onto the surface sheet, potentially lowering the physical properties of the gel such as elongation and fragility, and producing variation in the absorbent article product.

[0022]

The weight-average molecular weights (M_w) of the styrene-based thermoplastic elastomers (A1, A2) and styrene-based thermoplastic elastomer mixture (A), and the dispersity (M_w/M_n) of the styrene-based thermoplastic elastomer mixture (A), can be determined in terms of polystyrene, by GPC measurement under the following conditions using tetrahydrofuran (THF) as the mobile phase.

[0023]

[GPC measuring conditions]

Apparatus: GPC-8220 (product of Tosoh Corp.)
Column: SHODEX KF-804 (product of Showa Denko K.K.)
Temperature: 40°C.
Solvent: THF
Flow rate: 1.0 mL/min
Sample concentration: 0.05 to 0.6 mass%
Injection rate: 0.1 mL
Detection: RI (differential refractometer)

[0024]

As mentioned above, the gelatinous composition comprises a mixture of two different styrene-based thermoplastic elastomers (A1, A2) with different weight-average molecular weights, where the mixing ratio is in the range of $(A1)/(A2) = 95/5$ to $50/50$, preferably $90/10$ to $60/40$ and more preferably $80/20$ to $70/30$, as the mass ratio of the low-molecular-weight styrene-based thermoplastic elastomer (A1) and the high-molecular-weight styrene-based thermoplastic elastomer (A2). For the mass ratio, a mixing ratio of greater than 95 for the low-molecular-weight styrene-based thermoplastic elastomer (A1) will result in insufficient gel hardness and elongation after application onto the surface sheet, and may therefore impair the flexibility of the surface sheet, while if the mixing ratio is lower than 50, the surface of the gel applied onto the surface sheet will tend to be tacky, producing a sticky feel for the wearer and creating unpleasantness.

[0025]

Also, the gelatinous composition may further comprise a hydrocarbon oil (B) having a kinematic viscosity of 5 to 50 mm²/s at 37.8°C. The hydrocarbon oil (B) is not particularly restricted so long as it is a compound comprising carbon and hydrogen, and it may have a straight-chain, branched or cyclic structure, and have either saturated or unsaturated bonds. Examples for the hydrocarbon oil (B) include olefin-based hydrocarbons (alkenes with one double bond), paraffinic hydrocarbons (alkanes containing no double bonds or triple bonds), acetylene-based hydrocarbons (alkynes containing one triple bond), hydrocarbons with two or more double bonds and/or triple bonds, and cyclic hydrocarbons, such as aromatic hydrocarbons and alicyclic hydrocarbons. More specifically, there may be mentioned hydrogenated polyisobutene, liquid paraffin, squalane, squalene and the like, with hydrogenated polyisobutene being

particularly preferred for use because it does not produce tack in the gel after application onto the surface sheet, and also does not produce stickiness by the controlled-release oil solution.

5 **[0026]**

 The hydrocarbon oil (B) has a 37.8°C kinematic viscosity in the range of 5 to 50 mm²/s, preferably in the range of 10 to 30 mm²/s and more preferably in the range of 10 to 20 mm²/s. If the kinematic viscosity is less than 5 mm²/s, the hydrocarbon oil (B) will tend to volatilize off during production of the gelatinous composition, and therefore variation may be produced in the physical properties of the gel after application onto the surface sheet. If the kinematic viscosity exceeds 50 mm²/s, on the other hand, the gel will become hard after application onto the surface sheet, tending to result in a tacky property. The kinematic viscosity of the hydrocarbon oil (B) can be obtained by measurement according to JIS K 2283:2000, "5. Kinematic Viscosity Test Method", using a Cannon-Fenske reverse-flow viscometer, at a testing temperature of 37.8°C.

20 **[0027]**

 The content of the hydrocarbon oil (B) is in the range of 500 to 4800 parts by mass, preferably in the range of 800 to 3000 parts by mass and even more preferably in the range of 1000 to 1500 parts by mass, with respect to 100 parts by mass of the styrene-based thermoplastic elastomer mixture (A). If the content is less than 500 parts by mass, the gel may become hard and have reduced elongation after application onto the surface sheet, and the flexibility of the surface sheet may be impaired. If the content is greater than 4800 parts by mass, on the other hand, the gel will become too soft, and after application onto the surface sheet the gel will tend to permeate to the non-skin side surface of the surface sheet.

35 **[0028]**

Also, the gelatinous composition may further comprise a silicone oil (C) with a kinematic viscosity of 50 to 200 mm²/s at 25°C. The silicone oil (C) used may be any known silicone oil without any particular
5 restrictions, so long as it is a silicone oil. Examples for the silicone oil (C) include diorganopolysiloxanes such as dimethylpolysiloxane and methylphenylpolysiloxane, and cyclic siloxanes such as cyclopentasiloxane. Dimethylpolysiloxane is particularly
10 preferred for use since it allows the suitable sustained-release property for the oil solution to be imparted to the gelatinous composition.

