

ESCOBAR – URIBE ASOCIADOS

A B O G A D O S

Carrera 11A No. 94-76 - Of. 305 - P.O. Box 94948, Bogotá, D.C. - Colombia

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2724/P.

SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO DIVISION DE NUEVAS CREACIONES

E. S. D.

Ref.: Expediente No. 04.084.674
Solicitud de Patente a nombre de
McNeil-PPC, Inc.

SUPERINDUSTRIA Y COMERCIO

Radicacion : 04004674 00000002

Folios: 64

Fecha (MM): 2004-11-23 16:00:05

Tramite : 002 PATENTES D 1 REGISTRO/ 444 REPUESTA

Dependencia: 2020 DIVISION DE NUEVAS CREACIONES

Yo, JIMENA ESCOBAR URIBE, identificada como aparece al pie de mi firma, domiciliada en la Carrera 11 A No. 94-76, of. 305, obrando como apoderada de la sociedad McNeil-PPC, Inc., domiciliada en Skillman, New Jersey, Estados Unidos de América, solicitante de la patente de la referencia, en respuesta su oficio No. 8774 notificado por fijación en lista el día 23 de septiembre de 2004, me permito manifestar lo siguiente:

1. Anexo los documentos de cesión suscritos por los inventores a favor de mi mandante.

Sobre el particular, es importante resaltar que de conformidad con las normas legales vigentes, artículo 1 de la Resolución 210 de 2001, expedida por el Superintendente de Industria y Comercio y artículo 2 de la Convención de la Haya, el documento en inglés que se pretenda aportar como parte de los trámites de propiedad industrial ante la Superintendencia de Industria y Comercio no requieren traducción. Por otro lado, la legalización consular y/o diplomática de los documentos expedidos en el extranjero no es necesaria. Por lo tanto, el documento de cesión anexo a este memorial es válidamente presentado en idioma inglés y con la correspondiente Apostilla.

2. Acompaño al presente memorial la copia certificada de la solicitud de Patente Número 10/652,171 presentada en los Estados Unidos de América el día 29 de agosto de 2003, respectivamente, con la debida traducción de lo pertinente, incluyendo el capítulo reivindicatorio.

Espero con esto haber dado cabal cumplimiento a lo solicitado por ese despacho y de conformidad con lo indicado en los artículos 3º., inciso 3, 35 inciso 2 y 59 inciso 2 del CCA, al analizar este memorial, atentamente ruego se traten todas las cuestiones planteadas con motivo del mismo.

Señor Superintendente,



JIMENA ESCOBAR URIBE

C.C.39.779.452 de usaquén

T.P. 68228

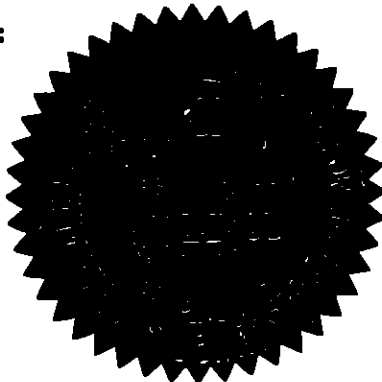
APOSTILLE

(CONVENTION DE LA HAYE DU 5 OCTOBRE 1961)

1. COUNTRY: UNITED STATES OF AMERICA
2. THIS PUBLIC DOCUMENT HAS BEEN SIGNED BY:
CHRISTINA A CLICKNER
3. ACTING IN THE CAPACITY OF:
NOTARY PUBLIC OF NEW JERSEY
4. BEARS THE SEAL/STAMP OF:
CHRISTINA A CLICKNER, NOTARY

CERTIFIED

5. AT TRENTON, NEW JERSEY
6. THE 7TH DAY OF SEPTEMBER 2004
7. BY: John E McCormac, CPA, NEW JERSEY TREASURER
8. NO. A207438
9. SEAL/STAMP:
10. SIGNATURE



John E McCormac

PPC 5015 COL(L)

CERTIFICATION

I hereby certify that I have compared the attached document with the original, and that such said document is a true copy of the original Assignment document as filed in the U.S. Patent Office in connection with USSN 10/652,171 filed AUGUST 29, 2003.

