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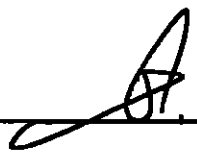
***** CONSIGNACION *****

DEPOSITANTE	TIPO PAGO	BANCO	CUENTA	No. PAGO	FECHA PAGO	Vr. PAGO
FREDERICK TORRES	CONSIGNACION	BANCO POPULAR	050-00110-6	33693622	14/12/2004	13,951,000.00

***** CONCEPTO *****

CANT.	RENTISTICO	CONCEPTO	TOTAL CONCEPTO
1	50005-01-01 SOLICITUDES	114 PTC CAP-II EXAMEN DE PATENTIBILIDAD	177,000.00
		TOTAL :	\$ 177,000.

SON: CIENTO SETENTA Y SIETE MIL PESOS

RESPONSABLE : 

RECIBO DE CAJA APLICADO AL EXPEDIENTE No. _____

DIVISION DE NUEVAS CREACIONES

RADICACIÓN EXPEDIENTE No. 04-50474

**EL EXTRACTO DE LA PRESENTE SOLICITUD DE PATENTE DE INVENCION -
PCT FUE PUBLICADO EN LA GACETA DE PROPIEDAD INDUSTRIAL No 544,
DE FECHA 30 DE SEPTIEMBRE DE 2004, EL TERMINO HABIL SEÑALADO
POR LA LEY EXPIRA EL 29 DE DICIEMBRE DE 2004.**

NOTA: Dentro del plazo de los seis (6) meses siguientes a partir de la fecha de publicación en la gaceta de Propiedad Industrial, deberá solicitar y cancelar el examen de patentabilidad so pena de que la solicitud calga en abandono, de acuerdo con lo establecido en el Artículo 44 de la Decisión 486/2000.

SE PRESENTARON OPOSICIONES POR PARTE DE TERCEROS.

SI

NO **X**

**SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO
DIVISION DE NUEVAS CREACIONES
SOLICITUD VIA PCT**

2020
Bogotá, D.C., 4 de enero de 2007

Doctor
CARLOS R. OLARTE
Apoderado

Oficio No. 0430

ASUNTO	Radicación 04-50474 Trámite 002 Evento 001 Actuación 430 Folios 016
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Como resultado del examen de fondo, realizado con fundamento en el artículo 45 de la Decisión 486 de la Comisión de la Comunidad Andina, se le comunica:

1. Documentos estudiados

- Para el presente estudio se tuvo en cuenta el capítulo descriptivo que se encuentra en los folios 33 a 63 y el capítulo reivindicatorio que se encuentra en los folios 64 a 68 que comprende veintiún (21) reivindicaciones.
- Se considerará la prioridad reivindicada sobre la solicitud de Estados Unidos No. 10/022,863 del 14 de diciembre de 2001.

2. Objeto de la invención

- La invención propuesta se refiere a materiales formados principalmente para productos para el cuidado personal.

En la reivindicación independiente 1 se define un material no tejido para productos para el cuidado personal que comprende una mezcla de fibras sintéticas de denier diferente, en donde una primera fibra de denier tiene un denier promedio de 2 o menos, dicha primera fibra tiene un denier promedio de por lo menos de 3 denier menos que una segunda fibra, y dicha segunda fibra tiene un denier promedio de entre 4 y 15, y en donde dicho material tiene un peso base de entre 30 y 200 gramos por metro cuadrado.

En la reivindicación independiente 13 se define un pañal que comprende el material tal y como se reivindica en la cláusula 1.

En la reivindicación independiente 14 se define un calzoncillo de aprendizaje que comprende el material tal y como se reivindica en la cláusula 1.

En la reivindicación independiente 15 se define un producto para la incontinencia que comprende el material tal y como se reivindica en la cláusula 1.

En la reivindicación independiente 16 se define un vendaje que comprende el material tal y como se reivindica en la cláusula 1.

En la reivindicación independiente 17 se define una toalla sanitaria que comprende el material tal y como se reivindica en la cláusula 1.

En la reivindicación independiente 18 se define un material de surgimiento para productos para el cuidado personal que comprende entre 40 y 60 por peso de una primera fibra que tiene un primer denier de fibra y entre 60 y 40% por peso de una segunda fibra que tiene un segundo denier de fibra, en donde dicho primer denier es de por lo menos de 3 denier menos que dicho segundo denier, dicho segundo denier es de entre 4 y 15 en donde dicho material tiene un peso base de entre 30 y 200 gramos por metro cuadrado.

En la reivindicación independiente 21 se define un material de surgimiento para productos para el cuidado personal que comprende alrededor de 60% por peso de una primera fibra en una configuración de vaina/núcleo de bicomponente, hecha de polímeros seleccionados del grupo que consiste de polietileno/polipropileno, polietileno/tereftalato de polietileno y co-tereftalato de polietileno/tereftalato de polietileno y teniendo un primer denier promedio y alrededor de 40% por peso de una segunda fibra de poliéster que tiene un segundo denier promedio, en donde dicho primer denier es de por lo menos de 3 denier menos que dicho segundo denier, dicho segundo denier es de entre 4 y 15, y en donde dicho material tiene un peso base de entre 30 y 200 gramos por metro cuadrado.

- Se afirma que en el campo de los artículos absorbentes aún existe la necesidad de una tela para usarse en productos para el cuidado personal con capacidades de manejo de fluido mejoradas. Tal material debe tomar y retener el fluido más eficientemente que lo que lo han practicado en el pasado.
- El objeto de la invención definido se catalogó como D04H 1/54, A61F 13/15, según la Clasificación Internacional de Patentes (IPC⁷).

3. Claridad de la solicitud

El artículo 30 de la Decisión 486 de la Comisión de la Comunidad Andina establece que: "Las reivindicaciones definirán la materia que se desea proteger mediante la patente. Deben ser claras y concisas y estar enteramente sustentadas por la descripción.

Las reivindicaciones podrán ser independientes o dependientes. Una reivindicación será independiente cuando defina la materia que se desea proteger sin referencia a otra reivindicación anterior. Una reivindicación será dependiente cuando defina la materia que se desea proteger refiriéndose a una reivindicación anterior. Una reivindicación que se refiera a dos o más reivindicaciones anteriores se considerará una reivindicación dependiente múltiple".

- Dado el sinnúmero de materiales no tejidos que conforman el estado de la técnica se recomienda que las reivindicaciones independientes 1, 18 y 21 presenten la formalidad de preámbulo y parte caracterizante diferenciados por la expresión "caracterizado por" tal como se encuentran las reivindicaciones dependientes, donde el preámbulo permita situar el campo de la invención y contenga las características ya conocidas en el arte previo; de otra parte, la parte caracterizante debería estar conformada únicamente por el aporte técnico que realiza el señor solicitante, es decir, las características novedosas y sorprendentes.

- El capítulo reivindicatorio contiene cantidades precedidas por la expresión "alrededor" la cual no le confiere claridad ni precisión a la definición y especificación de la invención pues no es posible conocer objetivamente cuán alrededor puede estar un número respecto a los límites superior e inferior de los intervalos indicados. Por lo tanto, se recomienda eliminar dicha expresión del capítulo reivindicatorio y presentar los intervalos con cantidades exactas.
- El capítulo reivindicatorio comprende tres reivindicaciones independientes (1, 18 y 21) para enunciar un producto como es el material no tejido.

Al estudiar la materia que corresponde a la invención de la solicitud se encontró innecesaria la definición de la invención mediante tres reivindicaciones independientes. Esto puede resultar en problemas de unidad de invención a causa de la falta de claridad. Por lo tanto, se recomienda enunciar una sola reivindicación independiente en cuya parte caracterizante se definan todas las características novedosas, y emplear el número de reivindicaciones dependientes necesarias para delimitar aún más la invención.