[0029]

The silicone oil (C) preferably has a 25°C kinematic
15 viscosity in the range of 50 to 200 mm²/s, more preferably in the range of 70 to 150 mm²/s and even more preferably in the range of 80 to 120 mm²/s. If the kinematic viscosity is less than 50 mm²/s, the silicone oil (C) will tend to volatilize off during production of the
20 gelatinous composition, and therefore variation may be produced in the physical properties of the gel after application onto the surface sheet. If the kinematic viscosity exceeds 200 mm²/s, on the other hand, the amount of sustained release of the oil solution will be reduced,
25 and a tacky property will tend to result. The kinematic viscosity of the silicone oil (C) can also be obtained by measurement according to JIS K 2283:2000, "5. Kinematic Viscosity Test Method", using a Cannon-Fenske reverse-flow viscometer, at a testing temperature of 25°C.

[0030]

The content of the silicone oil (C) is in the range of 20 to 60 parts by mass and preferably in the range of 30 to 50 parts by mass, with respect to 100 parts by mass of the styrene-based thermoplastic elastomer mixture (A).
35 If the content is less than 20 parts by mass the sustained release of the oil solution will be reduced.

If the content is greater than 60 parts by mass, on the other hand, the sustained release of the oil solution will be too high and the gel surface will become oily.

[0031]

5 Depending on the desired product properties, the gelatinous composition may also contain one or more of any desired additives such as stabilizers, antioxidants (for example, BHT (2,6-di-t-butyl-p-cresol), BHA (butylated hydroxyanisole), propyl gallate or the like),
10 light stabilizers, coloring agents, pigments (for example, titanium oxide, zinc oxide or the like), aromatics, inorganic powders (for example, alumina, talc, mica, calcium carbonate, clay or the like) or organic powders (for example, PE, PP, silicone resin powder or
15 the like), or other components, in ranges that do not impede the object of the invention.

[0032]

 Examples of other components include oils with skin care functions (for example, jojoba oil or camellia oil),
20 vitamins, various amino acids, peptides, zeolite, cholesterol, hyaluronic acid, lecithin, ceramide, skin astringents, anti-pimple medications, anti-wrinkle agents, anti-cellulite agents, skin whiteners, antimicrobial agents, antifungal agents, anti-
25 inflammatory components, pH regulators, humectants and the like.

[0033]

 Since the gelatinous composition can maintain a gel state even under temperature conditions of 38°C, an
30 absorbent article coated with the gelatinous composition on the surface sheet does not have melting of the gelatinous composition by the body temperature of the wearer when the absorbent article is worn, and the gelatinous composition does not permeate to the non-skin
35 side surface of the surface sheet as occurs in the prior art, and therefore does not adversely affect bonding between the surface sheet and core wrap sheet by the

adhesive. Furthermore, since the gelatinous composition coated on the skin side surface of the surface sheet does not permeate to the non-skin side surface of the surface sheet, liquid excreta permeating from the skin side surface to the non-skin side surface of the surface sheet tends to easily diffuse in the in-plane direction of the surface sheet as it approaches the non-skin side surface, and therefore liquid excreta that has reached the non-skin side surface of the surface sheet while diffusing in the in-plane direction of the surface sheet can be absorbed into the absorbent core from wide regions through the core wrap sheet that is bonded to the non-skin side surface of the surface sheet, thereby allowing the absorption efficiency of the liquid excreta into the absorbent body to be further improved. As a result, it is possible to obtain an absorbent article with an excellent absorption property.

[0034]

Furthermore, the gelatinous composition can be produced by mixing each of the aforementioned compounding ingredients using any known mixing means. For example, the different compounding ingredients may be supplied into a mixer either simultaneously or in any desired order, and melt mixed in the mixer for production. There are no particular restrictions on the melt mixing means, and any known mixing means may be applied. Examples of such mixing means include mixers, such as single-screw extruders, twin-screw extruders, rollers, Banbury mixers, kneaders or mixing kilns.

[0035]

Since the gelatinous composition has a sustained-release property in addition to suitable hardness and elongation, its adhesion to the coating apparatus or molding apparatus can be inhibited, while allowing its coating onto the surface sheet. Furthermore, since the gelatinous composition contains more low-molecular-weight styrene-based thermoplastic elastomer than high-

molecular-weight styrene-based thermoplastic elastomer, it exhibits a suitable flow property even under temperature conditions of near 100°C, so that its coating on surface sheets made of nonwoven fabrics can be accomplished with various coating patterns and in a facilitated manner.

[0036]

In the absorbent article of the invention, the coating pattern for the gelatinous composition is not particularly restricted so long as the gelatinous composition is intermittently coated, and coating on the surface sheet may be accomplished with any desired coating pattern within a range that does not interfere with the liquid drain away property and liquid permeation property of the surface sheet, or the function of the gelatinous composition. Throughout the present description, the term "intermittently coated" means that the skin side surface of the surface sheet is coated in such a manner that there are formed a plurality of coated regions and non-coated regions where the gelatinous composition is not coated.