A handwritten signature in cursive script, reading "Christina A. Clickner", written over a horizontal line.

**Christina A. Clickner
(Notary Public of New Jersey)
My Commission Expires:
March 2, 2005**

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**RECORDATION FORM COVER SHEET
PATENTS ONLY**

Commissioner for Patents:

Please record the attached original documents or copy thereof.

1. Name of conveying party(ies): Annemarie Devine Joseph Vincent P. Lasko Mary Gail O'Malley Additional name(s) of conveying party(ies) attached? _ Yes ☒ No	2. Name and address of receiving party(ies): Name: McNeil-PPC, Inc. Street Address: 199 Grandview Road City: Skillman State: NJ Zip: 08858 Additional name(s) & address(es) attached? _ Yes ☒ No
3. Nature of conveyance: ☒ Assignment ☐ Merger ☐ Security Agreement ☐ Change of Name ☐ Other Execution Date: June 16, 2004 and June 24, 2004	4. Application number(s) or patent number(s): If this document is being filed together with a new application, the execution date of the application is: A. Patent Application No.(s) B. Patent No.(s) 10/652,171. Additional numbers attached? _ Yes ☒ No
5. Name and address of party to whom correspondence concerning document should be mailed: Philip S. Johnson, Esq. Chief Patent Counsel Johnson & Johnson One Johnson & Johnson Plaza New Brunswick, NJ 08933-7003	6. Total number of applications & patents involved: <u>1</u> 7. Total fee (37 CFR 3.41) _____ \$40.00 ☒ Authorized to be charged to Deposit Account 8. Deposit Account Number: 10-0750/PPC-5015-NP/PJH
9. Statement and signature <i>To the best of my knowledge and belief, the foregoing information is true and correct and any attached copy is a true copy of the original document.</i> Name of Person Signing Paul J. Higgins  Signature Date July 7, 2004 Total number of pages including cover sheet, attachments, and document: 6	

Mail documents to be recorded with required cover sheet information to:

Mail Stop Assignment Recordation Services
Commissioner for Patents
P.O. Box 1458
Alexandria, VA 22313-1458

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DOCKET NO. PPC-5015-USNP
Joint Inventors

A S S I G N M E N T

Serial No. 10/652,171
Filed August 29, 2003

~~Mary Gail~~ WHEREAS, Annemarie Devine Joseph, Vincent P. Lasko and ~~Gail M. O'Malley~~, residing at 3216 Ravens Crest Drive, Plainsboro, NJ 08536, 14 Holly Hill Drive, New Egypt, NJ 08533 and 616 Cardeza Avenue, Brielle, NJ 08730, respectively (hereinafter called "Assignors"), have made certain new and useful inventions or discoveries relating to

DISPOSABLE ABSORBENT ARTICLES

for which they have executed an application for Letters Patent of the United States; and

WHEREAS, McNeil-PPC, Inc., a corporation of the State of New Jersey, having its principal place of business at 199 Grandview Road, Skillman, NJ 08558 (hereinafter called "Assignee"); is desirous of acquiring Assignors' entire right, title, and interest therein:

NOW, THEREFORE, BE IT KNOWN that for and in consideration of the sum of One Dollar and other valuable considerations to them moving, the receipt of which is hereby acknowledged, Assignors have sold, assigned, and transferred, and do hereby sell, assign and transfer unto said Assignee their entire right, title and interest in and to all said inventions and discoveries disclosed in said application whose identification above by serial number and filing date, when available is hereby authorized, and in and to said application, all substitutions, divisions, and continuations thereof, and in and to all Letters Patent, United States and foreign, that may be granted for said inventions and discoveries, and in and to all extensions, renewals, and reissues thereof, the same to be held and enjoyed by said Assignee, its successors and assigns, as fully and entirely as the same would have been held and enjoyed by Assignors if this Assignment and sale had not been made;