- En conclusión, el capítulo reivindicatorio no cumpliría con el requisito de claridad de acuerdo con el artículo 30 de la Decisión 486.

4. Reivindicaciones de uso

El artículo 14 de la Decisión 486 de la Comisión de la Comunidad Andina establece: "Los Países Miembros otorgarán patentes para las invenciones, sean de producto o procedimiento, en todos los campos de la tecnología, siempre que sean nuevas, tengan nivel inventivo y sean susceptibles de aplicación industrial."

- En las reivindicaciones independientes 13 a 17 se intenta reclamar un pañal, un calzoncillo de aprendizaje, un producto para incontinencia, un vendaje y una toalla sanitaria respectivamente. Si bien estas reivindicaciones se definen como productos, la caracterización de la invención se realiza únicamente mencionando que 'comprende el material tal y como se reivindica en la cláusula 1', lo que da a entender que se espera reclamar las aplicaciones o usos del material.
- Dado que la legislación colombiana no permite la protección de los usos, se recomienda que las reivindicaciones 13 a 17 sean eliminadas.
- En conclusión, las reivindicaciones 13 a 17 no son patentables de acuerdo con el artículo 14 de la Decisión 486.

5. Determinación del estado de la técnica

El artículo 16 de la Decisión 486 de la Comisión establece: "El estado de la técnica comprenderá todo lo que haya sido accesible al público por una descripción escrita u oral, utilización, comercialización o cualquier otro medio antes de la fecha de presentación de la solicitud de patente o, en su caso, de la prioridad reconocida."

Sólo para el efecto de la determinación de la novedad, también se considerará dentro del estado de la técnica, el contenido de una solicitud de patente en trámite ante la oficina nacional competente, cuya fecha de presentación o de prioridad fuese anterior a la fecha de presentación o de prioridad de la solicitud de patente que se estuviese examinando, siempre que dicho contenido esté incluido en la solicitud de fecha anterior cuando ella se publique o hubiese transcurrido el plazo previsto en el artículo 40."

- Se realizó el estudio de los documentos concernientes a la búsqueda preliminar Internacional y se consideró el 14 de Diciembre de 2001 como fecha para el análisis del estado de la técnica.
- De acuerdo con lo establecido en el artículo 16 se determinó el estado de la técnica y se encontraron los siguientes antecedentes:

No.	Documento No.	Título	Fecha de Publicación
1	US6087551	"MULTI-DENIER NON-WOVEN FABRIC FOR DISPOSABLE ABSORBENT PRODUCTS"	11 de julio de 2000
2	US5366453	"NEWBORN'S GROWTH ADJUSTABLE ABSORBENT DIAPER HAVING VARIABLE OVERLAPPING AND NON-OVERLAPPING EARS"	22 de noviembre de 1994

Respecto al estado de la técnica:

- En el documento **US6087551** (llamado D1 de aquí en adelante) se divulga la existencia de una tela no tejida con fibras de varios denier, deseable para usas como capa del lado del cuerpo en productos absorbentes desechables tales como pañales, toallas higiénicas, trajes quirúrgicos, tampones y demás.

En D1 se enseña que la tela no tejida es elaborada desde una red interconectada de fibras de polímeros termoplásticos que comprende una mezcla homogénea de fibras de alto denier y fibras de bajo denier en el rango de 2 a 15 denier, donde las fibras de mayor denier y las fibras de menor denier difieren por lo menos en un denier.

- En el documento **US5366453** (llamado D2 de aquí en adelante) se divulga la existencia de un artículo absorbente.

En D1 se enseña que la hoja superior de un artículo absorbente desechable debe ser permeable a los líquidos tales como la orina, además, es deseable que posea una sensación suave o textura altamente deseable para la piel sensible y blanda de un recién nacido. Un medio preferido de proveer una hoja superior con tales características es construirla de una matriz de fibras en las cuales por lo menos algunas de las fibras son bicomponentes. Estas fibras bicomponentes pueden tener una construcción núcleo – envoltura.

En D1 se menciona una modificación de la invención en la que la hoja superior está conformada por dos capas una elaborada de fibras bicomponentes y otra que es una capa de manejo de fluidos que está formada por mezcla de fibras bicomponentes y otras fibras.

6. Evaluación de los requisitos de patentabilidad

El artículo 14 de la Decisión 486 de la Comisión de la Comunidad Andina establece: "Los Países Miembros otorgarán patentes para las invenciones, sean de producto o de procedimiento, en todos los campos de la tecnología, siempre que sean nuevas, tengan nivel inventivo y sean susceptibles de aplicación Industrial."

En cumplimiento con este artículo, se procedió a evaluar los requisitos de novedad, nivel inventivo y aplicación Industrial con el fin de establecer la patentabilidad de la invención reivindicada en la solicitud en estudio.

Evaluación de la Novedad

El artículo 16 de la Decisión 486 de la Comisión de la Comunidad Andina establece:

"Una invención se considerará nueva cuando no está comprendida en el estado de la técnica." "El estado de la técnica comprenderá todo lo que haya sido accesible al público por una descripción escrita u oral, utilización, comercialización o cualquier otro medio antes de la fecha de presentación de la solicitud de patente o, en su caso, de la prioridad reconocida.

Sólo para el efecto de la determinación de la novedad, también se considerará dentro del estado de la técnica, el contenido de una solicitud de patente en trámite ante la oficina nacional competente, cuya fecha de presentación o de prioridad fuese anterior a la fecha de presentación o de prioridad de la solicitud de patente que se estuviese examinando, siempre que dicho contenido esté incluido en la solicitud de fecha anterior cuando ella se publique o hubiese transcurrido el plazo previsto en el artículo 40."

- Para el presente estudio de novedad se realizó la comparación elemento por elemento de la invención de la presente solicitud con respecto al estado de la técnica. A continuación se presentan los cuadros comparativos:

D1	Solicitud en estudio
"Se divulga la existencia de una tela no tejida con fibras de varios denier, deseable para usas como capa del lado del cuerpo en productos absorbentes desechables tales como pañales, toallas higiénicas, trajes quirúrgicos, tampones y demás. En D1 se enseña que la tela no tejida es elaborada desde una red interconectada de fibras de polímeros termoplásticos que comprende una mezcla homogénea de fibras de alto denier y fibras de bajo denier en el rango de 2 a 15 denier, donde las fibras de mayor denier y las fibras de menor denier difieren por lo menos en un denier." (D1; Resumen) "Las telas no tejidas de la presente invención generalmente tienen un peso base en el rango de 25 a 50 gramos por metro cuadrado, preferiblemente en el rango de 30 a 35 gramos por metro cuadrado [...]" (D1; Columna 4, líneas 26 – 30)	En la reivindicación Independiente 1 se define un material no tejido para productos para el cuidado personal que comprende una mezcla de fibras sintéticas de denier diferente, en donde una primera fibra de denier tiene un denier promedio de 2 o menos, dicha primera fibra tiene un denier promedio de por lo menos de 3 denier menos que una segunda fibra, y dicha segunda fibra tiene un denier promedio de entre 4 y 15, y en donde dicho material tiene un peso base de entre 30 y 200 gramos por metro cuadrado.
"En una modificación preferida [...] las fibras de alto denier tienen un denier de 4 a 15" (D1; Columna 41 – 45)	"El material no tejido [...] caracterizado porque la segunda fibra de denier tiene un denier de entre 6 y 15" (Reivindicación 2)
"Las fibras de menor denier están presentes en la tela no tejida en una cantidad de 90 a 10% por peso; preferiblemente en el rango de 30 a 70% y más preferiblemente en el rango de 40 a 60% por peso basado en el peso total de la tela no tejida" (D1; Columna 2, líneas 49 – 54)	"El material no tejido [...] caracterizado porque la primer fibra de denier está presente en una cantidad de 25 y 75% por peso y dicha segunda fibra de denier está presente en una cantidad de entre 75 y 25% por peso" (Reivindicación 3)
"Las fibras de mayor denier están presentes en la tela no tejida en una cantidad de 10 a 90% por peso, preferiblemente en el rango de 30 a 70% por peso y más preferiblemente en el rango de 40 a 60% por peso" (D1; Columna 2, líneas 45 – 49)	"El material no tejido [...] caracterizado porque la primera fibra de denier está presente en una cantidad de entre 40 y 60% por peso y dicha segunda fibra de denier está presente en una cantidad de entre 60 y 40% por peso" (Reivindicación 4)
	"El material no tejido [...] caracterizado porque la primera fibra de denier está presente en una cantidad de alrededor de 60% por peso y dicha segunda fibra de denier está presente en una cantidad de alrededor de 40% por peso" (Reivindicación 5)

Continuación...