[0037]

The absorbent article of the invention has a hydrophobic gelatinous composition intermittently coated on the skin side surface of a surface sheet composed of hydrophilic fiber, whereby hydrophobic gelatinous composition coated regions 6 are formed on the skin side surface of the surface sheet 2, as shown in Fig. 2, while the interior of the surface sheet 2 is hydrophilic, such that synergistic action between the hydrophobic water-repellent action in the coated regions 6 and the hydrophilic water-absorbing action in the interior of the surface sheet 2 can form a state where liquid excreta U such as urine introduced onto the skin side surface of the surface sheet 2 can be easily drawn into the interior of the surface sheet 2 via the non-coated regions where the gelatinous composition has not been coated, thereby

allowing the liquid drain away property of the surface sheet 2 to be significantly improved while maintaining the liquid permeation property in the thickness direction D_T . In addition, even when body pressure of the wearer is applied onto the surface sheet 2 and liquid excreta U that has permeated to the interior of the surface sheet 2 migrates toward the skin side surface of the surface sheet 2, the presence of the hydrophobic gelatinous composition on the skin side surface of the surface sheet 2 inhibits seepage of the liquid excreta U to the skin side surface of the surface sheet 2, and can therefore effectively prevent liquid leakage of the liquid excreta U that has already permeated into the interior. As a result, it is possible to obtain an absorbent article with an excellent dryness property on the surface and an excellent liquid permeation property in the thickness direction of the absorbent article.

[0038]

Throughout the present description, the term "liquid drain away property" means the ease with which liquid excreta introduced onto the skin side surface of the surface sheet is drained away when drained from the skin side surface to the non-skin side, and it can be quantified and evaluated based on the time required for liquid excreta to be drained from the skin side surface of the surface sheet to the non-skin side, and be removed from the surface sheet (i.e. the "draining away rate"). Also throughout the present description, the term "liquid permeation property" means the ease with which liquid excreta introduced onto the skin side surface of the surface sheet permeates when permeating from the skin side surface into the surface sheet, and it can be quantified and evaluated based on the time required for liquid excreta to complete permeation from the skin side surface of the surface sheet into the surface sheet (i.e. the "liquid permeation rate").

[0039]

The draining away rate and liquid permeation rate can be measured by the following absorption property evaluation test. For the absorption property evaluation test, first the surface sheet is removed from a
5 commercially available infant paper diaper (Mooney "Air-Fit" S-size, by Unicharm Corp.), and the surface sheet to be evaluated (for example, a gelatinous composition-coated surface sheet) is attached to the section where the surface sheet was removed, to produce a sample for
10 absorption property evaluation testing. On the surface sheet of the sample for absorption property evaluation testing, 40 ml of artificial urine is dropped once, and the time (sec) until all of the artificial urine migrated into the surface sheet is measured, recording the
15 measured time as the liquid permeation rate (sec). Similarly, the time (sec) until the artificial urine migrates through the surface sheet to the absorbent body side is measured and the measured time is recorded as the draining away rate (sec). The artificial urine is
20 prepared by dissolving 200 g of urea, 80 g of sodium chloride, 8 g of magnesium sulfate, 3 g of calcium chloride and approximately 1 g of dye (Blue #1) in 10 L of ion-exchanged water.

[0040]

25 As with the embodiment shown in Fig. 1, the gelatinous composition may be coated on the skin side surface of the surface sheet in a coating pattern with a plurality of essentially straight lines lying along the lengthwise direction D_L of the absorbent article and
30 arranged in the widthwise direction D_W , when the absorbent article is viewed flat in the extended state, although there is no limitation to this embodiment for the absorbent article of the invention. For example, the essentially straight linear shapes may be linear in a
35 waveform, zigzag or dotted line manner. Throughout the present description, the regions where the gelatinous composition is thus coated in a linear manner will be

referred to as "linear coated regions". Also, the spacings for the linear coated regions arranged in the widthwise direction D_w are not particularly restricted, but from the viewpoint of effects for the liquid drain away property of the surface sheet and liquid permeation property in the thickness direction, they are preferably 1 mm to 10 mm and more preferably 2 mm to 5 mm. The linear coated spacings may be equal spacings or different spacings.

10 **[0041]**

Also, the direction in which the linear shapes extend may be a direction other than the lengthwise direction D_L of the absorbent article (for example, the widthwise direction D_w), or directions such that different linear patterns cross (i.e. directions for a grid-like coating pattern). In addition, the coating pattern of the gelatinous composition may be in the form of a plurality of dots spread over a specific region of the skin side surface of the surface sheet (throughout the present description, a region in which the gelatinous composition is coated in a dot-like fashion will be referred to as "punctiform coated region"), or it may have a geometrical or design-like pattern. By appropriately adjusting the coating pattern of the gelatinous composition in this manner, it is possible to set the locations with a high liquid drain away property to any desired sections in the absorbent article, allowing a design property to be provided and allowing product designs suitable for a variety of needs.

30 **[0042]**

Furthermore, the gelatinous composition coating means for the absorbent article of the invention is not particularly restricted, and any publicly known coating means may be employed. Examples of such coating means include extrusion devices comprising a die and discharge nozzle; non-contact coaters, such as spiral coaters, curtain coaters, spray coaters and dip coaters; and

contact coaters.

[0043]

5 The region in which the gelatinous composition is to be coated on the surface sheet (that is, the proportion of the area of the coated regions with respect to the area on the skin side surface of the surface sheet) is preferably an area ratio of about 1% to about 50%, more preferably an area ratio of about 5% to about 30% and most preferably an area ratio of about 10% to about 15%,
10 with respect to the area on the skin side surface of the surface sheet (hereunder referred to simply as "surface sheet area"). If the gelatinous composition is coated to an area ratio of less than 1% with respect to the surface sheet area, there will be fewer coated regions of the gelatinous composition and the hydrophobicity on the skin
15 side surface of the surface sheet will be insufficient, thus making it difficult to obtain an effect on the liquid drain away property and the liquid permeation property in the thickness direction, while the amount of gelatinous composition on the surface sheet will also be lower, making it impossible to sufficiently exhibit the effect of the gelatinous composition. On the other hand, if the gelatinous composition is coated to an area ratio exceeding 50% of the surface sheet area, the regions of
20 the surface sheet that are not coated with the gelatinous composition (i.e. the non-coated regions) will be reduced, such that it will be difficult for the liquid excreta supplied onto the skin side surface of the surface sheet to permeate into the surface sheet.

