

[DESCRIPTION]

[Title of Invention]

BASE FABRIC FOR DISPOSABLE TEXTILE PRODUCT AND DISPOSABLE
TEXTILE PRODUCT USING SAME

[Technical Field]

The present invention relates to a base fabric for a disposable textile product which can be used for the manufacture of a disposable textile product, such as disposable undergarments and diapers. The present invention also relates to a disposable textile product manufactured using the base fabric.

[Background Art]

Base fabrics for disposable textile products have been widely used for diapers, hygiene products, and also undergarments, clothing, and bedding that can be used in a makeshift or temporary manner for travel, for emergency situations, outdoors, in hospitals, facilities, and hotels. The base fabrics are required to ensure good feeling in wearing when the base fabric product is worn on the body. For example, in the case of diapers, hygiene products, or undergarment, important properties which are required for the base fabrics include good body-fit feeling, good contact feeling when in contact with the skin, good air permeability, and good moisture transpiration ability which results in sweat absorption and drying ability (referred to hereinbelow simply as moisture transpiration ability).

In the case of a diaper which is one of disposable fabric products, nonwoven fabric materials are used most often as the material base fabrics with consideration for functions thereof. For example, PTL1 discloses a disposable diaper in which an inner pad is attached to a diaper body, wherein the diaper body is configured by inserting an absorbent such as cotton pulp between a liquid-permeable top sheet made of nonwoven fabric and a liquid-impermeable back sheet made of polyethylene, etc., and the inner pad is likewise configured by inserting an absorbent such as cotton pulp between a liquid-permeable top sheet made of nonwoven fabric and a liquid-impermeable back sheet made of polyethylene, etc.

In the case of disposable sleeping garments provided to guests in hotels, and the like, it has been suggested to impart a skin care function thereto. For example, PTL2 discloses a disposable sleeping garment that is subjected to processing of impregnating or coating a nonwoven base fabric with a lipophilic moisturizer, this processing constituting the skin care function processing.

[Citation List]

[Patent Literature]

[PTL 1] Japanese Patent No. 3667267

[PTL 2] Japanese Patent Application Publication No. 2009-97104

[Summary of Invention]

[Technical Problem]

In PTL1, there is a problem in that although the nonwoven fabric which is used as a material for the liquid-permeable top sheet has air permeability, moisture transpiration ability thereof is low. Further, in the diaper disclosed in PTL1, although a liquid-impermeable back sheet is used for preventing bodily wastes such as urine from leaking to the outside, this liquid-impermeable back sheet, too, has inherently low moisture transpiration ability. It is generally known that the back sheet in a diaper is also imparted with moisture permeability, but no contribution is made thereby to the improvement of moisture transpiration ability. Thus, the base fabric materials for use in the conventional disposable diapers do not have sufficient moisture transpiration ability, and water vapors formed by sweat, or the like, stay inside the diaper, thereby inevitably causing an uncomfortable feeling of sweatiness and stickiness.

Another drawback of the base fabric materials used in the conventional disposable diapers is that they have poor heat dissipation ability, which is the ability to dissipate the heat generated from the body to the outside, and the heat accumulated in the diaper creates a discomfort. Also, when wearing the diaper, contact with the fiber material creates an unpleasant skin sensation peculiar to fiber materials, lacking the pleasant cool contact feeling and smoothness such as those inherent to a cotton material, and the refreshing feeling of wearing it is absent. Thus, there is room for improvement in

the field of base fabrics configuring disposable textile products.

The drawback of the disposable sleeping garments disclosed in PTL2 is that the base fabric itself does not have a skin care function, and the intended skin care function is imparted by post-processing such as impregnation or coating with a lipophilic moisturizer, and the manufacturing process is complex and costly.

As for the base fabric material for disposable textile products that are in direct contact with the human skin, the base fabric itself is generally required to be flexible and create an overall soft and plump feeling. Further, from the standpoint of appearance and visibility, the base fabric for clothing for traveling, emergency situations, and outdoors is required to be capable of representing efficiently and effectively a variety of highly aesthetic designs, and is also required to include media properties such as messaging, promotion, and advertising. In addition, it is also desirable that various functions could be imparted thereto according to application.

It is an object of the present invention to provide a base fabric for a disposable textile product that excels in moisture transpiration ability, heat dissipation ability, and moisture permeability. It is another object of the present invention to provide a disposable textile product that creates excellent feeling in wearing and excels in contact with skin,

moisture transpiration ability, heat dissipation ability, and moisture permeability by using the base fabric in accordance with the present invention as a base fabric for a disposable textile product.

Yet another object of the present invention is to provide a base fabric for a disposable textile product that can efficiently and effectively express a variety of designs and messages and excels in overall soft and plump feeling, flexibility, and comfort in use while utilizing the texture that is characteristic to the base fabric material itself. Still another object of the present invention is to provide a base fabric for a disposable textile product that makes it possible to impart efficiently and effectively a variety of functions thereto according to the application and is easy to manufacture, and also to provide a disposable textile product utilizing the properties of the base fabric.

[Solution to Problem]

The base fabric for a disposable textile product in accordance with the present invention is configured of a laminated sheet which has first and second fibrous sheets having air permeability and a fiber material interposed between the first and second fibrous sheets and having liquid diffusibility, and in which the first and second fibrous sheets and the fiber material are laminated, wherein

the laminated sheet forms a composite layer in which fiber-constituted layers having air permeability and a fiber-constituted layer having liquid diffusibility are laminated;

the laminated sheet has a shirring portion in which an uneven surface is formed by the composite layer; and

elasticity is imparted to the laminated sheet.

Elastic members are provided, as means for imparting elasticity to the laminated sheet, between the fiber material and the second fibrous sheet.

The first fibrous sheet and the fiber material are preferably intermittently joined together through the elastic members, and the second fibrous sheet and the fiber material are preferably intermittently joined together.

The first fibrous sheet and the fiber material are preferably joined together with a hot-melt adhesive through the elastic member. The second fibrous sheet and the fiber material are preferably joined together by a hot-melt adhesive.

The elastic member is configured of a plurality of linear elastic bodies having stretching ability, and the plurality of linear elastic bodies is disposed at intervals in the width direction of the laminated sheet and joined between the first fibrous sheet and the fiber material.

The linear elastic bodies may be provided over the entire region or in a partial region inside the laminated sheet.

The base fabric in accordance with the present invention has a configuration in which, in the laminated sheet, a plurality of shirring portions extending in a direction perpendicular to the longitudinal direction of the linear elastic bodies in a non-tensioned state is formed, and shirring rows are formed in a pattern.

The fiber material preferably has a flexible structure obtained by a mechanical softening process. It is also preferred that the fiber material be subjected to a weakening process.

It is preferred that the first fibrous sheet and the second fibrous sheet be configured of a material having air permeability and moisture permeability, and nonwoven fabric is preferably used as such a material.

It is preferred that the fiber material be configured of a material having liquid diffusibility and liquid permeability, and paper material is preferably used as such a material.

The disposable textile product in accordance with the present invention is configured using the base fabric for a disposable product which is disclosed hereinabove.

The disposable textile product in accordance with the present invention can be configured as an undergarment, a diaper, a fitness wear, a swimming wear, a tube top, a room wear, a raincoat, or a belly band.

[Advantageous Effects of Invention]

The base fabric in accordance with the present invention has excellent moisture transpiration ability, heat dissipation ability, and moisture permeability, and when the base fabric of the present invention is used for a disposable textile product, good feeling in wearing can be imparted to the product.

The base fabric in accordance with the present invention also has elasticity and therefore excels in flexibility and contact with skin. Furthermore, the elasticity enables the production of free-size products.

The disposable textile product of the present invention is configured using the above-described base fabric, has refreshing feeling in wearing, creates soft feeling in contact with the skin, and demonstrates excellent moisture transpiration ability, heat dissipation ability, and moisture permeability.

[Brief Description of Drawings]

[Fig. 1]

Fig. 1 is a plan view illustrating an embodiment of the base fabric for a disposable textile product of the present invention.

[Fig. 2]

Fig. 2 is a perspective view of the base fabric depicted in Fig. 1.

[Fig. 3]

Fig. 3 is a principal enlarged view of the base fabric depicted in Fig. 1.

[Fig. 4]

Fig. 4 is an end surface view in the cross section taken along the A-A line in Fig. 3.

[Fig. 5]

Fig. 5 is an end surface view in the cross section taken along the B-B line in Fig. 3.

[Fig. 6]

Figs. 6a to 6j are simplified drawings illustrating the arrangement of elastic members constituting the base fabric of the present invention.

[Fig. 7]

Fig. 7 is a front view of an undergarment (T-shirt) which is the disposable textile product in accordance with the present invention, this product being configured by using the base fabric of the present invention.

[Fig. 8]

Fig. 8 is a perspective view illustrating the wearing state of a garment (tube top) which is the disposable textile product in accordance with the present invention.

[Fig. 9]

Fig. 9 is a front view of a belly band which is the disposable textile product in accordance with the present invention.

[Fig. 10]

Fig. 10 is a perspective view of a rainwear which is the disposable textile product in accordance with the present invention.

[Fig. 11]

Figs. 11a to 11e are perspective views illustrating the wearing state of a supporter which is the disposable textile product in accordance with the present invention.

[Fig. 12]

Fig. 12 is a perspective view of a bandage which is the disposable textile product in accordance with the present invention.

[Fig. 13]

Figs. 13a to 13c are explanatory drawings illustrating the action of the shirring portion in the base fabric of the present invention.