D1	Solicitud en estudio
"Fibras deseables para usar en la presente invención incluyen, pero no se limitan a, fibras poliméricas sintéticas formadas a partir de resinas termoplásticas tales como polipropileno, <u>poliéster</u> , polietileno, poliacrilato, y combinaciones de estas" (Columna 2, líneas 55 – 59).	"El material no tejido [...] caracterizado porque la segunda fibra de denier está hecha de un <u>poliéster</u> " (Reivindicación 8)
"Las fibras de la presente invención pueden ser tratadas con un agente activo hidrofílico de superficie [...]" (D1; Columna 3, líneas 66 – 67)	"El material no tejido [...] caracterizado porque dichas fibras tienen un tratamiento hidrofílico agregado a la superficie de dichas fibras" (Reivindicación 9)
"Las fibras de menor denier están presentes en la tela no tejida en una cantidad de 90 a 10% por peso; preferiblemente en el rango de 30 a 70% y más preferiblemente en el rango de 40 a 60% por peso basado en el peso total de la tela no tejida" (D1; Columna 2, líneas 49 – 54) "Las fibras de mayor denier están presentes en la tela no tejida en una cantidad de 10 a 90% por peso, preferiblemente en el rango de 30 a 70% por peso y más preferiblemente en el rango de 40 a 60% por peso" (D1; Columna 2, líneas 45 – 49) "La tela es formada de una mezcla homogénea de fibras de alto y bajo denier que tienen un denier en el rango de 2 a 15 denier [...]. Es considerada una característica importante de la presente invención que las fibras de mayor denier y las fibras de bajo denier difieran en por lo menos un denier, y preferiblemente en por 2 denier" (D1; Columna 2, líneas 32 – 39) "Las telas no tejidas de la presente invención generalmente tienen un peso base en el rango de 25 a 50 gramos por metro cuadrado, preferiblemente en el rango de 30 a 35 gramos por metro cuadrado [...]" (D1; Columna 4, líneas 26 – 30)	En la reivindicación Independiente 18 se define un material de surgimiento para productos para el cuidado personal que comprende entre 40 y 60 por peso de una primera fibra que tiene un primer denier de fibra y entre 60 y 40% por peso de una segunda fibra que tiene un segundo denier de fibra, en donde dicho primer denier es de por lo menos de 3 denier menos que dicho segundo denier, dicho segundo denier es de entre 4 y 15 en donde dicho material tiene un peso base de entre 30 y 200 gramos por metro cuadrado.
"Fibras deseables para usar en la presente invención incluyen, pero no se limitan a, fibras poliméricas sintéticas formadas a partir de resinas termoplásticas tales como polipropileno, <u>poliéster</u> , polietileno, poliacrilato, y combinaciones de estas" (Columna 2, líneas 56 – 59).	"El material no tejido [...] caracterizado porque la segunda fibra de denier está hecha de un <u>poliéster</u> " (Reivindicación 20)

- De acuerdo con la comparación técnica anterior se puede afirmar que un material no tejido como el propuesto en las reivindicaciones de la solicitud ya era conocido en el estado del arte.
- En conclusión, la invención definida en las reivindicaciones 1 a 5, 8, 9, 18 y 20 se encontraría afectada en el requisito de novedad de acuerdo con el artículo 16 de la Decisión 486.

Evaluación del Nivel Inventivo:

El artículo 18 de la Decisión 486 de la Comisión de la Comunidad Andina establece: "Se considerará que una invención tiene nivel inventivo, si para una persona del oficio normalmente versada en la materia técnica correspondiente, esa invención no hubiese resultado obvia ni se hubiese derivado de manera evidente del estado de la técnica."

Respecto a la solicitud en estudio:

- **El técnico**

El técnico de nivel medio versado en la materia encargado de resolver el problema técnico abordado puede ser un Ingeniero químico que labore en la industria de artículos absorbentes y que atiende a planes de mejoramiento continuo normalmente formulados por las empresas.

- **Especificaciones de la naturaleza de las fibras de la capa**

En las reivindicaciones dependientes 6, 7 y 19 se hace la especificación de que las fibras pueden ser bicomponentes. Aún cuando dicha opción no se encuentra revelada en D1, sí es posible que sea considerada por un técnico de nivel medio versado en la materia con acceso a las enseñanzas contenidas en D2, pues se vería impulsado a tener en cuenta enseñanzas ventajosas sobre la naturaleza química de las fibras de la capa superior y de la capa de manejo de fluidos en cuanto a que estas pueden ser de mezclas de fibras bicomponentes y otras fibras.

En las reivindicaciones dependientes 10 a 12 se enuncian resultados obtenidos con el material de la reivindicación 1. No obstante, aunque D1 no contiene estos resultados específicos se puede afirmar que si un técnico de nivel medio versado en la materia puede reproducir el material con las enseñanzas de D1 y los somete a ensayos de rutina que forman parte de sus conocimientos básicos, entonces obtendría resultados equivalentes.

- **El material de surgimiento de la reivindicación 21**

En la reivindicación 21 se define un material de surgimiento y se comprende que el principio técnico que fundamenta la propuesta consiste elaborar el material de una mezcla de fibras bicomponentes y fibras de poliéster de denier particular con diferencia de denier entre ellas, un porcentaje en peso y un peso base definido. No obstante, D1 contiene enseñanzas explícitas como que el material puede ser elaborado de una mezcla de fibras de diferente denier cuya diferencia de denier sea por lo menos de 1 y por lo menos de 2; que el denier de las fibras esté entre 4 y 15, que una de las fibras puede ser de poliéster, además de especificar los porcentajes en peso de cada tipo de fibra e intervalos de peso base como bien se demostró en el cuadro comparativo del numeral anterior.

La diferencia que existe entre D1 y la invención de la solicitud es que en la primera no se sugiere la posibilidad de incluir fibras bicomponentes. No obstante, D2 sí contiene sugerencias sobre este campo e incluso se mencionan fibras bicomponentes de núcleo – envoltura como por ejemplo polietileno/polipropileno que pueden emplearse mezcladas con otras fibras sintéticas para formar matrices con las cuales elaborar capas de manejo de fluidos.

Dado lo anterior, si un técnico de nivel medio versado en la materia tuviera acceso a D1 y D2 podría desarrollar materiales de surgimiento equivalentes en naturaleza y composición a los propuestos en la reivindicación independiente 21. Por lo tanto, no parece que con la invención de la solicitud se genere un efecto sorprendente que evidencie un salto tecnológico respecto al arte previo. Por el contrario, parece un mejoramiento que cae dentro de la línea normal del avance de la tecnología.