30 **[0044]**

In addition, the coating amount of the gelatinous composition coated on the skin side surface of the surface sheet will usually be in the range of 1 to 30 g/m², preferably in the range of 6 to 15 g/m² and even
35 more preferably in the range of 6 to 10 g/m². If the gelatinous composition coating amount is less than 6 g/m², the amount of gelatinous composition coated will be low

and the hydrophobicity on the skin side surface of the surface sheet will be insufficient, making it difficult to obtain an effect on the liquid drain away property, while if the gelatinous composition coating amount is greater than 15 g/m^2 , the degree of repellency by the hydrophobicity of the gelatinous composition will increase, making it difficult to obtain a liquid permeation property in the thickness direction. Throughout the present description, the gelatinous composition coating amount is determined in the following manner.

(1) A prescribed region of the gelatinous composition-coated surface sheet that is to be measured is cut out using a sharp blade such as a cutter replacement blade, while avoiding any alteration in thickness, to obtain a sample for measurement of the coating amount.

(2) The area of the cut out sample: $SA \text{ (m}^2\text{)}$ and the mass: $SM_0 \text{ (g)}$ are measured.

(3) The measured sample is dipped in a solvent in which the gelatinous composition is soluble, such as an aromatic solvent (for example, toluene) and stirred for at least 3 minutes for elution of the gelatinous composition into the solvent.

(4) The sample in the solvent is filtered using mass-measured filter paper, and the sample is thoroughly rinsed with the solvent on the filter paper. Each rinsed sample filter paper sheet is thoroughly dried in an oven at 100°C .

(5) The masses of the dried filter paper and the sample are measured, and the pre-measured mass of the filter paper is subtracted from that value to calculate the dry sample mass: $SM_1 \text{ (g)}$.

(6) The gelatinous composition coating amount $G_{BS} \text{ (g/m}^2\text{)}$ is calculated by the following formula (1).

[Formula 1]

$$G_{BS} \text{ (g/m}^2\text{)} = [SM_0 \text{ (g)} - SM_1 \text{ (g)}] / SA \text{ (m}^2\text{)} \quad (1)$$

[0045]

In order to reduce measurement error for the
5 gelatinous composition coating amount, multiple samples
are cut out from multiple absorbent articles, so that the
total area of the sample exceed 100 cm², and each sample
is measured according to (2) to (6) above, employing the
average value for the coating amount G_{BS} obtained from the
10 measuring operations.

[0046]

Also, the gelatinous composition may be coated
during production of the material for the surface sheet,
such as a nonwoven fabric, or it may be coated on the
15 surface sheet in the manufacturing line for the absorbent
article. From the viewpoint of minimizing equipment
investment, the gelatinous composition is preferably
coated on the surface sheet in the manufacturing line for
the absorbent article, and particularly from the
20 viewpoint of minimizing contamination by shedding of the
oil solution, it is preferably coated on the surface
sheet during a downstream step of the manufacturing line
(for example, just before the step of separately
packaging the product).

25 **[0047]**

The structural members used in the absorbent article
of the invention will now be explained in order.

[0048]

[Surface sheet]

30 For this embodiment of the invention, the surface
sheet 2 is a liquid-permeable sheet member located above
the skin side surface in the thickness direction D_T of the
disposable diaper 1, at the center axis line C_L extending
in the lengthwise direction D_L of the disposable diaper 1,
35 capable of direct contact with the skin surface of the

wearer. Although an air-through nonwoven fabric is used as the sheet member for this embodiment, there is no limitation to this for the absorbent article of the invention, and any publicly known sheet member of the prior art may be used so long as it is a liquid-permeable sheet member. Examples for such a sheet member include nonwoven fabrics, woven fabrics and knitted fabrics, with nonwoven fabrics being preferred from the viewpoint of cushioning properties, feel on the skin and general purpose use. Also, nonwoven fabrics include the aforementioned air-through nonwoven fabrics, as well as spunbond nonwoven fabrics, point bond nonwoven fabrics, spunlace nonwoven fabrics, needle punching nonwoven fabrics and meltblown nonwoven fabrics, and also combinations thereof (such as SMS and the like).

[0049]

When a nonwoven fabric or woven fabric is to be used as the surface sheet in the absorbent article of the invention, the fibers composing the woven fabric or nonwoven fabric may be natural fibers or chemical fibers, and specifically these include cellulose fibers such as ground pulp and cotton; regenerated cellulose such as rayon and fibril rayon; semi-synthetic cellulose such as acetate and triacetate, thermoplastic hydrophobic chemical fibers, and hydrophilicized thermoplastic hydrophobic chemical fibers. Also, examples of thermoplastic hydrophobic chemical fibers include polyethylene (PE), polypropylene (PP) and polyethylene terephthalate (PET) monofilaments, and fibers composed of PE and PP graft polymers. The nonwoven fabric or woven fabric may be subjected to hydrophilicizing treatment after formation of the nonwoven fabric or woven fabric.