And Assignors hereby authorize and request the Commissioner of Patents of the United States to issue said Letters Patent in accordance with this Assignment;

And for the consideration aforesaid, Assignors covenant and agree with said Assignee that he has a full and

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unencumbered title to the inventions and discoveries above described and hereby assigned, which title they warrant unto said Assignee, its successors and assigns;

And for the consideration aforesaid, Assignors further covenant and agree that they will, whenever requested, but without cost to them promptly communicate to said Assignee or its representatives any facts known to them relating to said inventions and discoveries, testify in any interference or legal proceedings involving said inventions and discoveries, and execute any additional papers that may be necessary to enable said Assignee or its representatives, successors, nominees, or assigns to secure full and complete protection for the said inventions and discoveries or that may be necessary to vest in said Assignee the complete title to the said inventions and discoveries and patents hereby conveyed and to enable it to record said title.

IN TESTIMONY WHEREOF, Assignor has hereunto set her hands and seals this 16th day of June, 2004


Annemarie Devine Joseph (L.S.)

unencumbered title to the inventions and discoveries above described and hereby assigned, which title they warrant unto said Assignee, its successors and assigns;

And for the consideration aforesaid, Assignors further covenant and agree that they will, whenever requested, but without cost to them promptly communicate to said Assignee or its representatives any facts known to them relating to said inventions and discoveries, testify in any interference or legal proceedings involving said inventions and discoveries, and execute any additional papers that may be necessary to enable said Assignee or its representatives, successors, nominees, or assigns to secure full and complete protection for the said inventions and discoveries or that may be necessary to vest in said Assignee the complete title to the said inventions and discoveries and patents hereby conveyed and to enable it to record said title.

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IN TESTIMONY WHEREOF, Assignor has hereunto set his hands and seals this 24th day of June, 2004

Vincent P. Lasko (L.S.)
Vincent P. Lasko

STATE OF N.J.)

) ss.)

COUNTY OF OCEAN)

BE IT REMEMBERED, That on this 24th day of June, 2004, before me, a Notary Public, personally appeared Vincent P. Lasko, who I am satisfied is the person named in and who executed the foregoing instrument in my presence, and I having first made known to him the contents thereof, he did acknowledge that he signed, sealed, and delivered the same as his voluntary act and deed for the uses and purposes therein expressed.

Cathleen S. Baumgartner
Notary Public

CATHLEEN S. BAUMGARTNER
NOTARY PUBLIC OF NEW JERSEY
MY COMMISSION EXPIRES JUNE 26 2006

ESTADOS UNIDOS DE AMERICA
A TODOS AQUELLOS A QUIENES EL PRESENTE LLEGUE:

DEPARTAMENTO DE COMERCIO DE LOS ESTADOS
UNIDOS
Oficina de Patentes y Marcas de los Estados Unidos

Septiembre 27 de 2004

La presente es para certificar que el anexo es una copia fiel de los registros de la Oficina de Patentes y Marcas de los Estados Unidos, de los documentos de la solicitud de patente identificada más adelante, que cumplieron con los requerimientos para concederse una fecha de presentación de acuerdo con 35 USC 111.