[Fig. 14]

Fig. 14 is a principal cross-sectional view of the laminated sheet constituting the base fabric of the present invention.

[Fig. 15]

Fig. 15 is a conceptual diagram illustrating the space formed between the second fibrous sheet and fiber material.

[Fig. 16]

Fig. 16 is a simplified drawing illustrating the formation of an adhesive permeation portions in the layer of the fiber material.

[Fig. 17]

Fig. 17 illustrating the wearing state of a diaper of a pants type which the disposable textile product in accordance with the present invention.

[Fig. 18]

Fig. 18 is an explanatory drawing illustrating a moisture transpiration ability (II) test (Boken standard BQEA028) in examples.

[Fig. 19]

Fig. 19 illustrates the transpiration ratio representing the moisture transpiration ability in examples and comparative examples.

[Fig. 20]

Fig. 20 illustrates the moisture permeability representing the moisture permeability in examples and comparative examples.

[Description of Embodiments]

Embodiments of the present invention will be explained hereinbelow with reference to the appended drawings. Fig. 1 illustrates an embodiment representing the surface state of a base fabric 1 of the embodiment of the present invention. In Fig. 1, the base fabric 1 is continuous in the x direction which is the first direction. The reference numeral 5 denotes elastic members provided inside the base fabric. The figure illustrates a configuration in which a large number of uneven surfaces are formed by a large number of elastic members 5. As depicted in Fig. 2, a large number of shirring portions 6 are formed by the large number of uneven surfaces.

As depicted in Figs. 4 and 5, the base fabric 1 is configured of a laminated sheet 30 which has a first fibrous sheet 2 having air permeability, a second fibrous sheet 3 likewise having air permeability, and a fiber material 4 which is interposed between the first and second fibrous sheets 2 and 3 and has liquid diffusibility, the laminated sheet being obtained by laminating the first and second fibrous sheets 2 and 3 and the fiber material 4. The first and second fibrous sheets 2 and 3 constitute fiber layers having air permeability, and the fiber material 4 constitutes a fiber layer having liquid diffusibility. Thus, the laminated sheet 30 forms a composite layer 31 in which fiber layers having air permeability (air-permeable fiber layers) and the fiber layer having liquid diffusibility (liquid-diffusible fiber layer) are laminated. The composite layer 31 has a three-layer structure including a first air-permeable fiber layer, the liquid diffusible fiber layer adjacent to the first air-permeable fiber layer, and a second air-permeable fiber layer, adjacent to the liquid diffusible fiber layer.

The first fibrous sheet 2 and the fiber material 4 are intermittently joined together through the elastic members 5. The second fibrous sheet 3 and the fiber material 4 are preferably intermittently joined together. Adhesive bonding, thermal fusion, and ultrasonic welding can be used as joining means, but from the standpoint of easiness of operations, adhesive bonding is preferred. The embodiment of the present

invention will be explained hereinbelow with reference to the case in which adhesive bonding is used as the joining means.

In adhesive bonding as the joining means, a hot-melt adhesive is preferably used as an adhesive. The embodiment of the present invention will be explained hereinbelow with reference to the case in which the hot-melt adhesive is used as the adhesive. In order to join the second fibrous sheet 3 and the fiber material 4 intermittently together by using the hot-melt adhesive, as depicted in Fig. 14, the hot-melt adhesive is intermittently applied to the fiber material 4 (alternatively, the hot-melt adhesive may be intermittently applied to the second fibrous sheet 3), and the second fibrous sheet and the fiber material are laminated and integrated by joining. In this case, non-adhesive portions 8 where an adhesive layer 7 is not present are formed between the second fibrous sheet 3 and the fiber material 4, and spaces 9 are formed by such non-adhesive portions 8. Since the elastic members 5 are interposed between the first fibrous sheet 2 and the fiber material 4, the intermittent joining of the first fibrous sheet 2 and the fiber material 4 is performed by joining the first fibrous sheet 2 and the fiber material 4 together in the locations of the elastic members 5. Thus, as depicted in Fig. 14, the hot-melt adhesive is applied by spraying to the outer circumference of the large number of elastic members 5 arranged parallel to each other at predetermined intervals, the elastic members 5 to which the

hot-melt adhesive has been applied are positioned between the first fibrous sheet 2 and the surface of the fiber material 4 in the laminated sheet of the second fibrous sheet 3 and the fiber material 4, lamination is performed such that the elastic members 5 are inserted between the surface of the fiber material 4 in the laminated sheet and the first fibrous sheet 2, and the layers are integrated by joining. The opposing surfaces of the first fibrous sheet 2 and the fiber material 4 where the elastic members 5 are not present become the non-adhesive portions 8, and spaces 9 are formed by the non-adhesive portions 8 (this feature is not specifically illustrated by Fig. 14). Fig. 15 illustrates the formation of the spaces 9 by the non-adhesive portions 8 in the shirring portion 6. Such a structure in which the spaces 9 are formed by the non-adhesive portions 8 improves functions such as moisture transpiration ability, heat dissipation ability, and moisture permeability in the base fabric 1.

As depicted in Fig. 4, the uneven surface is formed by the composite layer 31 in the laminated sheet 30, and the shirring portion 6 is formed by the uneven surface. As depicted in Figs. 2, 3, and 4, the shirring portion 6 is formed by a protrusion 6a and a depression 6b in the uneven surface, and a large number of the shirring portions 6 are configured by continuous formation of the protrusions 6a and depressions 6b.

Arranging the elastic members 5 inside the base fabric 1 in the above-described manner is means for forming the shirring portion 6 constituted by the protrusion 6a and the depression 6b. Linear elastic bodies 5a having stretching ability are used as the elastic members 5, and a rubber filament can be advantageously used as the linear elastic body 5a. The embodiment of the present invention will be explained hereinbelow with reference to the case in which the linear elastic body 5a is used as the elastic member 5.

As depicted in Figs. 1 and 2, the linear elastic bodies 5a are arranged such that the extension direction of lines thereof is the same as the longitudinal direction of the laminated sheet 30 (x direction in Figs. 1 and 2), and a large number of the linear elastic bodies 5a are arranged parallel to each other at predetermined intervals. Thus, a large number of the linear elastic bodies 5a are arranged at intervals in the width direction of the laminated sheet 30 (y direction in Figs. 1 and 2), and a large number of linear elastic body rows are thus formed.

As depicted in Fig. 5, the linear elastic bodies 5a are disposed between the first fibrous sheet 2 and the fiber material 4. In the present invention, the number of the linear elastic bodies 5a per unit surface area can be set as appropriate, and the intervals between the linear elastic bodies 5a in the linear elastic body row can be also set as appropriate. In such a configuration, one shirring portion 6

extending from one end to the other end along the y direction (second direction which is different from the first direction) in Figs. 1 and 2 will be referred to as "a shirring portion of one row". The shirring portion 6 is formed in a large number of rows at predetermined intervals in the x direction in Figs. 1 and 2. The joining region of the composite layer 31 and the linear elastic body 5a in the shirring portion 6 will be referred to as a shirring portion support point. As indicted hereinabove, the number of the linear elastic bodies 5a per unit surface area can be set as appropriate, but where the number of the linear elastic bodies 5a is increased and the interval between the linear elastic bodies 5a is decreased, the number of shirring portion support points in the shirring portion of one row is increased. Therefore, the protrusion 6a and the depression 6b in the shirring portion 6 of one row can be formed to have a uniform shape and this shape can be maintained. Such a configuration is preferred because the shape of the shirring portion 6 is prevented from collapsing, and the flexibility, moisture transpiration ability, heat dissipation ability, and moisture permeability of the base fabric 1 are improved. From this standpoint, it is preferred that the interval between the shirring portions 6, that is, the pitch interval between the protrusions 6a, be 2 mm to 7 mm. It is more preferred that the pitch interval between the protrusions 6a be 3.00 mm to 6.25 mm. By reducing the pitch interval between the protrusions 6a, it is possible to form

fine shirring, thereby improving the external appearance. Further, since an area of contact with the skin per one shirring decreases, contact with the skin is improved, and since the surface area increases, the ability to absorb sweat, or the like, is enhanced. Meanwhile, by increasing the pitch interval between the protrusions 6a, it is possible to suppress suitably the elastic force of the rubber filament and reduce the production cost.

An example of a method for manufacturing the base fabric 1 of the present invention by using the rubber filament as the linear elastic body 5a and a hot-melt adhesive as the adhesive will be explained hereinbelow. As will be described below, it is preferred that a paper material be used as the fiber material 4, and it is also preferred that nonwoven fabrics be used as the first fibrous sheet 2 and the second fibrous sheet 3. Therefore, the method for manufacturing the base fabric 1 of the present invention will be explained hereinbelow with reference to the case in which a paper material is used as the fiber material 4 and nonwoven fabrics are used as the first fibrous sheet 2 and the second fibrous sheet 3. In this case, the nonwoven fabric used as the first fibrous sheet 2 is referred to as the first nonwoven fabric, and the nonwoven fabric used as the second fibrous sheet 3 is referred to as the second nonwoven fabric.

The paper material serving as the fiber material 4 is unwound from a roll wound body. A printed layer 4a (see,

Figs. 4 and 14) has been formed in advance on the paper material. The unwound paper material is conveyed to an embossing roll and pushed through between the rolls, thereby performing the mechanical softening process. The mechanical softening process may be also an embossing process using a flat roll, or an embossing process using a meshing roll having a large number of projections on the roll surface. In the case of the latter embossing process, a large number of fine holes are opened in the paper material. A hot-melt adhesive is intermittently blown on the paper material after the embossing process. A mechanical process other than the embossing process may be also used. Meanwhile, the second nonwoven fabric sheet serving as the second fibrous sheet 3 is unwound from a roll wound body, the unwound second nonwoven fabric sheet and the paper material to which the hot-melt adhesive has been applied are press bonded by using the flat roll, the two are laminated, and a joined body sheet is manufactured. In the joined body sheet, the second nonwoven fabric sheet and the paper material are intermittently joined together.