[0050]

As shown in Fig. 1, the surface sheet 2 of this embodiment has an essentially rectangular outer shape with the lengthwise direction D_L as the long sides as viewed flat, but the absorbent article of the invention

is not limited to such a shape, and the shape may be a quadrilateral shape other than rectangular, or it may include curves, such as an ellipsoid, elliptical or gourd shape. Also, the size of the surface sheet is not particularly restricted so long as it is a size that can cover the entire surface on the skin side surface of the absorbent body that is located above the non-skin side surface of the surface sheet, and any desired size may be employed, depending on the size and gender of the intended wearer of the absorbent article, and the purpose of use. Also, the thickness of the surface sheet is not particularly restricted so long as the absorbent article can have the necessary liquid-permeable property, strength and flexibility, and any desired thickness may be employed. For example, the thickness of the surface sheet may be in the range of 0.001 mm to 5.0 mm, but from the viewpoint of suitable liquid permeability, cushioning properties and feel on the skin, it is preferably 0.01 mm to 3.0 mm and more preferably 0.1 mm to 1.0 mm.

[0051]

For this embodiment, the surface sheet 2 has a flat structure for at least the surface on the skin side, but there is no limitation to such a structure for the absorbent article of the invention. For example, a surface sheet with a plurality of raised sections formed on at least the surface of the skin side is suitable for use. When the surface sheet used has a plurality of raised sections protruding from the skin side surface, preferably at least some of the raised sections among the plurality of raised sections are coated with the gelatinous composition. The plurality of raised sections are the sections that contact with the skin of the wearer, and when these sections are coated with the gelatinous composition they become hydrophobic, thereby inhibiting liquid excreta such as urine from residing in or flowing back to those sections, so that it is possible to effectively prevent adhesion of discharged liquid

excreta onto the wearer.

[0052]

Furthermore, the raised sections may have any desired structure depending on the desired liquid drain
5 away property, liquid permeation property, cushioning properties and feel on the skin, and for example, the raised sections may be ridges (elevations) extending in the lengthwise direction of the surface sheet, or they may be protrusions with three-dimensional shapes, such as
10 flat rectangular solid or truncated square pyramids having rounded edge lines, pyramidal shapes (for example, triangular pyramids or square pyramids) having rounded apexes, or conical or arched shapes having rounded apexes. Also, the structure of the sections other than
15 the raised sections are not particularly restricted and may be furrows or flat sections, and for example, according to another embodiment of the invention, the surface sheet used is preferably one having a ridge-furrow structure, wherein the plurality of raised
20 sections are formed as a plurality of straight linear ridges extending parallel along the lengthwise direction of the surface sheet and aligned at essentially equal spacings in the widthwise direction D_w , with the sections between every two adjacent ridges formed as furrows
25 extending along the lengthwise direction of the surface sheet.

[0053]

In an embodiment in which ridges and furrows extend in a straight linear manner along the lengthwise
30 direction D_L of the absorbent article, liquid excreta such as urine introduced onto the surface sheet tend to diffuse in the lengthwise direction D_L of the absorbent article along the ridges and furrows, so that spreading of the liquid excreta in the widthwise direction D_w of the
35 absorbent article is minimized, and the resulting leakage of the liquid excreta from the widthwise direction D_w can be prevented. In addition, since liquid excreta that has

penetrated the surface sheet while diffusing in the lengthwise direction D_L of the absorbent article can be absorbed through a wide region of the absorbent body, the absorption efficiency of the liquid excreta can be drastically improved.

[0054]

In the ridge-furrow structure described above, the heights of the ridges, i.e. the distance between the horizontal plane containing the top sections of the ridges and the horizontal plane containing the bottom sections of the furrows, will usually be in the range of 0.1 to 1.2 mm, preferably in the range of 0.2 mm to 1.0 mm and more preferably in the range of 0.4 mm to 0.8 mm, from the viewpoint of allowing liquid excreta such as urine introduced onto the surface sheet to be directed in the prescribed direction, and not producing a feeling of discomfort or unpleasantness for the wearer when the ridges contact with the wearer. The heights of the ridges can be measured using a laser displacement gauge (for example, an LJ-G Series high-precision two-dimensional laser displacement gauge (Model: LJ-G030) by Keyence Corp.), in the following non-contact system. A sample of the surface sheet cut to a 100 mm × 100 mm size is placed on a horizontal measuring stage and the displacements of five different ridges from the measuring stage are measured with a laser displacement gauge, recording the average value of the five measured values as the ridge thickness (mm). Similarly, the displacements of five different furrows from the measuring stage are measured with a laser displacement gauge, recording the average value of the five measured values as the furrow thickness (mm). The ridge height (mm) is calculated from the ridge thickness (mm) and the furrow thickness (mm).