- Por lo anteriormente expuesto, la invención definida por las reivindicaciones 6, 7, 10 – 12, 19, 21 de la solicitud podría verse afectada en su nivel inventivo ya que se deriva de manera evidente del estado de la técnica y puede ser obvia para un técnico de nivel medio versado en la materia. Por tanto, no cumpliría con las disposiciones del artículo 18 de la Decisión 486 de la Comisión de la Comunidad Andina.
- En conclusión, los requisitos de patentabilidad de la presente solicitud se encuentran afectados así:

No.	Documento	Reivindicaciones Afectadas	Requisito que afecta
1.	US6087551	1 a 5, 8, 9, 18 y 20	Novedad
1.	US6087551	6, 7, 10 – 12, 19, 21	Nivel Inventivo
2.	US5366453		

En cumplimiento del artículo 45 de la Decisión 486 de la Comisión de la Comunidad Andina, se le indica que debe dar respuesta dentro del término de sesenta días contados a partir de la fecha de notificación de la presente comunicación. En caso de no dar respuesta al presente requerimiento, o si a pesar de la respuesta subsistieran los impedimentos para la concesión, se denegará la patente.

Notifíquese el presente oficio conforme a lo dispuesto en el numeral 5.2, literal e), del capítulo quinto del título primero de la circular única No. 10 de 2001.


ALIX CARMENZA CESPEDES DE VERGEL
 Jefe de División de Nuevas Creaciones

El anterior requerimiento fue notificado por fijación en lista, de fecha 12 ENE 2007

CONCEPTO TECNICO No. 002	EXAMINADOR TECNICO Código No. 202042
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United States Patent [19]

Pereira

LSRD067551A

(11) Patent Number 6,087,551
(45) Date of Patent *Jul. 11 2000

(54) MULTI-DENIER NON-WOVEN FABRIC FOR

(72) Inventor: Jose Antonio Pereira, Sao Jose dos Campos, Brazil

(73) Assignee: McNeil-PPC, Inc., Millman, N.J.

(1) Notes: This patent based on continued prosecution application filed under 37 C.F.R. 1.53(a), and is subject to the twenty year patent term provision of 35 U.S.C. 154(a)(2).

(21) Appl. No. 08/788,183

(22) Filed: Jan. 18, 1997

(31) Int. Cl. A61F 13/16

(32) U.S. Cl. 604/367; 604/365; 604/383; 1

(38) Field of Search 604/365, 367; 604/363.1, 369

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(57) ABSTRACT

A multi-denier non-woven fabric suitable for use as a body side liner in disposable absorbent products such as diapers, sanitary napkins, undergarments, surgical dressings, tampons, and the like. The multi-denier non-woven fabric is made from an interconnect network thermoplastic polymer fiber elements comprising homogeneous blend of high denier and low denier fibers having denier in range of from 2 to 15 denier, wherein the high denier fiber elements and the low denier fiber elements differ by at least one denier.

18 Claims, No Drawings

6,087,551

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MULTI-DENIER NON-WOVEN FABRIC FOR
DISPOSABLE ABSORBENT PRODUCTS

FIELD OF THE INVENTION

This invention relates to novel non-woven fabric suitable for use as body side liner in disposable absorbent products such as sanitary napkins, surgical dressings, tampons, and the like, and more particularly to multi-denier non-woven fabric made from an interconnect network thermoplastic polymer fibers comprising homogeneous blend of high denier staple fibers and low denier staple fibers.

BACKGROUND OF THE INVENTION

Non-woven, bonded, multilayered fabrics, hydrophilically stretched, thermally bonded, chemically bonded and mechanically bonded textile fiber fabrics, and selectively knit, spun-bonded fabrics are commonly used facing fabrics for disposable sanitary and consumer products. Such fabrics should be relatively soft and comfortable, capable of extended contact with contact and internal body surfaces without causing chafing or allergic reactions, and also capable of transmitting body fluids to central absorbent core while maintaining side dryness.

Because of the desire to provide disposable sanitary absorbent articles with body facing materials which are clean and dry, these products use synthetic fibers such as polypropylene, polyethylene, polyester and the like. Non-woven fabric cores derived from synthetic fibers having denier of 3 or less have generally been used as body-facing covers for disposable sanitary absorbent articles. However, these non-woven fabrics have not been found to adequately provide body facing materials for absorbent articles which rapidly absorb menstrual fluids, wash menstrual fluids, provide dry surface to the wearer and have the desired surface.

SUMMARY OF THE INVENTION

It is an object of the present invention to provide novel non-woven fabric which is useful as body-side liner for absorbent articles.

It is another object of this invention to provide novel non-woven fabric which is capable of rapidly absorbing fluid with limited saturation and which is capable of wicking absorbed fluids.

It is another object of this invention to provide an absorbent article which utilizes multi-denier non-woven fabric as body side liner.

In accordance with the present invention, there has been provided novel multi-denier non-woven fabric formed from an interconnect network thermoplastic polymer staple fibers, the fibers comprising homogeneous blend of high denier staple fibers and low denier staple fibers having denier in range of from 2 denier to 15 denier, wherein the high denier staple fibers and the low denier staple fibers differ by at least one denier and wherein the high denier staple fibers are present in the blend in an amount of from 10 to 90% and the low denier staple fibers are present in the blend in an amount of from 90 to 10%.

Also provided in accordance with the present invention, is novel absorbent article having body-facing side porous-side cover sheet, garment-facing side impermeable barrier sheet, an absorbent core between the cover sheet and the barrier sheet, wherein the cover sheet is non-woven fabric formed from an interconnect network thermoplastic polymer staple fibers, the fibers comprising homogeneous blend of high denier staple fibers and low denier staple fibers having

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denier in range of from 2 denier to 15 denier, wherein the high denier staple fibers and the low denier staple fibers differ by at least one denier and wherein the high denier staple fibers are present in the blend in an amount of from 10 to 90% and the low denier staple fibers are present in the blend in an amount of from 90 to 10%.

Also provided in accordance with the present invention, is novel absorbent article such as sanitary napkin having body-facing side porous-side cover sheet, garment-facing side impermeable barrier sheet, an absorbent core between the cover sheet and the barrier sheet, wherein the cover sheet is non-woven fabric formed from an interconnect network thermoplastic polymer fibers, the fibers comprising homogeneous blend of high denier staple fibers and low denier staple fibers having denier in range of from 2 denier to 15 denier, wherein the high denier staple fibers and the low denier staple fibers differ by at least one denier and wherein the high denier staple fibers are present in the blend in an amount of from 10 to 90% and the low denier staple fibers are present in the blend in an amount of from 90 to 10%.

The absorbent articles of this invention absorb body fluids and are useful as body-side liners in disposable diapers, sanitary napkins, tampons, undergarments, surgical dressings and gowns. The absorbent articles can be used as separate articles, or can be integral parts of disposable or reusable garments.

DESCRIPTION OF PREFERRED EMBODIMENTS

The present invention is directed to novel multi-denier non-woven fabric formed from an interconnect network thermoplastic polymer staple fibers. More specifically, the fabric is formed from homogeneous blend of high denier staple fibers and low denier staple fibers having denier in range of from 2 denier to 15 denier and preferably have denier in the range of from 3 denier to 4 denier. It is considered an important feature of the present invention that the high denier staple fibers and the low denier staple fibers differ by at least one denier, and preferably differ by 2 denier or more. In preferred embodiments, the low denier staple fibers have denier of from about 2 to 4 and most preferably have denier of about 3 and the high denier staple fibers have denier of from about 4 to 15 and most preferably have denier of about 5. The high denier staple fibers are present in the non-woven fabric in an amount of from 10 to 90 weight percent, preferably in range of from 30 to 70 weight percent, and most preferably in range of from 40 to 60 weight percent. The low denier staple fibers are present in the non-woven fabric in an amount of from 90 to 10 weight percent, preferably in range of from 30 to 70 weight percent, and most preferably in range of from 40 to 60 weight percent based on the total weight of the non-woven fabric.