Número de Solicitud: 10/652,171

Fecha de Presentación: Agosto 29 de 2003

Por la autoridad del
Comisionado de Patentes y Marca

(fdo) M.K. HAWKINS
Oficial Certificador
Sello oficial de la Oficina de Patentes y Marcas de los
Estados Unidos de América

NOVEDAD DE LA INVENCION

REIVINDICACIONES

- 5 1.- Una estructura absorbente que comprende: (a) un núcleo absorbente que tiene una superficie superior y una superficie inferior; (b) una capa de tejido que tiene una superficie superior y una superficie inferior, y (c) un aglutinante autoentrelazante, en donde la superficie inferior del primer núcleo absorbente está yuxtapuesta a la superficie superior del tejido, y el
- 10 aglutinante está aplicado en la superficie inferior de la capa de tejido, de modo que el aglutinante penetra a través del tejido hacia el núcleo absorbente.
- 2.- La estructura absorbente de conformidad con la reivindicación 1, caracterizada además porque el aglutinante autoentrelazante es un copolímero vinil acrílico autoentrelazante.
- 15 3.- La estructura absorbente de conformidad con la reivindicación 1, caracterizada además porque el aglutinante autoentrelazante tiene una temperatura de transición de vidrio de por lo menos aproximadamente +10 °C.
- 4.- Un artículo absorbente que comprende una estructura absorbente como la que se reclama en la reivindicación 1.
- 20 5.- La estructura absorbente de conformidad con la reivindicación 1, caracterizada además porque el aglutinante autoentrelazante se aplica a la superficie superior del núcleo absorbente.
- 6.- La estructura absorbente de conformidad con la reivindicación

1, caracterizada además porque comprende un aglutinante no entrelazante, en donde el aglutinante no entrelazante se aplica a la superficie superior del núcleo absorbente.

5 7.- La estructura absorbente de conformidad con la reivindicación 1, caracterizada además porque comprende polímero superabsorbente.

8.- La estructura absorbente de conformidad con la reivindicación 6, caracterizada además porque el aglutinante no entrelazante tiene una temperatura de transición de vidrio en la escala de -3°C a -30°C , aproximadamente.

10 9.- La estructura absorbente de conformidad con la reivindicación 8, caracterizada además porque el aglutinante autoentrelazante tiene una temperatura de transición de vidrio de aproximadamente $+20^{\circ}\text{C}$, y el aglutinante no entrelazante tiene una temperatura de transición de vidrio de aproximadamente -23°C .

15 10.- Un artículo absorbente que comprende: (a) una estructura absorbente que comprende un núcleo absorbente que tiene una superficie superior y una superficie inferior, una capa de tejido que tiene una superficie superior y una superficie inferior, y un aglutinante autoentrelazante, en donde la superficie inferior del primer núcleo absorbente está yuxtapuesta a la
20 superficie superior del tejido, y el aglutinante está aplicado en la superficie inferior de la capa de tejido, de modo que el aglutinante penetra a través del tejido hacia el núcleo absorbente; y (b) una capa de barrera.

11.- El artículo absorbente de conformidad con la reivindicación

10, caracterizado además porque comprende un aglutinante no entrelazante aplicado a la superficie superior del núcleo absorbente.

12.- El artículo absorbente de conformidad con la reivindicación 10, caracterizado además porque comprende una capa de cubierta que tiene una superficie superior de contacto con el cuerpo y una superficie inferior, la superficie inferior de la cubierta colocada en yuxtaposición a la superficie superior del núcleo absorbente.

13.- El artículo absorbente de conformidad con la reivindicación 11, caracterizado además porque comprende una capa de cubierta que tiene una superficie superior de contacto con el cuerpo y una superficie inferior, la superficie inferior de la cubierta colocada en yuxtaposición a la superficie superior del núcleo absorbente.

14.- El artículo absorbente de conformidad con la reivindicación 10, caracterizado además porque la capa de cubierta comprende un laminado.

15 15.- El artículo absorbente de conformidad con la reivindicación 14, caracterizado además porque el laminado comprende una capa no tejida y una capa de película con aberturas.

16.- El artículo absorbente de conformidad con la reivindicación 15, caracterizado además porque la película con aberturas comprende macrofiguras elevadas.

17.- El artículo absorbente de conformidad con la reivindicación 16, caracterizado además porque la capa no tejida hace contacto con las macrofiguras de la película con aberturas en el laminado.