[0055]

Also, each width at the ridges and furrows of the ridge-furrow structure may be such that the widths of the

ridges are in the range of 1.0 to 5.0 mm, but they are preferably 2.0 to 4.0 mm from the viewpoint of the diffusibility and liquid drain away property for liquid excreta, as well as cushioning properties and feel on the skin. If the ridge widths exceed 5.0 mm, liquid excreta will tend to reside in the ridges and the liquid drain away property may be reduced. Similarly, the widths of the furrows may be in the range of 1.0 to 3.0 mm, but are preferably 1.0 to 2.0 mm. Also, the pitch of the ridge-furrow structure (that is, the spacing (mm) between the centers of the top sections of two adjacent ridges) may be in the range of 2.0 mm to 8.0 mm, but it is preferably 2.0 mm to 6.0 mm from the viewpoint of the diffusibility and liquid drain away property for liquid excreta, as well as the cushioning properties and feel on the skin. The width of a ridge can be measured as the distance between the border lines between the ridge and the two furrows located above either side of the ridge, based on a flat photograph or flat image of the surface sheet in an unpressed state. The same applies for the furrow widths.

[0056]

In the absorbent article of the invention, the ridge-furrow structure that can be applied for the structure of the surface sheet is not limited to the aspect described above, and for example, it may be an aspect in which the ridges and furrows in the ridge-furrow structure lie at least partially in a direction other than the lengthwise direction D_L of the absorbent article (for example, the widthwise direction D_W of the absorbent article), an aspect in which they lie at least partially in altering directions (for example, an undulating or zigzag form), an aspect in which they lie at least partially in a discontinuous (that is, intermittent) manner in the lengthwise direction D_L of the absorbent article, an aspect in which at least in some sections the spacings between two adjacent ridges are not

constant, or an aspect in which two or more of these aspects are in any desired combination. By appropriately setting the direction and form in which the ridges and furrows lie, it is possible to control the diffusion direction for liquid excreta introduced onto the surface sheet, and to realize a product design suited for a variety of needs.

[0057]

The method of forming the ridge-furrow structure on the surface sheet is not particularly restricted, and it may be known method such as a method of forming a ridge-furrow structure by continuously blasting gas (usually air) onto the fiber web, a method of utilizing vacuum forming, a method utilizing gear stretching, or a method utilizing heat extension of heat-extendable fibers and/or heat shrinkage of heat-shrinkable fibers, as disclosed in Japanese Unexamined Patent Publication No. 2008-25079, Japanese Unexamined Patent Publication No. 2008-23326 or Japanese Unexamined Patent Publication No. 2009-30218, for example.

[0058]

When a surface sheet having such a ridge-furrow structure is to be used, preferably the gelatinous composition is present in linear coated regions or punctiform coated regions along the ridges, for at least some of the plurality of ridges. The plurality of ridges are the sections that contact with the skin of the wearer, and when these sections are coated with the gelatinous composition they become hydrophobic, thereby inhibiting liquid excreta such as urine from residing in or flowing back to those sections, so that it is possible to effectively prevent adhesion of discharged liquid excreta onto the wearer, while also providing the effect exhibited by the ridge-furrow structure, i.e. the effect of inhibiting leakage of liquid excreta and significantly increasing absorption efficiency for liquid excreta.

[0059]

The basis weight of the surface sheet in the absorbent article of the invention is not particularly restricted and may be any desired basis weight in a range such that the liquid permeability, strength and flexibility are not impaired. The basis weight may be, for example, 10 g/m² to 100 g/m², and is preferably 20 g/m² to 50 g/m². If the basis weight is less than 10 g/m² it will not be possible to obtain sufficient surface strength as a surface sheet, and the absorbent article may tear when worn. If the basis weight is greater than 100 g/m², excessive stiffness may result, creating unpleasantness or discomfort for the wearer of the absorbent article.

[0060]

[Absorbent body]

In the disposable diaper 1 of this embodiment, the absorbent body 4 is located above the non-skin side surface of the surface sheet 2, and it absorbs and retains liquid excreta such as urine that has permeated the surface sheet 2. An absorbent body is generally preferred to be bulky and resistant to deformation and have low chemical irritation, in consideration of water absorption and comfort during wear. From this viewpoint, the absorbent body 4 used may be one comprising an absorbent core 41, for absorption and retention of liquid excreta, and a core wrap sheet 42 enclosing the absorbent core 41, as shown in Fig. 2. For this embodiment, the surface sheet 3 and core wrap sheet 42 located above the skin side surface of the absorbent body 4 are at least partially bonded with any desired adhesive, such as a hot-melt adhesive.

[0061]

The absorbent core may be one containing a fiber material, such as fluff pulp, a spunbond nonwoven fabric, an airlaid nonwoven fabric, hydrophilic fiber such as cellulose-based fiber, or hydrophilicized thermoplastic fiber, and a super-absorbent polymer such as sodium

acrylate copolymer. The absorbent core does not have to contain a super-absorbent polymer, and for example, a core wrap sheet enclosing only the fiber material mentioned above may be used as the absorbent body.

5 **[0062]**

 The core wrap sheet is not particularly restricted so long as it has sufficient liquid permeability to allow permeation of liquid excreta such as urine and a sufficient barrier property to prevent permeation of the enclosed absorbent core components (that is, to prevent leakage of the fiber material composing the absorbent core), and examples include sheet-like fiber structures, such as nonwoven fabrics, woven fabrics and knitted fabrics made of natural fibers or chemical fibers, and more specifically, tissues or liquid-permeable nonwoven fabrics and hydrophilic nonwoven fabrics having basis weights of about 10 g/m² to about 30 g/m².

[0063]

 The structure of the absorbent body in the absorbent article of the invention is not particularly restricted, and any structure may be employed according to the desired absorption performance and size, and the purpose of use.