A large number of rubber filaments are unwound from a roll wound body onto which a large number of rubber filaments have been wound in parallel rows. The rubber filaments are unwound while being tensioned by a predetermined tension force. The hot-melt adhesive is blown on the unwound rubber filaments. In this case, the adhesive is blown continuously

over the entire length in the longitudinal direction of the rubber filaments. The adhesive is also applied to the entire circumferential surface of the rubber filaments. Meanwhile, the first nonwoven fabric sheet serving as the first fibrous sheet 2 is unwound from a roll wound body, and the unwound first nonwoven fabric sheet is fed such as to face the joined body sheet. The rubber filaments are supplied such that the rubber filaments to which the adhesive has been applied in the above-described manner is inserted between the joined body sheet and the first nonwoven fabric sheet. In this case, the rubber filaments are supplied between the surface of the paper material of the joined body sheet and the first nonwoven fabric sheet.

The rubber filaments pass between the flat rolls in a state of being inserted between the surface of the paper material of the joined body sheet and the first nonwoven fabric sheet. The joined body sheet, rubber filaments, and first nonwoven fabric sheet are press bonded, laminated, and integrated by the flat roll. Since the first nonwoven fabric sheet and the paper material are joined such that the rubber filaments are interposed therebetween, the two are joined intermittently. The laminated sheet 30 is thus manufactured in which the second nonwoven fabric sheet and the paper material are joined together intermittently, and the first nonwoven fabric sheet and the paper material are joined together intermittently. If necessary, the laminated sheet 30

is supplied to the embossing roll and the mechanical softening process is performed. By performing such a process, it is possible to improve further the flexibility of the base fabric 1.

Since the manufactured laminated sheet 30 has a large length, the sheet is cut to obtain the predetermined length in the longitudinal direction (x direction in Figs. 1 and 2) of the laminated sheet 30. In such cutting, the first nonwoven fabric sheet, second nonwoven fabric sheet, paper material, and rubber filaments are cut. As a result of the cutting, the tension force applied to the rubber filaments in the tensioned state is released and the filaments are contracted by the restoring force. As a result of contraction stresses appearing in this case, a force acts in the length reduction direction on the composite layer 31 constituted by the first nonwoven fabric sheet, second nonwoven fabric sheet, and paper materials. Therefore, an uneven surface is formed in the composite layer 31, thereby forming the shirring portion 6. The base fabric 1 having a large number of shirring portions 6 is thus manufactured.

The configuration of the base fabric 1 of the present invention is explained hereinbelow. Under the effect of the restoring force, the linear elastic bodies 5a are in the contracted state, that is, non-tensioned state, a large number of shirring portions 6 extending in the direction (the width direction of the laminated sheet 30 in Figs. 1 and 2, that, is

the same direction as the y direction) perpendicular to the longitudinal direction (that is, the longitudinal direction of the laminated sheet 30 in Figs. 1 and 2, that is, the same direction as the x direction) of the linear elastic bodies 5a in the non-tensioned state are formed, and shirring portion rows are formed in a pattern on the laminated sheet 30.

The linear elastic bodies 5a may be provided over the entire region inside the laminated sheet 30 or only in part thereof. The merit of providing the linear elastic bodies 5a over the entire region inside the laminated sheet 30 is that since uniform elasticity is imparted to the base fabric 1, when the base fabric 1 is used as a cover sheet for disposable pants or paper diaper, it can be reliably held on the body and prevented from slipping down.

The elasticity is imparted to the laminated sheet 30 by the linear elastic bodies 5a arranged inside the laminated sheet 30. Therefore, where the base fabric 1 constituted by the laminated sheet 30 is pulled by hand in the x direction in Figs. 1 and 2, the linear elastic bodies 5a extend and the base fabric 1 is therefore also extended and expanded. Where the hand is released from this state, the linear elastic bodies 5a are contracted by the restoring force, thereby restoring the original dimensional state of the base fabric 1. Since the base fabric 1 is thus stretchable, when the base fabric 1 is used for a disposable textile product such as undergarment and diapers, the base fabric excels in fit

feeling with respect to the body and, moreover, makes it possible to produce free-size products.

The base fabric 1 can be also configured by laminating two or more laminated sheets 30. Further, the base fabric can be also configured by laminating one or two or more laminated sheets 30 with one or two or more other sheets.

The base fabric 1 of the present invention can be advantageously used as a material for a disposable textile product and it is useful as a material having excellent properties that could not be found in the related art. The disposable textile products using the base fabric 1 of the present invention are not limited to products which disposed of after a single use and are also inclusive of products that are used repeatedly in a short period of time according to the usage application and objective. The products that are repeatedly used can withstand several cycles of washing.

The first and second fibrous sheets 2 and 3 are preferably constituted by materials having air permeability and moisture permeability, and nonwoven fabrics are preferably used, as mentioned hereinabove, as the fiber materials having such air permeability and moisture permeability.

Well-known nonwoven fabrics which have generally been used conventionally can be used as the nonwoven fabric in the present invention. Thus, well-known nonwoven fabrics having a fiber structure in which the fibers are oriented unidirectionally or randomly and joined by entanglement,

fusion, or adhesive bonding can be used. Examples of fiber materials for the nonwoven fabrics include natural fibers such as vegetable fibers (cellulose polymer) and animal fibers (protein polymers); purified fibers such as Lyocell and Tencel; regenerated fibers such as rayon and viscose rayon; semi-synthetic fibers such as acetate; synthetic fibers such as nylon and acrylic fibers; and chemical fibers such as PP (polypropylene), PE (polyethylene), and PET (polyethylene terephthalate). Those fibers may be used individually or in combinations of two or more thereof. If necessary, other materials may be included.

Nonwoven fabrics for use in the first fibrous sheet 2 and the second fibrous sheet 3 can be selected, as appropriate, according to the type or application of the product in which the base fabric 1 is to be used. For example, when the base fabric 1 is used for garments as the disposable textile products and the first fibrous sheet 2 or the second fibrous sheet 3 comes into contact with the user's body during wearing, it is preferred that the nonwoven fabric capable of demonstrating functions such as flexibility, good feel in contact with skin, and sweat absorption ability be used as the first fibrous sheet 2 or the second fibrous sheet 3. Meanwhile, when the first fibrous sheet 2 or the second fibrous sheet 3 is used in a state of being positioned on the front surface side of the garment which is not in contact with the user's body, it is preferred that nonwoven fabric capable

of demonstrating functions, for example, waterproofing ability, be used as the first fibrous sheet 2 or the second fibrous sheet 3.

Examples of nonwoven fabrics suitable for the first fibrous sheet 2 or the second fibrous sheet 3 include spunbonded nonwoven fabrics, thermally bonded nonwoven fabrics, spunlaced nonwoven fabrics, dry nonwoven fabrics, wet nonwoven fabrics, melt-blown nonwoven fabrics, chemically bonded nonwoven fabrics, needle punched nonwoven fabrics, stitch bonded nonwoven fabrics, and steam jet nonwoven fabrics. Among them, it is preferred that spunbonded nonwoven fabrics, thermally bonded nonwoven fabrics, and spunlaced nonwoven fabrics be used.

The preferred basis weight of the nonwoven fabrics used for the first fibrous sheet 2 and the second fibrous sheet 3 is 5 g/m² to 60 g/m², more preferably 7 g/m² to 40 g/m². The reason why it is preferable to set the basis weight of the nonwoven fabric within those ranges is that where the basis weight is less than 5 g/m², for example, when a hot-melt adhesive is applied, the hot-melt adhesive can ooze to the nonwoven fabric surface, and where the basis weight exceeds 60 g/m², the product thickness increases, the production efficiency decreases, and packaging operability is degraded. When the basis weight is 7 g/m² to 40 g/m², the joining strength can be increased by using the method of joining with

a hot-melt adhesive together with the joining method based on thermal sealing or ultrasonic joining.

A material other than the nonwoven fabrics can be used for the first fibrous sheet 2 and the second fibrous sheet 3, provided that this material has air permeability and moisture permeability. For example, air-permeable sheets and moisture-permeable sheets made from synthetic resins can be used.

When the base fabric 1 of the present invention is used as a material for disposable garments, as depicted in Fig. 13a, the second fibrous sheet 3 is rarely disposed on the side which is in contact with the skin 200 of the user, but when the base fabric 1 is used as a material for disposable bedding (for example, sheets), the second fibrous sheet 3 is often disposed on the side which is in contact with the skin 200 of the user. When the second fibrous sheet 3 is thus in direct contact with the human body, it is preferred that nonwoven fabric having the functions of flexibility, good feel in contact with the skin, and sweat absorption ability be used as a material for the second fibrous sheet 3.

It is preferred that the fiber material 4 be from a raw material having liquid diffusibility and liquid permeability, and it is preferred that paper materials be used, as indicated hereinabove, as such materials having liquid diffusibility and liquid permeability.

Materials other than paper materials can be used as the fiber material 4 in the present invention, provided that they

have liquid diffusibility and liquid permeability. For example, natural fibers such as kenaf, bamboo fibers, straw, cotton, cocoon filaments, and sugarcane can be used. Using a paper material as the fiber material 4 is the preferred mode for carrying out the present invention, and the case in which a paper material is used as the fiber material 4 is considered hereinbelow by way of example.