Suitable fibers for use in the present invention include, but are not limited to, synthetic polyamide fibers formed from thermoplastic resins such as polypropylene, polyester, polyethylene, polyacrylate, and the like and combinations thereof. A preferred synthetic polyamide fiber is polypropylene. As noted above, the fibers used to form the non-woven fabric of the present invention are staple fibers, and generally have fiber length in range of from 1 inch to 4 inches, and preferably have fiber length in the range of from 1.25 inches to 3 inches.

The non-woven fabric of the present invention may be formed by one of the processes including carding, combing, melt bonding, and spreading processes. In

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all of these manufacturing processes, the fabric process may be to form webs of homogeneously mixed low and high density fibers. Accordingly, webs of low density staple fibers and high density staple fibers are homogeneously mixed in an air mixing chamber and then either extruded to form a coated web or extruded into a nonwoven fibrous structure in form of a spun web. When utilizing thermobonding processes, the web of homogeneously mixed low density and high density fibers may be fed into a contacting station equipped with a heated die and a heated roller and a heated roller which bonds the fibers and stabilizes the web into a nonwoven fabric. An alternative thermobonding process involves feeding heated air through the web and is generally known as through-air bonding process. In such bonding process, the web of homogeneously mixed low density and high density fibers is heated as shown and passed through a bonding zone equipped with a web of water spray nozzles (i.e. having pressure of about 200 psi) which are capable of tightly entangling the fibers. The entangled web is then de-watered and fed into a roller winding station where the fabric is impregnated with a binder. The binder-impregnated fabric is then dried and used in an oven. Alternatively, the fabric may be sprayed with a resinous material under vacuum and then through-air bonded in an oven. Finally, in a quaternary process, the homogenous blend of low and high density staple fibers is passed through a series of high pressure water jets, i.e. having pressure of from 500 to 1500 psi, to tightly entangle the fibers and form a stabilized fabric. The fabric is then de-watered and dried. All of the foregoing processes are well known in the art and of ordinary skill in the art and the details of one process over another process is not, per se, critical to the invention, provided that the resultant nonwoven fabric has sufficient structural integrity to permit it to be selected as a cover material for absorbent articles. In general, nonwoven fabrics have sufficient structural integrity when the tensile strength is about one pound per inch. Sufficient structural integrity is achieved when the tensile strength comprises from 10 to 40 percent of the total fabric area, and is preferably in a range of from 15 to 30 percent of the total fabric area. It is preferred that the nonwoven fabric of the present invention be coated with a binder by thermobonding process utilizing water spray nozzles.

The ability of a nonwoven fabric to resist chemical fluids, particularly universal fluid, is an important contribution to the development of body-side liners for absorbent articles. Accordingly, the fibers of the present invention are preferably provided with a coating. A preferred coating is a "white" coating, preferably formed by chemical bonding. The chemical bonding coating of the fibers is present in an amount to provide sufficient opacity to the fibers and thereby provide great wetting of absorbent fluids. The chemical bonding coating is preferably between about 1 to 6 weight percent, and is most preferably in a range of from 2 to 2.5 weight percent. An alternative coating is a cationic surfactant, and is present in a range of from 50 to 20 weight percent. Mixtures of cationic surfactants and chemical coatings may also be used.

When the multi-density nonwoven fabric is utilized as body-side liners in disposable absorbent articles, it is generally desirable that the body-side liners have double hydrophilic fibers so that the portion of the absorbent article in contact with a wearer's skin remains hydrophilic after multiple fluid impositions. Hydrophilic fibers provide enhanced body fluid wicking away from the wearer which aids in transporting the body fluids to the underlying absorbent core. The fibers of the present invention may be treated with double hydrophilic surface active agents, such as, for

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example, amide surface active agents which is commercially available under the trademark ATASER from ICI Polysar Additives, New York, N.Y. Other suitable hydrophilic surface active agents include, but are not limited to, surface active agents of diethyl sulfoxide (commercially available under the trademark ARKONOL GT), non-ionic polyoxyethylene surface active materials (commercially available under the trademark TWISTEN 20), or the like. The double hydrophilic fibers may be applied to the fibers by dipping them into an aqueous solution of the desired surface active agent or by spraying an aqueous solution of the desired surface active agent onto either surface and subsequently drying the fibers. The surface active agent may be deposited on the nonwoven fabric by means of a roller which has been coated with an aqueous solution of the surface active agent which is passed over lower surface of nonwoven fabric so as to deposit the surface active agent over and on lower surface while the other surface remains substantially hydrophilic character. Alternatively, internal hydrophilic endgroups or wetting agents can be incorporated directly into the thermoplastic polymer during manufacture of the fibers. Suitable wetting agents for hydrophilic non-ionic surfactants based on ethylene oxide-allyl ether ether, ethoxylated esters of polyurethane with polypropylene glycol, fatty acids or modified and glycol, and the like.

The nonwoven fabric of the present invention generally have bulk weight in a range of from 25 grams per square meter (gm) to 30 gm, preferably in a range of from 30 gm to 35 gm and have bulk (thickness) of between 10 to 20 mils, preferably from 12 to 16 mils.

The multi-density nonwoven fabric of the present invention are particularly suitable for use as body-side liners in absorbent articles. In accordance with the embodiment of the present invention, there is provided a novel absorbent article having body-facing field permeable cover sheet comprising multi-density nonwoven fabric formed from an interconnected network thermoplastic polymer staple fibers, the fibers comprising homogeneous blend of high density fibers and low density fibers having density in a range of from 2 density to 15 density, wherein the high density fibers and the low density fibers differ by at least one density and wherein the high density fibers are present in the blend in an amount of from 10 to 90% and the low density fibers are present in the blend in an amount of from 90 to 10%.

The absorbent articles of this invention, include, but are not limited to disposable diapers, sanitary napkins, tampons, panty liners, and the like.

As is well known to those skilled in the art, absorbent articles which are worn externally, such as sanitary napkins, generally comprise a field impermeable backing sheet, an absorbent core, which is a layer of fluid absorbent material positioned on the backing sheet, and body side liner which is a nonwoven fabric, formed from an open but interconnected network of oriented, thermoplastic staple fibers. During use, body side liner is in contact with or close to the wear of the absorbent article. In accordance with this embodiment of the present invention, there is provided novel absorbent articles, such as sanitary napkins, having body-facing field permeable cover sheet, garment-facing field impermeable barrier sheet, an absorbent core between the cover sheet and the barrier sheet, wherein the cover sheet is multi-density nonwoven fabric formed from an interconnected network thermoplastic polymer fibers, the fibers comprising homogeneous blend of high density staple fibers and low density staple fibers having density in a range of from 2 density to 15 density, wherein the high density fibers and the low density fibers differ by at least one density and

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wherein the high density fibers are present in the blend in an amount of from 10 to 90% and the low density fibers are present in the blend in an amount of from 90 to 10%.

The body side liner and garment-facing field impermeable barrier sheet are usually substantially continuous and are joined together along the periphery of the absorbent article by chemical bonding, adhesive, or by any other convenient means. If desired, the absorbent core may be sandwiched to garment-facing field impermeable barrier sheet by one or more glue lines.