[0064]

25 [Back sheet]

 The liquid-impermeable back sheet in the absorbent article of the invention is not particularly restricted, and any publicly known sheet member of the prior art may be used. Examples of such sheet members include films comprising PE, PP and the like, resin films with air permeability, multilayer articles combining air permeable resin films with nonwoven fabrics such as spunbond or spunlace fabrics, and multilayer nonwoven fabrics such as SMS.

35 **[0065]**

 The absorbent article of the invention may further contain any desired structural members, depending on the

desired product properties and the purpose of use. The present invention can be applied not only to a disposable diaper as with this embodiment, but also to various types of absorbent articles, such as incontinence pads,
5 sanitary napkins and panty liners. Furthermore, the absorbent article of the invention is not restricted by the embodiment described above and can be appropriately modified within a range that is not outside of the object and gist of the invention.

10 [Examples]

[0066]

The invention will now be explained in greater detail using examples and comparative examples, with the understanding that the invention is not limited only to
15 the examples.

[0067]

Example 1

A surface sheet comprising a nonwoven fabric with a 3 mm-pitch ridge-furrow structure was coated with a
20 gelatinous composition comprising 5 mass% of polystyrene-block-poly(ethylene-co-butylene)-block-polystyrene (SEBS), 2 mass% of polystyrene-block-polyethylene-block-poly(ethylene-co-propylene)-block-polystyrene (SEPS), 90 mass% of PARLEAM 6 (product of NOF Corp.: a branched
25 chain hydrocarbon produced by copolymerizing liquid isoparaffin, isobutene and n-butene and then hydrogenating the copolymer, polymerization degree: approximately 5 to 10, weight-average molecular weight: approximately 330) and 3 mass% of silicone oil (100 cst),
30 at a coating width of 2 mm and a coated spacing of 2 mm, to prepare a surface sheet sample having multiple linear coated regions. The prepared surface sheet sample was attached using a hot-melt adhesive onto the section of a commercially available infant paper diaper (Mooney "Air-Fit" S-size, by Unicharm Corp.) from which the surface
35 sheet had been removed, to fabricate an absorbent article for Example 1.

[0068]

Comparative Example 1

An absorbent article for Comparative Example 1 was fabricated in the same manner as Example 1, except that
5 no gelatinous composition was coated onto the surface sheet.

[0069]

The absorbent articles of Example 1 and Comparative
Example 1 were used to measure the draining away rate,
10 liquid permeation rate, rewetting amount and core wrap sheet bonding strength, by the following procedures. The measured values are shown in Table 1.

[0070]

The liquid permeation rate was determined by
15 dropping 40 ml of artificial urine once on the surface sheet of each absorbent article, measuring the time (sec) until all of the artificial urine migrated into the surface sheet, and recording the measured time as the liquid permeation rate (sec). Similarly, the draining
20 away rate was determined by measuring the time (sec) until the artificial urine migrated through the surface sheet to the absorbent body side, and recording the measured time as the draining away rate (sec).
Measurement of the draining away rate and liquid
25 permeation rate was conducted 3 times successively. The artificial urine was prepared by dissolving 200 g of urea, 80 g of sodium chloride, 8 g of magnesium sulfate, 3 g of calcium chloride and approximately 1 g of dye (Blue #1) in 10 L of ion-exchanged water.

30 **[0071]**

The absorbent articles of Example 1 and Comparative Example 1 were used for measurement of the rewetting amount (g) by the following test method.

(1) The artificial urine dropping location on the
35 sample is marked.

(2) The sample weight and artificial urine dropping location thickness are measured. A thickness gauge

(PEACOCK PIAL THICKNESS GAUGE, diameter: 50 mm) is used for the thickness measurement.

(3) The sample is anchored.

5 (4) A burette is anchored at a location 10 mm above the artificial urine dropping location.

(5) The burette is temporarily removed, and a cylinder (diameter: 60 mm, weight: 200 g) is placed on the sample with the artificial urine dropping location mark situated at the center.

10 (6) The burette is returned to the artificial urine dropping location (the center of the cylinder) and the first artificial urine dropping is commenced ($T = 0$).

(7) The artificial urine is dropped in an amount of 70 mL.

15 (8) The procedure is paused until the artificial urine disappears from the surface of the surface sheet inside the cylinder.

(9) The weight (g) of filter paper (Advantech, Inc. No.2, 100 mm × 100 mm) is measured and recorded as
20 "weight A (g)".

(10) After 5 minutes from the start of artificial urine dropping ($T = 5$ min), the weight-measured filter paper (Advantech, Inc. No.2, 100 mm × 100 mm) is placed on the sample with the center of the filter paper aligned
25 with the artificial urine dropping location, and a weight (3.5 kg) is set on it.

(11) After 8 minutes from the start of artificial urine dropping ($T = 8$ min) (3 minutes after setting the weight), the weight is removed, and the weight (g) of the
30 filter paper is measured and recorded as "weight B (g)".

(12) The change in the filter paper weight (weight B (g) - weight A (g)) is calculated and recorded as the "first rewetting amount (g)".

35 (13) After 10 minutes from the start of the first artificial urine dropping ($T = 10$ min), a second artificial urine dropping is commenced.

(14) The artificial urine is dropped in an amount of

70 mL.