A paper material formed from a material using pulp paper or pulp as a principal material can be used as the paper material. Thus, a paper material manufactured by using pulp as a raw material and employing a papermaking process can be used.

Wood pulp, synthetic pulp, waste paper pulp, etc. can be used as the raw material pulp. Further, natural fibers such as pulp are not limiting, and regenerated fibers such as rayon can be also used. Furthermore, the present invention can also use a toilet paper material as a raw material pulp. In this case, for example, it is possible to use raw material pulp constituted by bleached softwood kraft pulp obtained from softwood such as red pine, Yezo spruce, Sakhalin fir, Douglas fir, hemlock, and spruce. It is also possible to use the bleached softwood kraft pulp in combination with hardwood bleached kraft pulp obtained from hardwood such as beech, oak, birch, eucalyptus, oak, poplar, and alder. From the standpoint of problems associated with the manufacturing cost and the easiness of production, it is preferred that the

softwood bleached kraft pulp be alone used as the raw material pulp.

When the paper material is formed using pulp as a principal raw material, the blended pulp preferably constitutes 30% or more, more preferably 50% or more, and most preferably 80% or more. Where the pulp is blended at the abovementioned ratios, the flexibility of the base fabric 1 as a whole can be increased and production efficiency during the manufacture can be increased. Further, by increasing the pump blending ratio, it is possible to facilitate the decomposition of the waste in the soil, or the like, after the disposal. Therefore, the environmental load can be further reduced and concern for the environment can be raised. It is preferred that paper sheets with good disintegrability in water be used as the paper material. It is also preferred that the paper material constituting the fiber material 4 have a single-layer configuration constituted by a single paper sheet, but it may also have a multilayer configuration constituted by a stack of a plurality of paper sheets. In the case of a multilayer configuration, the layers may be of the same or different materials and may have the same or different thickness. The paper material constituting the fiber material 4 may be obtained by blending the pulp with nonwoven fabric. For example, a material obtained by blending the pulp with spunlaced nonwoven fabric or by blending the pulp with air-laid nonwoven fabric can be used as the paper material.

The basis weight of the paper material constituting the fiber material 4 is preferably 7 g/m² to 50 g/m². Where the basis weight is less than 7 g/m², good feeling in wearing is difficult to achieve when wearing a disposable textile product constituted by the base fabric 1 of the present invention. Further, sufficient moisture transpiration performance and heat radiation performance is difficult to impart to the product. In addition, the strength of the base fabric 1 is insufficient. Meanwhile, where the basis weight exceeds 50 g/m², the base fabric thickness is increased, the feeling in wearing is degraded and the moisture transpiration performance and heat radiation performance are degraded. Further, since the product thickness increases, packaging of the product is made difficult. It is more preferred that the basis weight of the paper material be 10 g/m² to 30 g/m².

Colored paper can also be used as the paper material constituting the fiber material 4. With such a configuration, it is possible to provide a highly aesthetic base fabric 1.

It is preferred that the paper material constituting the fiber material 4 be imparted with a flexible structure by a mechanical softening process. The embossing process can be used as the mechanical softening process. A pair of embossing rolls in which a large number of projections are formed on the roll surface can be used in the embossing process. Where the embossing process is performed using the embossing rolls, a large number of fine holes are formed in the paper material

and, at the same time, the paper structure is weakened and the paper material is imparted with flexibility. The holes may be of a round, linear, or slit-like shape. The paper material can be likewise imparted with flexibility by providing a rough surface formed by a large number of protrusions and depressions, without opening the holes in the paper material.

The embossing roll which is used in the embossing process is not limited to the roll provided with projections, and a pair of flat rolls having a smooth roll surface without projections may be also used. The paper structure is weakened by passing the paper material between the flat rolls and applying pressure by the rolls. Thus, the paper structure is weakened by a pressurizing force applied between the rolls, without using a perforation process. The embossing process for imparting the paper material with the flexible structure can be also performed by combining the embossing process with the embossing roll having projections on the roll surface with the embossing process using the flat roll.

As a result of imparting the paper material with the flexible structure in the above-described manner, the entire base fabric 1 becomes rich in flexibility, and the feeling in wearing of the disposable textile product configured from such a base fabric 1 can be improved. Thus, the user has a sense of satisfaction created by a soft feeling in wearing, without feeling discomfort due to the fact that the paper material is used as the material for the product.

The following effects result from imparting the paper material with the flexible structure. Thus, where the paper material serving as the fiber material 4 has the flexible structure, the entire laminated sheet 30 has a flexible structure and, therefore, can be easily deformed. For this reason, when the shirring portion 6 is formed by the shrinkage stress of the linear elastic bodies 5a, the laminated sheet 30 is easily deformed, and the shirring portion 6 with a uniform shape of the protrusion 6a and the depression 6b can be formed. As a result of forming the shirring portion 6 with a uniform shape of the protrusion 6a and the depression 6b, the entire base fabric 1 increases in flexibility, and the disposable textile product configured from the base fabric 1 can give a much softer feeling in wearing to the user. Further, as a result of imparting the paper material with flexibility, the base fabric 1 can create an overall soft and plump feeling.

As will be indicated hereinbelow, the weakening process for the paper structure by the embossing process also imparts the base fabric 1 with even better moisture transpiration ability, heat dissipation ability, and moisture permeability.

As indicated hereinabove, it is preferred that the second fibrous sheet 3 and the fiber material 4 be joined by using a hot-melt adhesive. Suitable examples of hot-melt adhesive include adhesives based on EVA (ethylene-vinyl acetate copolymer), PO (polyolefins), PA (polyamides), SR (silicone

synthetic rubber), ACR (acryl), and PUR (polyurethane humid-air-curable), and such adhesives can be used individually or in combinations of two or more thereof. In addition to the hot-melt adhesive, an organic solvent-based adhesive and a water-soluble adhesive can be used for joining the second fibrous sheet 3 and the fiber material 4.

The second fibrous sheet 3 and the fiber material 4 can be joined by applying the adhesive over the front contact surfaces thereof, but the above-described intermittent application is preferred. The advantage of the intermittent application over the full-surface application is that the base fabric 1 becomes flexible and the moisture transpiration ability, heat dissipation ability, and moisture permeability of the base fabric 1 are improved. A method for intermittent application of the adhesive can involve linear, spot-like, stripe-like, spiral, block, and pattern application, and such methods can be used individually or in combinations of a plurality thereof.

As a result of intermittent application of the adhesive, non-adhesive portions 8 are formed between the second fibrous sheet 3 and the fiber material 4. The surface area ratio of the non-adhesive portions 8 is preferably 5% to 85%, more preferably 10% to 80%, and even more preferably 30% to 75% with respect to the surface area of the second fibrous sheet 3. Where the surface area ratio of the non-adhesive portions 8 is within such ranges, the base fabric 1 demonstrates

excellent flexibility, moisture transpiration ability, heat dissipation ability, and moisture permeability, and also excellent overall soft and plump feeling of the base fabric 1 can be realized. As a result, the applied amount of the adhesive may be only that necessary for obtaining the predetermined bonding strength, and it is preferred that the applied amount be as small as possible.

As mentioned hereinabove, the linear elastic bodies 5a are disposed such that the extension direction of the filaments thereof is the same as the longitudinal direction (x direction in Figs. 1 and 2) of the laminated sheet 30, a large number of the linear elastic bodies are arranged at intervals in the width direction (y direction in Figs. 1 and 2) of the laminated sheet 30, and a large number of linear elastic body rows are formed. The parallel arrangement of the linear elastic bodies 5a when a large number of the linear elastic bodies 5a are arranged in the laminated sheet 30 is not limiting. Figs. 6a to 6j illustrate various arrangements of the linear elastic bodies 5a.

Thus, possible arrangement modes of the linear elastic bodies 5a include a parallel arrangement of straight linear elastic bodies 5a as depicted in Fig. 6a, an arrangement in which some or all of the straight linear elastic bodies 5a arranged parallel to each other are provided with cut-out sections as depicted in Figs. 6b and 6c, an arrangement in which curved and bent linear elastic bodies 5a are arranged

parallel to each other as depicted in Figs. 6d, 6f, and 6g, and an arrangement in which wave-like curved linear elastic bodies 5a are arranged side by side irregularly as depicted in Figs. 6e and 6j. The linear elastic bodies 5a may be also arranged in a net-like pattern as depicted in Figs. 6h and 6i. In the arrangement of a large number of the linear elastic bodies 5a, it is preferred that the linear elastic bodies 5a have the same stretching ratio, but the linear elastic bodies 5a having different stretching ratios may be also combined. The elastic members 5 are not limited to the linear form, and sheet-shaped elastic bodies provided with a large number of holes or cuts to ensure the predetermined air permeability can be also used. Such sheet-shaped elastic bodies can be produced by using rubbers based on urethane or silicone and rubber materials such as natural rubbers as starting materials. In the present invention, it is preferred that the linear elastic bodies 5a of a linear form be used as the elastic members 5.

The linear elastic bodies 5a can be joined between the first fibrous sheet 2 and the fiber material 4 by joining the linear elastic bodies 5a between the first fibrous sheet 2 and the fiber material 4 with an adhesive applied to the linear elastic bodies 5a, or the linear elastic bodies 5a can be joined between the first fibrous sheet 2 and the fiber material 4 with an adhesive applied to the first fibrous sheet 2 and the fiber material 4. An adhesive same as the above-

described adhesive used for joining the second fibrous sheet 3 and the fiber material 4 can be used for joining the linear elastic bodies. It is preferred that a hot-melt adhesive be used as the adhesive.