18.- El artículo absorbente de conformidad con la reivindicación 10, caracterizado además porque el aglutinante autoentrelazante es un copolímero vinil acrílico autoentrelazante.

5 19.- El artículo absorbente de conformidad con la reivindicación 10, caracterizado además porque el aglutinante autoentrelazante tiene una temperatura de transición de vidrio de por lo menos aproximadamente + 10 °C.

10 20.- El artículo absorbente de conformidad con la reivindicación 11, caracterizado además porque el aglutinante autoentrelazante es aproximadamente 5% en peso y el aglutinante no entrelazante es aproximadamente 3% en peso de la estructura absorbente.

21.- El artículo absorbente de conformidad con la reivindicación 10, caracterizado además porque el aglutinante autoentrelazante está aplicado en la superficie superior del núcleo absorbente.

15 22.- El artículo absorbente de conformidad con la reivindicación 10, caracterizado además porque comprende un aglutinante no entrelazante, en donde el aglutinante no entrelazante está aplicado en la superficie superior del núcleo absorbente.

20 23.- El artículo absorbente de conformidad con la reivindicación 10, caracterizado además porque comprende polímero superabsorbente.

24.- El artículo absorbente de conformidad con la reivindicación 22, caracterizado además porque el aglutinante no entrelazante tiene una temperatura de transición de vidrio en la escala de -3 °C a -30 °C,

aproximadamente.

25.- El artículo absorbente de conformidad con la reivindicación 22, caracterizado además porque el aglutinante autoentrelazante tiene una temperatura de transición de vidrio de aproximadamente +20 °C, y el
5 aglutinante no entrelazante tiene una temperatura de transición de vidrio de aproximadamente -23 °C.

26.- Un artículo absorbente que comprende: (a) una cubierta que tiene una superficie de contacto con el cuerpo y una superficie de contacto con la estructura absorbente; (b) una estructura absorbente que comprende
10 un núcleo absorbente que tiene una superficie superior y una superficie inferior, una capa de tejido que tiene una superficie superior y una superficie inferior, y un aglutinante autoentrelazante, en donde la superficie inferior del primer material no tejido está yuxtapuesta a la superficie superior del tejido, y el aglutinante está aplicado en la superficie inferior de la capa de tejido, de
15 modo que el aglutinante penetra a través del tejido hacia el núcleo absorbente; y (c) una capa de barrera.

27.- El artículo absorbente de conformidad con la reivindicación 26, caracterizado además porque comprende un aglutinante no entrelazante aplicado en la superficie superior del núcleo absorbente.

20 28.- El artículo absorbente de conformidad con la reivindicación 26, caracterizado además porque comprende polímero superabsorbente.

29.- El artículo absorbente de conformidad con la reivindicación 27, caracterizado además porque comprende polímero superabsorbente.

30.- El artículo absorbente de conformidad con la reivindicación 26, caracterizado además porque la capa de cubierta comprende un laminado.

31.- El artículo absorbente de conformidad con la reivindicación 27, caracterizado además porque la capa de cubierta comprende un laminado.

5 32.- El artículo absorbente de conformidad con la reivindicación 28, caracterizado además porque la capa de cubierta comprende un laminado.

33.- Un artículo absorbente que comprende: (a) una cubierta que tiene una superficie de contacto con el cuerpo y una superficie de contacto con la estructura absorbente; (b) una estructura absorbente que comprende
10 un núcleo absorbente que tiene una superficie superior y una superficie inferior, una capa de tejido que tiene una superficie superior y una superficie inferior, un aglutinante autoentrelazante y un aglutinante no entrelazante, en donde la superficie inferior del primer material no tejido está yuxtapuesta a la superficie superior del tejido, el aglutinante autoentrelazante está aplicado en
15 la superficie inferior de la capa de tejido, de modo que el aglutinante penetra a través del tejido hacia el núcleo absorbente, y el aglutinante no entrelazante está aplicado en la superficie superior del núcleo absorbente; y (c) una capa de barrera.