(15) In the same manner as (8) to (12) above, the procedure is paused until the artificial urine disappears from the surface of the surface sheet inside the cylinder, and the change in filter paper weight (g) is calculated and recorded as the "second rewetting amount (g)".

(16) After 10 minutes from the start of the second artificial urine dropping ($T = 20$ min), a third artificial urine dropping is commenced.

(17) The artificial urine is dropped in an amount of 70 mL.

(18) In the same manner as (8) to (12) above, the procedure is paused until the artificial urine disappears from the surface of the surface sheet inside the cylinder, and the change in filter paper weight (g) is calculated and recorded as the "third rewetting amount (g)".

(19) Measurement of the first to third rewetting amounts is repeated 5 times, and the average value is calculated.

[0072]

The absorbent articles of Example 1 and Comparative Example 1 were used for measurement of the bonding strength between the surface sheet and core wrap sheet, by the following test method.

i) The surface sheet and the core wrap sheet attached to the surface sheet are removed from each absorbent article and cut to a width of 25 mm to prepare a sample for tensile testing.

ii) The respective lengthwise edges of the surface sheet and the core wrap sheet of the tensile test sample are clamped with a tensile tester chuck (chuck distance: 10 mm).

iii) The surface sheet and core wrap sheet of the tensile test sample are pulled in the 180° direction by the tensile tester for detachment, and the load value is

measured.

iv) The maximum of the measured load value is recorded as the bonding strength (N/25 mm).

[0073]

5 [Table 1]

		Example 1	Comparative Example 1
Coating width/Coated spacing (mm/mm)		2/2	-
Coating amount (g/m ²)		8	0
Permeation rate (sec)	1st time	6	6
	2nd time	9	9
	3rd time	14	15
Draining away rate (sec)	1st time	17	19
	2nd time	62	88
	3rd time	128	272
Rewetting amount (g)	70 mL	0	0
	140 mL	21	29
	210 mL	40	46
Bonding strength (N/25 mm)	0 hr	0.42	0.34
	After 1 week	0.48	0.32

[0074]

10 As shown in Table 1, the absorbent article of Example 1 maintained a liquid permeation rate equivalent to that of the absorbent article of Comparative Example 1 that was not coated with a gelatinous composition, while also exhibiting a more excellent draining away rate and
15 rewetting rate compared to the absorbent article of Comparative Example 1. In addition, the absorbent article of Comparative Example 1 showed an approximately 10% reduction in bonding strength after 1 week at 50°C, whereas the absorbent article of Example 1 showed no
20 reduction in bonding strength even after 1 week at 50°C.

Reference Sign List

[0075]

- 1 Disposable diaper
- 2 Surface sheet
- 25 3 Back sheet

- 4 Absorbent body
- 41 Absorbent core
- 42 Core wrap sheet
- 5 Side sheet member
- 5 6 Coated region

CLAIMS

1. An absorbent article having an absorbent body comprising an absorbent core and a core wrap sheet enclosing the absorbent core, and a surface sheet located
5 above a skin side surface of the absorbent body and bonded with the core wrap sheet by an adhesive,
wherein the surface sheet has a lengthwise direction, a widthwise direction and a thickness direction, and
10 a skin side surface of the surface sheet is intermittently coated with a hydrophobic gelatinous composition that can maintain a gel state at 38°C.
2. The absorbent article according to claim 1, wherein the surface sheet has a plurality of raised
15 sections protruding from the skin side surface, with at least some of the raised sections among the plurality of raised sections being coated with the gelatinous composition.
3. The absorbent article according to claim 2,
20 wherein the plurality of raised sections are a plurality of ridges extending in the lengthwise direction of the surface sheet, the surface sheet having a ridge-furrow structure comprising a plurality of ridges and a plurality of furrows between each of the ridges, the
25 gelatinous composition lying in linear coated regions or punctiform coated regions in at least some of the ridges among the plurality of ridges.
4. The absorbent article according to claim 3, wherein the pitch of the ridge-furrow structure is 2.0 mm
30 to 5.0 mm.
5. The absorbent article according to claim 4, wherein the gelatinous composition is present as a plurality of linear coated regions extending parallel to the lengthwise direction of the surface sheet on the skin
35 side surface of the surface sheet, and the spacings in the linear coated regions are 1 to 10 mm.
6. The absorbent article according to any one of

claims 1 to 5, wherein the gelatinous composition comprises a composition containing a styrene-based elastomer and a hydrocarbon oil.

5 7. The absorbent article according to claim 6,
wherein the gelatinous composition comprises a
composition containing 100 parts by mass of a styrene-
based thermoplastic elastomer mixture (A), having a
molecular weight dispersity (M_w/M_n) of 1.25 to 1.60 and
including a styrene-based thermoplastic elastomer (A1)
10 composed of a triblock or more block copolymer with a
weight-average molecular weight of 100,000 or greater and
less than 180,000, and a styrene-based thermoplastic
elastomer (A2) composed of a triblock or more block
copolymer with a weight-average molecular weight of
15 180,000 or greater and 300,000 or less, in a mass ratio
of (A1)/(A2) = 95/5 to 50/50, with 500 to 4800 parts by
mass of a hydrocarbon oil (B) having a kinematic
viscosity of 5 to 50 mm^2/s at 37.8°C and 20 to 60 parts by
mass of a silicone oil (C) having a kinematic viscosity
20 of 50 to 200 mm^2/s at 25°C.