The hot-melt adhesive is applied by spraying on the circumferential surface of the linear elastic bodies 5a, and the applied hot-melt adhesive acts to join the first fibrous sheet 2, the fiber material 4, and the linear elastic bodies 5a in a state in which the linear elastic bodies are inserted between the first fibrous sheet and the fiber material. Therefore, it is not necessary to apply the hot-melt adhesive to the first fibrous sheet 2 and the fiber material 4. The adhesive may be also applied to the opposing surfaces of the first fibrous sheet 2 and the fiber material 4 that are to be in contact with the linear elastic bodies 5a, instead of applying the adhesive to the linear elastic bodies 5a.

As indicated hereinabove, the first fibrous sheet 2, the fiber material 4, and the linear elastic bodies 5a are joined together in a state in which the linear elastic bodies are inserted between the first fibrous sheet and fiber material by using the hot-melt adhesive which has been applied by spraying to the circumferential surface of the linear elastic bodies 5a. However, in the joined state, part of the hot-melt adhesive penetrates into the layers of the fiber material 4, and adhesive permeation portions Z are formed, as depicted in Fig. 16. Since the adhesive permeation portions Z are

integrated with the hot-melt adhesive on the circumferential surface of the linear elastic bodies 5a, the adhesive permeation portions Z exhibit an anchor action in joining together the linear elastic bodies 5a and the fiber material 4, thereby strengthening the joining of the linear elastic bodies 5a and the fiber material 4 with the hot-melt adhesive. An anchor structure is thus formed by the adhesive in the fiber material 4. The resulting advantage is that a predetermined joining strength can be obtained even with a small amount of the adhesive applied to the linear elastic bodies 5a, the overall strength of the base fabric 1 is increased, and the base fabric 1 which is rich in fastness can be provided. In Fig. 16, the adhesive arranged between the second fibrous sheet 3 and the fiber material 4 is omitted.

A problem associated with the base fabric for the conventional disposable textile product is that when nonwoven fabrics are joined together by an adhesive, the adhesive oozes to the base fabric surface through the gaps between the fibers of the nonwoven fabrics. By contrast, in the base fabric 1 of the present invention, since the composite layer 31 is formed and the fiber material 4 is included in the composite layer 31, the adhesive can be prevented from oozing to the base fabric surface as a result of the adhesive penetrating into the fiber material 4.

As indicated hereinabove, in the process for manufacturing the base fabric 1, the laminated sheet 30 which

is manufactured in a continuous mode is cut to obtain products of the predetermined length. Because of the large length, the cutting is performed such as to obtain a predetermined length in the longitudinal direction (x direction in Figs. 1 and 2) of the laminated sheet 30. Since the linear elastic bodies 5a are cut in the cutting, the linear elastic bodies 5a that have been under tension are released therefrom and shrunk by the restoring force. An uneven surface is formed in the composite layer 31 under the effect of shrinkage stresses created at this time. Where the joining force of the linear elastic bodies 5a and the first fibrous sheet 2 and the joining force of the linear elastic bodies 5a and the fiber material 4 are small in this case, peeling occurs between the linear elastic bodies 5a, the first fibrous sheet 2, and the fiber material 4, the shrinkage stresses do not reach the composite layer 31 constituted by the first fibrous sheet 2 and the fiber material 4 joined together by the linear elastic bodies 5a, and the so-called "rubber dropout" effect occurs. As a result of the "rubber dropout", the composite layer 31 does not receive a force in the direction of reducing the length thereof, and therefore, no uneven surface is formed in the composite layer 31, resulting in non-formation of the shirring portion 6. In this case, where the adhesive permeation portions Z are formed by the hot-melt adhesive inside the layer of the fiber material 4, as depicted in Fig. 16, the joining force of the fiber material 4 and the linear elastic

bodies 5a is enhanced, and therefore the occurrence of the "rubber dropout" when the linear elastic bodies 5a are cut can be prevented.

The thickness of the base fabric 1 can be arbitrarily set, and a thin base fabric can be formed. When the base fabric of a small thickness is formed, air permeability and water permeability of the disposable textile product configured using the base fabric 1 can be improved and good feeling in wearing can be ensured.

When a paper material is used as the fiber material 4, a printed layer 4a can be formed, as necessary in the paper material, as depicted in Figs. 4 and 14. As depicted in Fig. 14, the printed layer 4a is formed in the fiber material 4 on the side facing the second fibrous sheet 3. In the embodiment of the present invention, printing can be performed on the paper material, rather than on the nonwoven fabric. Therefore, clear pictures can be printed easily and efficiently. As a result, various designs and images can be represented efficiently and effectively. In particular, by selecting, as appropriate, the design or pattern to be printed on the paper material, the nonwoven fabric to be used in the second fibrous sheet 3, and a method for forming the adhesive layer 7, it is possible to provide the base fabric 1 as a whole with excellent design and aesthetic properties. For example, a picture, color, pattern, photographs (referred to

hereinbelow as "pictures") are examples of the designs and patterns to be printed on the paper material.

The pictures can be printed on the paper material serving as the fiber material 4, for example, by ink-jet printing, flexographic printing, and gravure printing. The surface of the printed layer 4a may be subjected to varnishing and discoloration prevention process, or a binder may be applied thereto. Examples of the binder include well-known materials such as PVA (polyvinyl alcohol), CMC (carboxymethyl cellulose), EVA (ethylene - vinyl acetate copolymer), acryl, and lacquer. An ink subjected to discoloration preventing process can be also used.

It is preferred that the printed layer 4a be formed by flexographic printing. The advantage of the flexographic printing method is that the contact surface area between the plate and paper material can be small and a low pressure is applied during printing. Therefore, the paper material can be easily peeled off from the plate. Such a method is particularly advantageous for forming the printed layer 4a when the thickness of the paper material is small. Further, a large number of various types of inks can be used in the flexographic printing, and in this respect, the process is less affected by the ink viscosity than the ink-jet printing process in which the ink is discharged through a nozzle or the like. Where a picture is represented on the printed layer 4a, the picture which is to be printed by a plate can be printed

as a picture of an elongated design according to the state in which the laminated sheet 30 is stretched in the extension/contraction direction (x direction in Fig. 2) of the linear elastic bodies 5a. When the tensioned state of the linear elastic bodies 5a is released, the picture of the original target design (non-elongated design) is displayed. In this case, the elongation ratio of the picture, which to be printed, in the x direction is determined by the extension/contraction ratio of the linear elastic bodies 5a. For example, the printing can be performed by increasing the length of the picture with the original target design (non-elongated device) by a factor of 1.1 to 3.5.

A three-dimensional picture can be displayed on the printed layer 4a by forming a plurality of depressions or protrusions on the paper material by the embossing process, and pictures of designs that differ depending on the angle of view can be represented. Further, as depicted in Fig. 14, the printed layer 4a can be formed such as to be positioned in the spaces 9, and the printed layer 4a can be formed to be at positions covered by the adhesive layer 7. By combining such printed layers 4a, it is possible to expand the variety of designs that can be represented on the product. Where the proportion of the spaces 9 is large, the printed layer 4a represented on the product appears to be somewhat blurred, and when the proportion of the spaces 9 is small, the printed layer 4a represented on the product is clearly visible.

Since the printed layer 4a is visible from the outside through the second fibrous sheet 3, various designs or messages can be efficiently and effectively represented on the base fabric 1. For the printed layer 4a to be accurately recognizable from the outside and to provide the product with high aesthetic properties, it is preferred to use nonwoven fabric as the second fibrous sheet 3.

In the disposable textile product configured using the base fabric 1 of the present invention, when the sweat 300 adheres to the skin 200, as depicted in Fig. 13a, where the body moves as depicted in Fig. 13b, the shirring portion 6 acts to wipe the sweat 300, and the sweat 300 which has thus been wiped is absorbed by the fiber material 4 (paper material) in the composite layer 31 (see Fig. 4). Further, the sweat 300 that has not been wiped transpires into the spaces formed by the shirring portions 6 and is likewise absorbed by the fiber material 4 (paper material), as depicted in Fig. 13c. Accordingly, the base fabric 1 is not brought into intimate contact with the skin 200 by the sweat 300, and the sweat 300 absorbed by the fiber material 4 (paper material) is efficiently transpired to the outside (Fig. 13c). For this reason, the sweat 300 dries rapidly, there is no feeling of stickiness created by the sweat 300, and the product can be worn comfortably.

A variety of additives can be added to the base fabric 1 according to the properties of the product when the base

fabric 1 of the present invention is used in a disposable textile product. Examples of the additives added to the base fabric 1 include deodorants, insect repellants, fragrances, waterproofing agents, antifouling agents, antibacterial agents, and softeners, and those agents can be used individually, or in combinations of two or more thereof. When added to the base fabric 1, the additive may be added to any one of the first fibrous sheet 2, the second fibrous sheet 3, and the fiber material 4, or may be added to two or more thereof. The addition may be made by applying the additive to the surface of the first fibrous sheet 2, the second fibrous sheet 3, and the fiber material 4. When the additive is added to the first fibrous sheet 2 and the second fibrous sheet 3, the additive may be kneaded in advance with the fibers which will constitute those sheets. In the case of addition to the paper material serving as the fiber material 4, the additive may be added in advance to water in the papermaking process for manufacturing the paper, thereby including the additive into the paper. Further, when the printed layer 4a is formed on the base fabric 1, the additive may be mixed in advance with the printing ink, and the printing ink including the additive may be printed.