The field impermeable garment facing barrier layer may be of any flexible material that prevents the transfer through it of fluid but does not necessarily prevent the passage of gases. Commonly used materials are polyethylene or polypropylene films. Other materials that may be used as impermeable barriers may be chosen from films of polyesters, polyamides, polyethylene vinyl acetate, polyvinyl chloride, and polyvinylidene chloride. Coextruded and laminated combinations of the foregoing, wherein such combinations are punctured by the chemical and physical properties of the film, may be used. Field impermeable nonwoven fabrics and resilient treated papers may also be used. Films that are field barriers, but permit gases to transmit, i.e., "breathable films" may be used. These may be chosen from polyurethane films and from silicon-gel films, where selectivity is created by blocking molecules or by blocking out of soluble molecules using organic or inorganic solvents. Polymers where surfaces have been made repellent or where gases are small by virtue of cross linking of fibers, or where gases have been reduced in size by blocking off large liquid molecules, may also be used alone, or together with breathable films, as breathable barriers. A suitable backing sheet material can be an opaque polyethylene, e.g., polyethylene, web impermeable to body fluids and about 0.001 inch thick. Another suitable sheet material for this purpose is polyurethane, e.g., polyethylene, acceptances, web having thickness of about 0.0025 inch.

The absorbent core can be fully wetted from relatively loose webs of nonwoven fibers having relatively high density regions. The absorbent core is usually of rectangular configuration, and may optionally have laterally curved side edges such as an hourglass shape. The absorbent core is constructed similar to the backing sheet and nonwoven topsheet fibers. The absorbent core may also be formed from having an integral clarified layer. In such case the absorbent core is positioned on the backing sheet of the absorbent article so that the clarified layer defines the backing sheet. The clarified layer has relatively higher wicking ability and liquid permeability than the rest of the absorbent article. The clarified layer may be formed by slightly reducing the surface of the top and thereafter compensating the mechanical surface.

The absorbent articles may optionally comprise multi-layered absorbent structures which may comprise, in addition to the absorbent core, transfer layer, which is low density field absorbing and field releasing layer, usually located between the absorbent core and the permeable body side liner. The transfer layer may be comprised of relatively low density hydrophilic materials and structures, that is contained in the absorbent core, such as webs of multilayer polypropylene or polyurethane fibers. Such webs may also contain wicking agent within. Transfer layers may also be comprised of low density, highly absorbent webs comprised of wood-pulp and synthetic fibers such as polyethylene, polypropylene, polyester, polyvinylidene chloride and polyamide. Such highest webs may be bonded with chemical bonding or by thermal means such as by through-air bonding.

The thickness of the absorbent structure may be uniform throughout its surface of the absorbent element or, for the purposes of specific fit, flexibility, absorbency, the absorbent structure may be thicker in some regions than in others. For example, particularly preferred thickness profile is an absorbent structure that is thicker in the central region than it is in the end regions.

The garment-facing field impermeable barrier sheet may be fixed or otherwise attached to the surface of the absorbent structure overall or in discrete areas of attachment. The garment facing barrier layer may be attached to the body side liner in an overlapping configuration for example parallel to the sides of the absorbent structure or parallel to the bottom of the absorbent article or in flaps and extending from the sides of the absorbent structure. When the body side liner and garment facing barrier layer are attached in each other in flaps and the body facing layer may additionally be wrapped around the flaps and about the body facing layer or the garment facing layer may additionally be wrapped around the flaps and about the body facing layer.

The nonwoven body side liner is usually permeable to body fluids and is made up of an open network of interconnected fibers elements which are relatively low density staple fibers, i.e., more density not greater than about 4 and usually about 2 to about 4 and high density staple fibers, i.e., more density which is at least one density higher than the low density staple fibers and not greater than 15 and is usually about 4 to 6. A more density than the low density staple fibers of about 2.5 to about 3.5 is preferred and more density than the high density fibers of about 4.5 to 5.5 is preferred. Additionally, some nonwoven fibrous structures with an outer surface of the nonwoven fabric being softer than the opposite surface of the nonwoven fabric. It is preferred that the outer fibers cover surface be the body-facing surface when the nonwoven fabric is incorporated into an absorbent article.

The thickness of the body side liner that is provided for the absorbent article of the present invention can vary, depending on the intended use of the pads. Usually the body side liner is about 10 mil to about 30 mils thick. Body side liners provided in the foregoing manner usually have good drapes and bond, and relatively smooth surfaces.

The absorbent articles of the present invention can be of various shapes and configurations depending on the intended use, e.g., as disposable diapers, sanitary napkins, tampons, underpads, surgical dressings or wipes, and the like. Additionally, the present absorbent pads can be incorporated into disposable or reusable garments as an integral part thereof. For example, an absorbent pad made according to the present invention can be part of disposable training pants and similar garments.

The foregoing description is intended as illustrative and is not to be taken as limiting. Other variations are possible without departing from the spirit and scope of this invention and will readily present themselves to one skilled in the art.

1. An absorbent product comprising body fluid-impermeable backing sheet, layer of absorbent material on said backing sheet, and web, body fluid-permeable, body contacting, body side liner overlying said absorbent material and body side liner being nonwoven fabric comprising an interconnected network thermoplastic polymer fibers, said fibers further comprising homogeneous blend of high density staple fibers and low density staple fibers in a range of from 2 to 15 density, wherein the high density staple fibers and

the low density films differ by at least one density and wherein the high density films are present in the blend in an amount of from 10 to 90% and the low density films are present in the blend in an amount of from 90 to 10%, wherein the high density films have a density in a range of from 4 to 15 and the low density films have a density in a range of from 2 to 4.

2. The sheath product in accordance with claim 1 wherein the high density films have a density of 3 and the low density films have a density of 2.

3. The sheath product in accordance with claim 1 wherein the films are polypropylene.

4. The sheath product in accordance with claim 1 wherein the films have a tensile weight of between 25 to 35 grams per square meter.

5. The sheath product in accordance with claim 1 wherein the non-woven fabric the films contain sheath divide in an amount between 0.1% to 5%.

6. The sheath product in accordance with claim 1 wherein the films contain sheath divide in an amount between 2% to 4%.

7. The sheath product in accordance with claim 1 wherein the high density films are in a range of from 30% to 70% and the low density films are in a range of from 70% to 30%.

8. The sheath product in accordance with claim 1 wherein the high density films are in a range of from 40% to 60% and the low density films are in a range of from 60% to 40%.

9. The sheath product in accordance with claim 1 wherein the non-woven fabric is a carded web.

10. The sheath product in accordance with claim 1 wherein a surface active agent is present on said fabric.

11. A sheath product having a body consisting, body side face and an underlying sheath core wherein the body side face comprises a multi-density non-woven fabric formed from an interconnect network thermoplastic poly-mer films, said films further comprising a homogeneous blend of high density films and low density films in a range of from 2 to 15 density, wherein the high density films and the low density films differ by at least one density and wherein the high density films are present in the blend in an amount of from 10 to 90% and the low density films are present in the blend in an amount of from 90 to 10%, wherein the high density films have a density in a range of from 4 to 15 and the low density films have a density in a range of from 2 to 4.

12. The sheath product in accordance with claim 11 wherein said sheath product is a tape.

13. The sheath product in accordance with claim 11 wherein said sheath product is a multi-layer.

14. The sheath product in accordance with claim 11 wherein said films contain sheath divide in an amount from 1% to 5%.

15. The sheath product in accordance with claim 11 wherein said films are made from polyolefins.

16. The sheath product in accordance with claim 11 wherein said films are made from polypropylene.

17. The sheath product in accordance with claim 11 wherein a surface active agent is present on said body side face.

18. The sheath product in accordance with claim 17 wherein the surface active agent is hydrophobic.

[54] NEWBORN'S GROWTH ADJUSTABLE
ABSORBENT DIAPER HAVING VARIABLE
OVERLAPPING AND NON-OVERLAPPING
EARS

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abandoned.