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FIG. 1

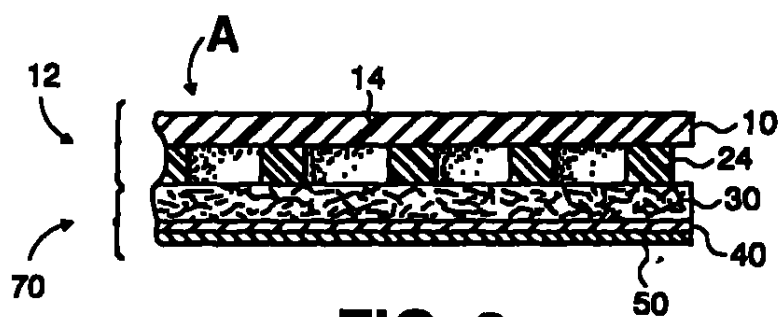
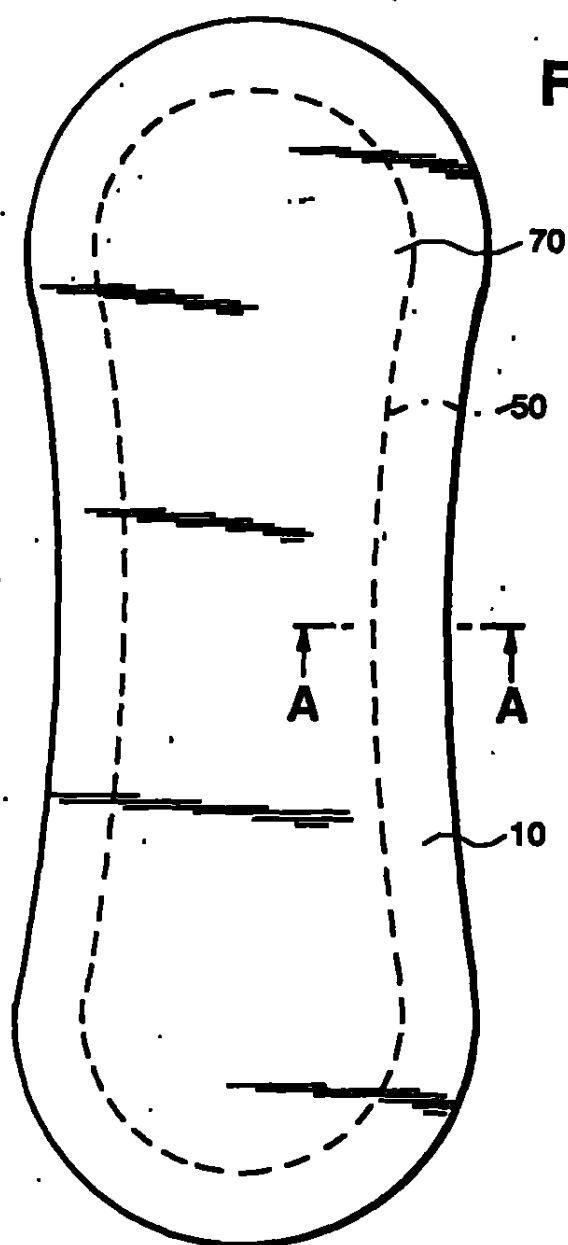
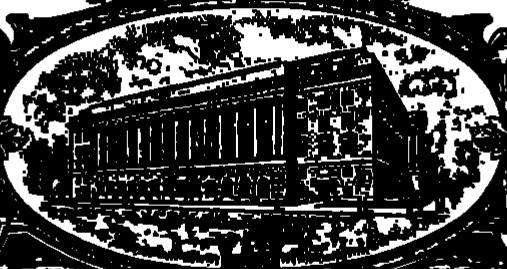