Specific examples of the deodorants include catechin, epigallocatechin, gallocatechin, epicatechin gallate, epigallocatechin gallate, gallotannin, and ellagitannin which are extracts from plants, such as catechins and tannins; iron

- ascorbic acid chelate compounds; zirconium hydroxide; hydroxides of lanthanoids; salts of metal such as Zn, Cu, and Fe (for example, ZnSO_4). Examples of the deodorants having an adsorptive action include activated carbon; zeolites; silica; ceramics; Oya tuff stone; charcoal polymer; carbon nanotubes; carbon nanohorns; organic acids such as citric acid and succinic acid; inorganic acids such as sulfuric acid, boric acid, and phosphoric acid; ion exchangers; anions, ammonia, amines, alkenes, alkynes, nucleophilic agents such as aromatic compounds; cations, boron fluoride, aluminum chloride, iron bromide, zinc chloride, and electrophilic agents such as acetone. Those deodorants may be used individually or in combinations of two or more thereof.

Specific examples of insect repellants include N, N-diethyl-m-toluamide (DEET), dipropyl pyridine-2,5-dicarboxylate, pyrethrin, dimethyl phthalate, 2,3:4,5-bis(2-butylene)tetrahydrofurfural, citronella, geraniol, lemon grass oil (essential oil), eugenol, p-menthane-3,8-diol, ethyl butyl acetyl aminopropionate, 1-piperidine carboxylic acid, 2-(2-hydroxy ethyl)-ester, and 1-methyl propyl-ester. In addition, natural plant essential oils, citronella oil, lemon grass oil, cinnamon oil, eucalyptus oil, clove oil, cinnamon oil, lemon eucalyptus oil, Hiba oil, lavender oil, orange oil, grapefruit oil, cedarwood oil, geranium oil, thyme white oil, and peppermint oil can be used as insect repellants. Furthermore, essential oils including components such as citronellal,

citronellol, citral, linalool, dihydrolinalool, tetrahydrolinalool, dehydrolinalool, terpineol, menthol, menthane, p-menthane-3,8-diol, camphene, methyl salicylate, pinene, limonene, geraniol, borneol, and geranyl formate can be used as insect repellants. Those insect repellants may be used individually or in combinations of two or more thereof.

Specific examples of perfumes include (plant) essential oils of fruits such as orange, lemon, lime, and peach; flowers such as rose and lavender; and mint and sandalwood. Aromatic components are usually oil-based or soluble in water or alcohols. Examples of oil-based perfumes include phenyl ethyl alcohol, linalool, jasmone, hexylcinnamic aldehyde, α -linemon, α -pinene, bromostyrene, citronellal, chloral, terpineol, menthol, and cinnamic acid. Those perfumes may be used individually or in combinations of two or more thereof.

Carbendazim derivatives with antimicrobial properties, etc. can be used as the antibacterial agent.

Examples of suitable antifouling agents and softeners include cationic surfactants such as alkylated quaternary ammonium salts which are widely used as hair rinses and fabric softeners. Examples of such cationic surfactants include dicocoyl dimethyl ammonium chloride and alkyl trimethyl ammonium chlorides. Glycerin, propylene glycol, butylene glycol, dipropylene glycol, and liquid paraffin can be also used as the antifouling agents and softeners. Those

antifouling agents and softeners may be used individually or in combinations of two or more thereof.

The base fabric 1 of the present invention is used as a material for a disposable textile product, and it is particularly beneficial when used as a constituent material of disposable undergarments such as disposable pants and disposable diapers. Other examples of disposable textile products that can be configured using the base fabric 1 of the present invention include an undergarment or a T-shirt 100 such as depicted in Fig. 7, a tube top 101 such as depicted in Fig. 8, a belly band 102 such as depicted in Fig. 9, a rainwear 103 such as a raincoat depicted in Fig. 10, supporters 104 that are used on various parts, such as hands, arms, wrists, knees, and ankles, of the body as depicted in Figs. 11a to 11e, and a bandage 105 such as depicted in Fig. 12. Further, fitness wear, sportswear, sweat-absorbing inner wear, swimming wear, and room wear can be also used as disposable textile products (such examples are not specifically illustrated by the figures). When the base fabric 1 of the present invention is used for a hat as a disposable textile product, it can be worn with the fiber material 4 impregnated with water. In this case, the evaporation of water produces a cooling effect on the head of the user.

The base fabric 1 of the present invention can be also used as a constituent material for diaper bags for storing

used diapers, various sanitary items for women, various disposable garments to be used in camping and outdoor activities, cooling or warming scarfs, towels, and disposable clothing, bedding, long pants, bras, shorts, bathrobes, leg warmers, headbands, hair bands, massage clothes, and nursing clothing to be provided to patients and customers in hospitals, hotels, and the like.

Fig. 17 illustrates an embodiment in which a disposable undergarment 10 as a disposable textile product is configured using the base fabric 1 of the present invention. The undergarment 10 depicted in Fig. 17 is a diaper of the so-called pants-type which is used by wearing on the torso of a user P. This undergarment has a torso attachment part 12 which is configured of the base fabric 1 of the present invention, covers the entire torso of the user P, and includes a portion applying a light pressure to the lower abdomen, and a waist attachment portion 14 which is provided on the upper side of the torso attachment part 12, includes an elastic member such as rubber, and is attached around the waist of the user P. Inside the torso attachment part 12 (the side in contact with the body), an elastic sheet 16 is bridged between the front and rear portions of the torso attachment part 12, and inside the elastic sheet 16 (side in contact with the skin of the user P), the absorber 18 is attached for absorbing bodily wastes.

As indicated hereinabove, the undergarment 10 depicted in Fig. 17 functions as a diaper and can be used as a diaper for infants and as a diaper for adults. The diaper using the base fabric 1 of the present invention feels softer than the conventional diapers, excels in moisture transpiration ability, heat dissipation ability, and moisture permeability, and advantageously creates a cold sensation. The undergarment 10 using the base fabric 1 of the present invention feels similarly to the usual undergarment (pants) when worn, and the specific feature thereof, which cannot be found in the conventional disposable diapers, is that it creates only weak sensation of resistance when used. Therefore, the undergarment can be used with confidence, without the sensation of resistance, as a disposable undergarment by patients with a risk of incontinence, women giving birth at advanced age, and menstruating women. When a paper material is used as the fiber material 4, which is the constituent material of the base fabric 1 of the present invention, the generation of static electricity during use can be prevented because the paper material is hardly charged by friction.

The operation effect of the base fabric of the present invention configured in the above-described manner and the disposable textile product configured by using the base fabric of the present invention will be explained hereinbelow. Since the shirring portion 6 is formed on the laminated sheet 30 in the base fabric 1 of the present invention, the operation

effect is such that the base fabric is soft in contact with the skin and the base fabric as a whole demonstrates flexibility.

Further, the laminated sheet 30 includes the first fibrous sheet 2 having air permeability, the second fibrous sheet 3 likewise having air permeability, and the fiber material 4 having liquid diffusibility as laminated constituent materials. In such a configuration, the fiber layers having air permeability and the fiber layer having liquid diffusibility are present adjacently to each other. The composite layer 31 in which the fiber layers having air permeability and the fiber layer having liquid diffusibility are laminated adjacently to each other is formed in the laminated sheet 30. When the disposable textile product constituted by the base fabric 1 of the present invention is worn, for example, such that the first fibrous sheet 2 is in contact with the skin of the body, the sweat generated by the body is absorbed in the layer of the fiber material 4 through the first fibrous sheet 2, and the sweat is diffused inside the layer of the fiber material 4. The sweat which has diffused and widely dispersed inside the layer is transpired to the outside through the second fibrous sheet 3. Therefore, the transpiration of the sweat is performed efficiently and no sweat is locally retained in regions which are in contact with the base fabric.

Thus, since the air-permeable functional layers and the liquid-diffusible functional layer are present adjacently to each other in the composite layer 31 in the laminated sheet 30, the air-permeable functional layers and the liquid-diffusible functional layer interact, and the sweat transpiration efficiency is greatly increased by this interaction. Thus, since moisture passages in the air-permeable functional layers and moisture passages in the liquid-diffusible functional layer are arranged continuously and adjacently to each other, a very high efficiency of sweat absorption and drying is obtained. Further, since the shirring portion 6 formed on the laminated sheet 30 is configured to have a structure in which an uneven surface is formed by the composite layer 31, the air-permeable functional layers and the liquid-diffusible functional layer in the composite layer 31 are of uneven shapes, thereby ensuring a large surface area. As a result, the efficiency of sweat transpiration from the composite layer 31 is greatly increased.

The base fabric 1 of the present invention excels in heat dissipation ability and can efficiently dissipate the heat emanating from the body. The heat emanating from the body is transferred through the first fibrous sheet 2 to the layer of the fiber material 4, and this heat is diffused in the layer of the fiber material 4. The fiber material 4 has liquid diffusibility, and because of the liquid diffusibility, the

fiber material at the same time exhibits also heat diffusion ability. The heat which has diffused and widely dispersed in the layer is dissipated to the outside through the second fibrous sheet 3. Therefore, the heat is efficiently dissipated and no heat is retained between the body and the base fabric 1. Such excellent heat dissipation ability can be demonstrated in the base fabric 1 of the present invention because, in the same manner as in the above-described sweat transpiration action, the laminated sheet 30 has the composite layer 31 in which the fiber layers having air permeability and the fiber layer having liquid diffusibility are laminated adjacently to each other and the air-permeable functional layers and the liquid-diffusible function layer interact with each other in the composite layer 31.