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604/366; 604/370; 604/378; 604/383.1;
604/386; 604/391; 604/393; 604/400

[58] Field of Search 604/358, 366, 370, 378-382,
604/384, 385.1, 385.2, 386, 387, 389, 393, 391,
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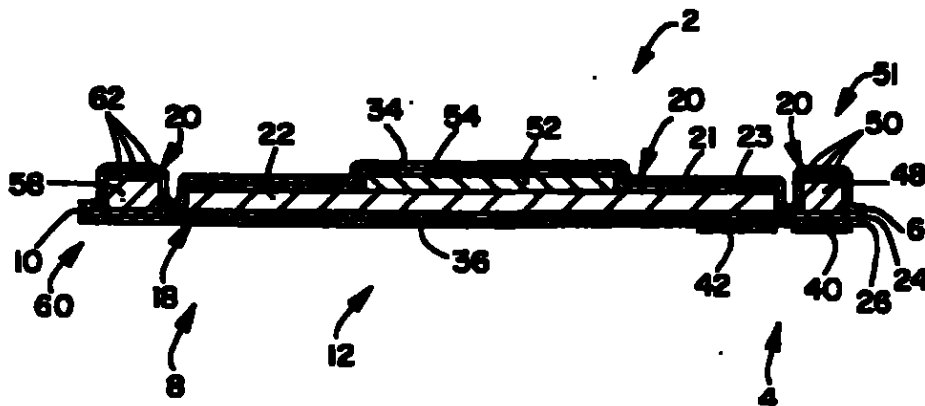
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[57] ABSTRACT

A growth adjustable diaper for newborn babies is ad-
justable in length by use of a foldable absorbent panel at
the front edge of the diaper and comprises an elastic
member positioned between the foldable panel and a
topsheet.

38 Claims, 7 Drawing Sheets



**NEWBORN GROWTH ADJUSTABLE
ADJUSTMENT DIAPER HAVING VARIABLE
OVERLAPPING AND NON-OVERLAPPING ZONE**

This application is a continuation-in-part of copending U.S. Pat. application Ser. No. 01/751,789 filed Sep. 11, 1991, now abandoned.

BACKGROUND OF THE INVENTION

The invention pertains to disposable articles and, more particularly, to disposable absorbent articles that are adjustable in length and circumference to accommodate the individual body growth of newborn baby.

Conventionally, disposable absorbent articles that wrap around an infant and child are not and have generally required multiple cloth absorbent articles. A typical disposable absorbent article generally comprises a composite structure including: topsheet, a backsheet, and an absorbent interlayer between the topsheet and backsheet. These articles usually include some type of fastening system for fitting the article onto the wearer.

Although current disposable baby diapers have been generally accepted by the public, these diapers still have need of improvement in specific areas. For example, newborns of newborns between the ages of one and generally about four months are most of the infants that require disposable diapers with the smallest size and during the first month of the newborn's existence. Normally, any newborn of the smallest size is discarded to the newborn and of newborns continues to the newborn. Another serious concern to newborns is the tenderness of the newborn's skin and, thus, its sensitivity to even slight pressure or rubbing action that can cause irritation and red marking. With current diapers, this irritation or pressure is caused by leg elastic that pulls the diaper tightly against the newborn's skin to prevent urine leakage. It also can occur at the waist area where the back end of the diaper are effectively attached tightly to the front portion of the diaper. Thus, it can be appreciated that current diapers do not provide an optimum absorbent article for newborns.

In addition to concerns for the newborn's feeling additional cold and tender, sensitive skin is the relatively rapid growth of the newborn between the time when he or she is born to approximately the age of four months. During this time, the newborn will grow in length and weight from about six pounds to about fifteen pounds, thus posing problems to the mother, since the diaper she must use that will grow with the baby at birth, while the need the diaper may not be appropriate to a newborn during this rapid growth stage. Thus, it would be desirable to have a diaper specifically designed for newborns, between the age of one and about four months, that provides adjustability in size to accommodate this rapid growth.

SUMMARY OF THE INVENTION

In one form of the invention, there is provided growth-adjustable absorbent article having: length comprising backsheet including front portion, back portion, and an intermediate middle portion, and waist absorbent body disposed on at least the intermediate middle portion. A foldable panel is disposed on the front portion between the waist absorbent body and the front edge of the front portion. This foldable panel is movable between first position, in which it is substantially coplanar with the waist absorbent body, and second position, in which the foldable panel is folded laterally

open the waist absorbent body, thereby providing adjustability to the article. An elastic member is positioned between the foldable panel and the topsheet such that the front portion curves upwardly, in the direction of the topsheet, when the foldable panel is substantially coplanar with the waist absorbent body and when the elastic member is relaxed.

BRIEF DESCRIPTION OF THE DRAWINGS

The above-mentioned and other features of the present invention, and the manner of utilizing them, will become more apparent, and the invention itself will be better understood, by reference to the following description of the invention taken in conjunction with the accompanying drawings, wherein:

FIG. 1 is a top plan view of the body of the present invention of the present invention when laid flat.

FIG. 2 is a top plan view of the backside of the absorbent article in FIG. 1 when laid flat.

FIG. 3 is a cross-section of the absorbent article in FIG. 1 taken along line 3-3 and viewed in the direction of the arrows.

FIG. 4 is an exploded perspective of the absorbent article in FIG. 1.

FIG. 5 is a top plan view of the body of the absorbent article in FIG. 1, modified to the absorbent article in FIG. 1.

FIG. 6 is a view of the absorbent article in FIG. 1 on newborn baby with the foldable absorbent panel folded laterally and the waist overlapping.

FIG. 7 is similar to FIG. 6 except that the waist is not overlaid.

FIG. 8 is similar to FIG. 7 except that the foldable absorbent panel has been unfolded with the waist overlaid thereon.

FIG. 9 is a perspective view of the absorbent article in FIG. 1.

FIG. 10 is a perspective view of another embodiment of the invention.

FIG. 11 is a cross-section view of the absorbent article in FIG. 1 taken along line 11-11 and viewed in the direction of the arrows.

DESCRIPTION OF A PREFERRED EMBODIMENT

The absorbent articles of the present invention will be described herein in relation to their use in newborns, disposable absorbent articles, but it should be understood that potential uses of the absorbent features of the present invention need not be limited to newborns, disposable absorbent articles. As used herein, the term "newborn, disposable absorbent article" refers to articles which absorb and contain body excretions and are intended to be discarded after limited period of use. The articles are not intended to be laundered or otherwise restored for reuse. The articles can be placed upon or in proximity to the body of the wearer to absorb and contain various excretions discharged from the body. While the present description will primarily be made in the context of a diaper article, it should be understood that the present invention is also applicable to other disposable personal care absorbent articles, such as adult incontinence garments, sanitary napkins, and children's training pants as well as surgical bandages and aprons.

Referring to FIGS. 1-4, 9 and 11, preferred embodiment of the present invention is illustrated in diaper 2

comprising front portion 4 having front edge 6, back portion 8 having back edge 10, and intermediate middle portion 12. Back portion 8 preferably further comprises a pair of ear members 14 and 16 attached to or integral with back portion 8. Generally, ear members 14 and 16 will be integral to back portion 8.

Diaper 2 further comprises backsheet 18 and topsheet 20 having peripheral circumferential waist absorbent body 22. Backsheet 18 and topsheet 20 may be of the same size and shape to which ear members 14 and 16 would be formed by extension of end, then, be integral with backsheet 18 and topsheet 20. If desired, topsheet 20 need not be substantially with backsheet 18, but it is preferred that both backsheet 18 and topsheet 20 have length and width greater than that of waist absorbent body 22 to allow their peripheries to be attached in any suitable manner. As illustrated in FIG. 3, waist absorbent body 22 does not extend the full length of diaper 2 but is positioned at least at intermediate middle portion 12. As such, absorbent body 22 does not have an absorbent portion which extends beyond front edge 6 or back edge 10.