The base fabric 1 of the present invention is also excellent in moisture permeability. In a composite sheet formed by laminating a plurality of constituent materials, moisture permeability generally tends to decrease with the increase in the number of constituent layers. In the present invention, a material layer, namely, the fiber material 4, is added and therefore the number of constituent layers is increased by comparison with that in the usual laminate obtained by laminating two fibrous sheets. However, no decrease in moisture permeability can be found in the base fabric 1 of the present invention as compared with the conventional products with good moisture permeability, and the

same moisture permeability can be demonstrated as in the conventional products with good moisture permeability. The possibility of maintaining good moisture permeability despite the increase in the number of constituent layers can be said to be a specific effect of the present invention. The possibility of exhibiting such an effect can be attributed to the above-described configuration in which the laminated sheet 30 has the composite layer 31 in which the fiber layers having air permeability and the fiber layer having liquid diffusibility are laminated adjacently to each other, and the air-permeable functional layers and the liquid-diffusible function layer interact with each other in the composite layer 31.

When the fiber material 4 is a paper material in the base fabric 1 of the present invention, wherein the weakening process for the paper structure is performed by the embossing process of the paper material in the above-described manner, then the interaction of the air-permeable functional layers and the liquid-diffusible function layer can be greatly increased, and the moisture transpiration ability, heat dissipation ability, and moisture permeability can be further improved.

Further, by performing printing on the base fabric 1 as an embodiment of the present invention, it is possible to represent a variety of designs or messages in an efficient and effective manner. The base fabric 1 of the embodiment of the

present invention excels in the overall soft and plump feeling and also in flexibility and can efficiently and effectively impart a variety of functions, while utilizing the texture that is characteristic to the base fabric material itself. Another advantage of the base fabric 1 of the present invention is that it can be manufactured easily and at a low cost.

EXAMPLES

The present invention will be explained hereinbelow in greater detail with reference to specific examples of the stretchable composite sheet which is used in the present invention.

(Example 1)

A spunbonded nonwoven fabric was used as the air-permeable sheet, paper with a pulp content of 100% (sheet of paper for toilet paper: basis weight of 18 g/m²) without printing was used as the liquid-diffusible fiber sheet, and urethane rubber having a diameter of 620 decitex was used as the linear elastic body. A sheet material with a total basis weight of 38 g/m² which was obtained by bonding the paper and urethane rubber with a hot-melt adhesive (total basis weight of the hot melt adhesive: 1.2 g/m²) between two nonwoven fabrics was taken as Example 1.

(Comparative Example 1)

A sheet material with a total basis weight of 20 g/m² which was obtained by using the nonwoven fabric and urethane

rubber same as in Example 1, inserting the urethane rubber between the nonwoven fabrics and bonding same with the hot-melt adhesive (total basis weight of the hot melt adhesive: 1.2 g/m²) was taken as Comparative Example 1.

(Comparative Example 2)

A conventional sheet material with a total basis weight of 24 g/m² which was obtained by using a spunbonded nonwoven fabric on a front surface and a rear surface and inserting the urethane rubber having a diameter of 620 decitex between the nonwoven fabrics was taken as Comparative Example 2.

(Comparative Example 3)

The conventional sheet material with a total basis weight of 22 g/m² which was obtained by using a thermally bonded nonwoven fabric on the front surface and rear surface and inserting the urethane rubber having a diameter of 620 decitex between the nonwoven fabrics was taken as Comparative Example 3.

(Comparative Example 4)

Another conventional sheet material with a total basis weight of 22 g/m² which was obtained by using a thermally bonded nonwoven fabric on the front surface and rear surface and inserting the urethane rubber having a diameter of 620 decitex between the nonwoven fabrics was taken as Comparative Example 4.

(Comparative Example 5)

The conventional sheet material with a total basis weight of 20 g/m² which was obtained by using a thermally bonded nonwoven fabric on the front surface and rear surface and inserting the urethane rubber having a diameter of 620 decitex between the nonwoven fabrics was taken as Comparative Example 5.

Initially, moisture absorption ability and quick drying ability (transpiration ability) and moisture permeability of the sheet materials of Example 1 and Comparative Examples 1 to 5 was evaluated.

The moisture-absorbing quick-drying ability was evaluated by combined evaluation of moisture-absorbing ability and quick drying ability by performing a transpiration (II) test (Boken standard BQEA028).

A testpiece with a diameter of about 9 cm was fabricated with respect to the sheet materials of Example 1 and Comparative Examples 1 to 5, and the mass (W) of each testpiece and a petri dish was measured. Then, 0.1 mL of water was dropped on the dish, the testpiece was placed thereon, and a mass (W₀) was measured. The dish with the specimen were allowed to stay in a standard state (20°C, humidity 65% RH), and the mass (W_t) was measured after each predetermined interval of time (5 min, 10 min, and then after every 10 min up to 60 min). The transpiration rate (%) for each predetermined period of time was then calculated from the measured masses W, W₀, W_t by using the following Equation (1).

Transpiration rate (%) = $\{(W_0 - W_t)/(W_0 - W)\} \times 100$

...(1)

The results are shown in Table 1.

Table 1

	Transpiration rate (%)						
	5 min	10 min	20 min	30 min	40 min	50 min	60 min
Example 1	9.8	20.9	43	62.9	78.7	88.6	94.7
Comparative Example 1	3.8	6.8	12.9	17.7	23.3	28.9	35.2
Comparative Example 2	4.3	8.1	15.3	20.4	27.5	33	39.5
Comparative Example 3	1.7	3	6.3	7.9	10.2	12.8	18.3
Comparative Example 4	0.7	3.5	5.7	9.5	11.4	15.2	17.9
Comparative Example 5	1.7	3.4	5.2	9.8	12.6	15.4	15.3

The results on the transpiration rate which are shown in Table 1 clearly indicate that in Comparative Examples 3 to 5, the transpiration rate is 20% or less even after 60 min, and in Comparative Examples 1 and 2, the transpiration rate is less than 20% after 20 min and 40% or less even after 60 min, whereas in Example 1, the transpiration rate exceeds 20% after

10 min, the transpiration rate exceeds 40% after 20 min, and then the transpiration rate exceeds 60% after 30 min, the transpiration rate exceeds 75% after 40 min, the transpiration rate exceeds 85% after 50 min, and the transpiration rate exceeds 90% after 60 min.

In the Boken standard BQEA028, as a measure of the evaluation, the preferred transpiration rate after 20 min from the start of the test is to be of 50% (inclusive) to 40% (inclusive) for a knitted product in the case of sports applications, and 40% (inclusive) to 30% (inclusive) for a knitted product in the case of general applications.

Therefore, since the sheet material of Example 1 makes it possible to obtain a transpiration rate of 40% or higher, it can be said that such material can be comfortably worn both in sports applications and general applications.

It follows from the above, that the disposable garment of the present invention that uses the sheet material of Example 1 has a very high moisture absorption ability and quick drying ability (transpiration ability).

The moisture permeability was then tested by the A-1 method (calcium chloride method) of JIS-L1099 (2012), and the moisture permeability ($\text{g}/\text{m}^2\cdot\text{h}$) was determined and evaluated.

The moisture permeability is defined as a value obtained by calculating the mass (g) of water vapor permeating through

the textile product per $1 \text{ m}^2 \times 1 \text{ h}$ of the textile product under standard temperature and humidity.

Testpieces were sampled from the sheet materials of Example 1 and Comparative Examples 1 to 5 according to JISL0105 (6.3) (Cloth-like sample and the testpiece thereof)

The devices and materials such as a moisture-permeable cup, a thermostat-hygrostat, a round plate, and a moisture absorbent corresponding to the calcium chloride method were prepared and the test was performed.

Initially, about 33 g of the moisture absorbent was placed in the moisture-permeable cup which was warmed up to about 40°C , the moisture-permeable cup was vibrated to obtain a uniform material, the surface was leveled with a spatula, and a distance between the moisture absorbent and the lower surface of the testpiece was adjusted to 3 mm by using the round plate.

Then, three testpieces each with a diameter of about 70 mm were sampled according to JISL0105 (6.3) (cloth-like sample and the testpiece thereof) with respect to the sheet materials of Example 1 and Comparative Examples 1 to 5.

Each testpiece was placed to be concentric with the moisture-permeable cup, such that the surface of the testpiece faced the moisture absorbent, a packing and a ring were successively mounted and fixed with a wing nut, and the mounting-side surface was sealed with a vinyl pressure-

sensitive adhesive tape to form a test sample. The test sample was placed at a location inside the thermostat-hygrostat with a temperature of $40^{\circ}\text{C} \pm 2^{\circ}\text{C}$ and a humidity $(90 \pm 5)\%$ RH, such that the air speed about 10 mm above the testpiece did not exceed 0.8 m/s. The test sample was taken out after 1 h and the mass (a_1) was immediately measured with an accuracy up to 1 mg. After the measurements, the test sample was again placed at the same location in the thermostat-hygrostat, the test sample was taken out after 1 h, and the mass (a_2) was immediately measured with an accuracy up to 1 mg. The moisture permeability PA_1 ($\text{g}/\text{m}^2\cdot\text{h}$) was then calculated from the measured masses a_1 and a_2 by using the following Equation (2):

$$\text{Moisture permeability } PA_1 \text{ (g/m}^2\cdot\text{h)} = (a_2 - a_1)/SA_1$$

...(2)

In Equation (2), $a_2 - a_1$ is the change amount (g/h) of the mass of the test sample per 1 h, and SA_1 is the moisture permeation area (m^2).

The test results were rounded to an integer by a three mean value method stipulated by JISZ8401 (Rounding methods). The obtained results are shown in Table 2.

Table 2

	Moisture permeability (g/m ² ·h)
Example 1	564
Comparative Example 1	563
Comparative Example 2	435
Comparative Example 3	496
Comparative Example 4	526
Comparative Example 5	433

The results relating to moisture permeability which are shown in Table 2 clearly indicate that the moisture permeability is 500 g/m²·h or less in Comparative Examples 2, 3, and 5, 563 g/m²·h in Comparative Example 1, and 526 g/m²·h in Comparative Example 4. Meanwhile, in Example 1, the moisture permeability is 564 g/m²·h which is higher than in the comparative examples.

It follows from the above that the functional base fabric material of the present invention is highly stable and has good moisture permeability.

The moisture permeability evaluation results and transpiration evaluation results after 20 min and 60 min are shown in Table 3 with respect to Example 1 and Comparative Examples 1 to 5.

The moisture permeability evaluation results and transpiration evaluation results shown in Table 3 clearly demonstrate that the functional base fabric material of the present invention which is represented by Example 1 is superior to the functional base fabric materials of Comparative Examples 1 to 5 in both the moisture permeability and the transpiration ability and makes it possible to obtain higher moisture permeability and transpiration rate.

The results presented hereinabove clearly demonstrate the effects of the functional base fabric material for a disposable product and of the disposable fabric product in accordance with the present invention.

Table 3

	Moisture permeability (g/m ² ·h)	Transpiration ability (%) after 20 min	Transpiration ability (%) after 60 min	Total basis weight (g/m ²)
Example 1	564	43	94.7	149.3
Comparative Example 1	563	12.9	35.2	92.3
Comparative Example 2	435	15.3	39.5	123.2
Comparative Example 3	496	6.3	18.3	144.9
Comparative Example 4	526	5.7	17.9	147.8
Comparative Example 5	433	5.2	15.3	143

It goes without saying that the present invention is not limited to the above-described embodiments and is inclusive of all of the embodiments making it possible to attain the object of the present invention.

Cool contact feeling (cool feeling) and wet contact cold feeling (stickiness during perspiration) of the sheet material in which paper is interposed between nonwoven fabrics and a sheet material in which no paper is interposed between nonwoven fabrics were then tested.

(Examples 2 to 5)

The sheet materials were prepared by using the nonwoven fabrics, paper, hot-melt adhesive, and urethane rubber similar to those of Example 1. The paper used in Examples 2 and 3 was subjected to the embossing process the number of cycles shown in Table 4, by using a pair of flat rolls. The basis weight of the paper used, the total basis weight of the hot-melt adhesive, and the total basis weight of the sheet materials are all shown in Table 4. The cool contact feeling and wet contact hot feeling were measured by the below-described methods with respect to the sheet materials. Values of cool contact feeling, wet contact cold feeling, and the ratio of the cool contact feeling and wet contact cold feeling [(cool contact feeling)/(wet contact cold feeling)] are shown in Table 5.

Cool contact feeling: the cool contact feeling represents the degree of sensations of cooling and refreshing in wearing, and it was measured by the following method by using a precision rapid thermal physical property measurement device (KES-F7 Thermolab II, manufactured by Kato Tech Co., Ltd.).

A testpiece (6 cm × 6 cm) cut out from the sheet material was placed on a base plate at a temperature of 20°C. A hot plate equipped with a precision thermal sensor was heated to 40°C, the hot plate was placed on the testpiece at 20°C, and the cool contact feeling value (q_{max}) was calculated from the

heat dissipation behavior measured with the thermal sensor of the hot plate.

Wet contact cold feeling: the wet contact cold feeling represents the degree of sticky feeling when sweating, and it was measured by the following method by using the precision rapid thermal physical property measurement device (KES-F7 Thermolab II, manufactured by Kato Tech Co., Ltd.).

A testpiece (6 cm × 6 cm) cut out from the sheet material was caused to absorb water at 80 g/m², and the resultant testpiece carrying water was placed on a base plate at a temperature of 20°C. A hot plate equipped with a precision thermal sensor was heated to 40°C, the hot plate was placed on the testpiece at 20°C, and the wet contact cold feeling value (wet-qmax) was calculated from the heat dissipation behavior measured with the thermal sensor of the hot plate.

(Comparative Example 6)

The cool contact feeling and wet contact cold feeling were tested in the same manner as in Examples 2 to 5 by using the sheet material similar to that of Comparative Example 2. The results are shown in Table 5.

(Comparative Example 7)

The cool contact feeling and wet contact cold feeling were tested in the same manner as in Examples 2 to 5 by using the sheet material similar to that of Comparative Example 4.

The results are shown in Table 5.

(Comparative Example 8)

The cool contact feeling and wet contact cold feeling were tested in the same manner as in Examples 2 to 5 by using the sheet material similar to that of Comparative Example 3. The results are shown in Table 5.

(Comparative Example 9)

The cool contact feeling and wet contact cold feeling were tested in the same manner as in Examples 2 to 5 by using the sheet material similar to that of Comparative Example 5. The results are shown in Table 5.

Table 4

	Total basis weight (g/m ²)	Basis weight of hot-melt adhesive (g/m ²)	Number of embossing cycles (cycle)	Basis weight of sheet material (g/m ²)
Example 2	18	1.2	1	150.8
Example 3	18	1.2	2	148.1
Example 4	18	1.2	—	146.2
Example 5	13	1.2	—	137.4

Table 5

	Cool contact feeling	Wet contact cold feeling	(Cool contact feeling)/(wet contact cold feeling)	Total basis weight (g/m ²)
Example 2	45	91	0.49	150.8
Example 3	49	95	0.52	148.1
Example 4	42	90	0.47	146.2
Example 5	50	96	0.52	137.4
Comparative Example 6	46	164	0.28	123.2
Comparative Example 7	37	165	0.22	144.9
Comparative Example 8	38	225	0.17	147.8
Comparative Example 9	27	119	0.23	143.0

[Reference Signs List]

- 2 First fibrous sheet
- 3 Second fibrous sheet
- 4 Fiber material
- 5 Elastic member

[CLAIMS]

[Claim 1]

A base fabric for a disposable textile product configured of a laminated sheet which has first and second fibrous sheets having air permeability and a fiber material interposed between the first and second fibrous sheets and having liquid diffusibility, and in which the first and second fibrous sheets and the fiber material are laminated together with an elastic member, wherein

the laminated sheet forms a composite layer in which a fiber layer having air permeability and a fiber layer having liquid diffusibility are laminated;

the laminated sheet has a shirring portion in which an uneven surface is formed by the composite layer; and

elasticity is imparted to the laminated sheet.

[Claim 2]

The base fabric for the disposable textile product according to claim 1, wherein the elasticity is imparted to the laminated sheet by the elastic member provided between the first fibrous sheet and the fiber material.

[Claim 3]

The base fabric for the disposable textile product according to claim 1 or 2, wherein the first fibrous sheet and the fiber material are intermittently joined together through the elastic member.

[Claim 4]

The base fabric for the disposable textile product according to any one of claims 1 to 3, wherein the second fibrous sheet and the fiber material are intermittently joined together.

[Claim 5]

The base fabric for the disposable textile product according to any one of claims 1 to 4, wherein the first fibrous sheet and the fiber material are joined together by a hot-melt adhesive through the elastic member.

[Claim 6]

The base fabric for the disposable textile product according to any one of claims 1 to 5, wherein the second fibrous sheet and the fiber material are joined together by a hot-melt adhesive.

[Claim 7]

The base fabric for the disposable textile product according to any one of claims 1 to 6, wherein the elastic member is configured of a plurality of linear elastic bodies having stretching ability, and the plurality of linear elastic bodies is disposed at intervals in a width direction of the laminated sheet and joined between the first fibrous sheet and the fiber material.

[Claim 8]

The base fabric for the disposable textile product according to claim 7, wherein the linear elastic bodies are

provided over an entire region or in a partial region inside the laminated sheet.

[Claim 9]

The base fabric for the disposable textile product according to claim 7 or 8, wherein, in the laminated sheet, a plurality of shirring portions extending in a direction perpendicular to a longitudinal direction of the linear elastic bodies in a non-tensioned state is formed, and shirring rows are formed in a pattern.

[Claim 10]

The base fabric for the disposable textile product according to any one of claims 1 to 9, wherein the fiber material has a flexible structure obtained by mechanical softening process.

[Claim 11]

The base fabric for the disposable textile product according to any one of claims 1 to 10, wherein the fiber material is subjected to weakening process.

[Claim 12]

The base fabric for the disposable textile product according to any one of claims 1 to 11, wherein the first fibrous sheet and the second fibrous sheet are configured of a material having air permeability and moisture permeability.

[Claim 13]

The base fabric for the disposable textile product according to any one of claims 1 to 12, wherein the first

fibrous sheet and the second fibrous sheet are configured of nonwoven fabric.

[Claim 14]

The base fabric for the disposable textile product according to any one of claims 1 to 13, wherein the fiber material is configured of a material having liquid diffusibility and liquid permeability.

[Claim 15]

The base fabric for the disposable textile product according to any one of claims 1 to 14, wherein the fiber material is configured of a paper material.

[Claim 16]

A disposable textile product configured using the base fabric for a disposable product according to any one of claims 1 to 15.

[Claim 17]

The disposable textile product according to claim 16, wherein

the disposable textile product is configured as an undergarment, a diaper, a fitness wear, a swimming wear, a tube top, a room wear, a raincoat, or a belly band.