Preferably, backsheet 18 has both cloth-like and hydrophobic properties. The cloth-like properties are suitably provided on the outermost surface of backsheet 18 to give a wettable, cloth feel to diaper 2 for both the newborn and mother or caretaker. This is in contrast to current diapers that use only a polypropylene film material as the backsheet and has a plastic touch or feel. One manner of providing backsheet 18 with both cloth-like and hydrophobic properties is to construct it of two plies. Hydrophobic inner ply 24, which may also be laminable or nonlaminable to viscose, and a cloth-like outer ply 26. Inner ply 24 can be this film of hydrophobic material that is introduced onto backsheet 18 as outer ply 26.

Topsheet 20 is permeable to liquid, such as urine and, in one of the various aspects of the present invention, has very soft feel or texture that is highly desirable for the newborn, tender skin of newborn. One preferred manner of providing topsheet 20 with this extremely soft feel or texture is to construct it of a matrix of fluff in which air, or at least some, of the fluff are biodegradable. These biodegradable fluff can be cloth-like or short-staple construction. A more detailed description of topsheet 20 is provided hereinafter. In one preferred embodiment, topsheet 20 is, two layer composite comprising front layer 28 made of biodegradable fluff and back layer 30 made of short-staple construction. Layer layer 28 and back layer 30 can be placed on top of each other without any additional means of joining the two layers together, or layer layer 28 and back layer 30 may be placed together followed by heating or joining step that fuses layers 28 and 30 together to form topsheet 20. Back layer 30 preferably is narrower than front layer 28 and contained between outer layer 28 or cover 32 and contained between outer layer 28 or cover 32 and inner layer 34 (FIG. 9). Back layer 30 preferably is between front layer 28 and absorbent body 22.

Ear members 14 and 16 have apertures, elastically-extendible material 36 attached near their ends on inner surface 38 of diaper 2. Each elastically-extendible surface or member herein may comprise, for example, back portion comprising plurality of loop members (not shown) that are integrable with loop members comprising plurality of loop members, adhesive system, or a mechanical fastener system. An adhesive system generally only sticks to back, while being stretchable to

other portions. A mechanical fastening system may comprise: buckle or snap fastener.

Diaper 2 further includes outer surface 30 on which is placed three elastically-extendible members 32, 34, and 36. Elastically-extendible member 32 is attached to either or both ear member 14 or ear member 16 and, in FIG. 4 is illustrated as being attached to ear member 16 on outer surface 30. Elastically-extendible member 34 and 36 are attached to outer surface 30 at front portion 4. As illustrated in FIGS. 2 and 3, elastically-extendible member 32 is near front edge 6 and elastically-extendible member 34 is spaced or positioned slightly laterally of elastically-extendible member 32. If desired, elastically-extendible member 34 and 36 may be one elastically-extendible member. Elastically-extendible member 32, 34, and 36 respectively may, for example, comprise plurality of loop members (not shown) that are integrable with plurality of loop members on elastically-extendible member 32.

A pair of elastically-extendible members 32 may be positioned on respective longitudinal sides of diaper 2 and, preferably, are attached between backsheet 18 and topsheet 20. Leg cuffs 40 can be hydrophobic or hydrophobic, and can preferably be formed by a plurality of elastic strands 42. Leg cuffs 40 are preferably two-ply composite in which the outermost ply is hydrophobic and the innermost ply is liquid permeable. In this design, the outermost ply can be made of the same material as backsheet 18, and the innermost ply can be made of the same material as front layer 28. It is desired that leg cuffs 40 be liquid permeable, both plies can be made of the same or different permeable materials.

In addition to make absorbent body 22, diaper 2 further comprises foldable absorbent panel 44 of absorbent material absorbent body 22 and front edge 6. As with absorbent body 22, foldable absorbent panel 44 is positioned between backsheet 18 and topsheet 20. Foldable absorbent panel 44 can be made of the same absorbent material as absorbent body 22 and, as illustrated in FIGS. 4 and 5, may be spaced from absorbent body 22. If desired, make absorbent body 22 and foldable absorbent panel 44 can be integral and yet separately identified by color-coding, marking, or the like, so as to permit foldable absorbent panel 44 to be folded laterally as illustrated in FIGS. 6 and 7. It should also be noted that elastically-extendible member 32 is foldable laterally with absorbent panel 44 in one of the various portions of backsheet 18 and topsheet 20 that overlap absorbent panel 44. If desired, foldable panel 44 can be made of nonabsorbent material preferably having liquid-damping or barrier characteristics.

In order to provide elasticity to the front waist portion of diaper 2, which is that portion of front portion 4 adjacent front edge 6, plurality of elastic strands 46 are positioned between absorbent panel 44 and topsheet 20. Elastic strands 46 can be first stretched and then attached to other topsheet 20 or panel 44, or both. Alternatively, elastic strands 46 can be made of heat-shrinkable material in which they are joined to absorbent panel 44 and then heated to become elastic as in a similar topsheet 20. If desired, elastic strands 46 can be joined to separate layer of material to form an elastic composite and then positioned between topsheet 20 and absorbent panel 44.

Referring to FIG. 11, by positioning the elastic strands 46 between absorbent panel 44 and topsheet 20, front portion 4 has been found to curve upwardly in the direction of the topsheet or alternatively, in the direction

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a pair of our numbers integral with said bank written and being identically cognate with said first portion.

31. The article of claim 30 wherein said topmost comprises Management files.

22. The article of claim 31 wherein said biocompatible films are sheath-over films.

23. The article of claim 31 wherein said biocompatible films are side-by-side films.

34. The article of claim 31 wherein said topcoat has bulk weight between about 15 to about 102 grams per

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square meter and a density between about 0.01 to about 0.05 grams per cubic centimeter.

26. The article of claim 31 wherein said films have similar between about 1 to about 15 degrees per element, and length between about 0.5 to about 2.0 inches.

36. The width of chain 31 wherein said links are collapsed is a range of about 14 to about 22 crimps per inch.

37. The article of claim 36 further comprising a pair of containment flaps attached to said topmost.

36. The article of claim 35 further comprising: a containment flap attached at said back section near said tank edge.

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SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO

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RADICACIÓN: 4-50474

EDICTO No. 8651

**LA SECRETARÍA GENERAL AD-HOC
HACE SABER:**

Que esta Superintendencia profirió Resolución No. 12311 de 30-ABR-2007. Que el contenido de la parte resolutive es como sigue: El Superintendente de Industria y Comercio.

RESUELVE

ARTICULO PRIMERO: Negar el privilegio de patente de invención para la solicitud correspondiente a "CAPAS DE MANEJO DE FLUIDO DE DENIER MEZCLADO", que entró

en fase nacional en virtud del Tratado de Cooperación en Materia de Patentes (PCT).

ARTICULO SEGUNDO: Notificar personalmente el contenido de la presente resolución al doctor Carlos Reinaldo Olarte García, o a quien haga sus veces, en su calidad de apoderado de Kimberly-Clark Worldwide, Inc., entregándole copia de la misma, advirtiéndole que contra ella procede el recurso de reposición interpuesto ante el Superintendente de Industria y Comercio, al momento de la notificación o dentro de los 5 días hábiles siguientes a ella.

NOTIFÍQUESE Y CUMPLASE

Dada en Bogotá, D.C., a los **30 ABR 2007**

EL SUPERINTENDENTE DE INDUSTRIA Y COMERCIO,

JAIR RUBIO ESCOBAR

Para notificar a los interesados, se fija el presente EDICTO en lugar visible al público en la SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO, por el término de (10) diez días hábiles contados a partir de las 8:00 a.m. de hoy.

Secretaría General Ad-Hoc 17-MAY-2007

Secretaría General Ad-Hoc

EDICTO No. 8651

Este edicto se desfilja hoy 31-MAY-2007 a las 4:30 p.m.