FIG. 2

PA 1229314



THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

UNITED STATES DEPARTMENT OF COMMERCE

United States Patent and Trademark Office

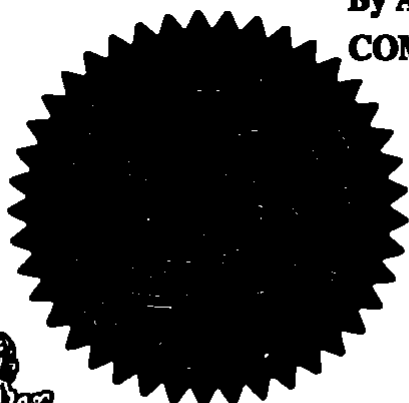
September 27, 2004

THIS IS TO CERTIFY THAT ANNEXED HERETO IS A TRUE COPY FROM THE RECORDS OF THE UNITED STATES PATENT AND TRADEMARK OFFICE OF THOSE PAPERS OF THE BELOW IDENTIFIED PATENT APPLICATION THAT MET THE REQUIREMENTS TO BE GRANTED A FILING DATE UNDER 35 USC 111.

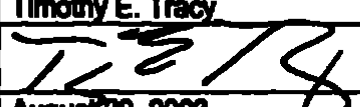
APPLICATION NUMBER: 10/652,171

FILING DATE: August 29, 2003

By Authority of the
COMMISSIONER OF PATENTS AND TRADEMARKS



M. K. HAWKINS
Certifying Officer

UTILITY PATENT APPLICATION TRANSMITTAL (only for new nonprovisional applications under 37 CFR 1.53(b))		Attorney Docket No. PPC-5015-USNP First Inventor Annemarie Devina Joseph Title DISPOSABLE ABSORBENT ARTICLES Express Mail Label No. EV 138495255 US	746 J. 81, 270 10/52171 08/23/03
APPLICATION ELEMENTS See MPEP Chapter 800 concerning utility patent application contents.		ADDRESS TO: Mail Stop Patent Applications Commissioner for Patents P.O. Box 1450 Alexandria, VA 22313-1450	
1. ☒ Fee Transmittal Form (e.g., PTO/SB/17) (submit an original and a duplicate for fee processing) 2. ☐ Applicant claims small entity status. 3. ☒ Specification [Total Pages 39] (Preferred arrangement set forth below) - Descriptive Title of the Invention - Cross Reference to Related Applications - Statement Regarding Fed sponsored R&D - Reference to sequence listing, a table, or a computer program listing appendix - Background of the Invention - Brief Summary of the Invention - Brief Description of the Drawings (if filed) - Detailed Description - Claim(s) - Abstract of the Disclosure 4. ☒ Drawing(s) [35 USC 113] [Total Sheets 1] 5. Oath or Declaration [Total Pages 3] a. ☒ Newly unexecuted original b. ☐ Copy from a prior application (37 CFR 1.63(d)) (for continuation/divisional with Box 18 completed) i. ☐ DELETION OF INVENTOR(S) Signed statement attached deleting inventor(s) named in the prior application, see 37 CFR 1.63(d)(2) and 1.33(b). 6. ☐ Application Data Sheet. See 37 CFR 1.76		7. ☐ CD-ROM or CD-R in duplicate, large table or Computer Program (Appendix) 8. Nucleotide and/or Amino Acid Sequence Submission (if applicable, all necessary) a. ☐ Computer Readable Form (CRF) b. ☐ Specification Sequence Listing on: i. ☐ CD-ROM or CD-R (2 copies); or ii. ☐ paper c. ☐ Statement verifying identity of above copies ACCOMPANYING APPLICATION PARTS 9. ☐ Assignment Papers (cover sheet & document(s)) 10. ☐ 37 CFR 3.73(b) Statement ☐ Power of Attorney (when there is an assignee) 11. ☐ English Translation Document (if applicable) 12. ☐ Information Disclosure Statement (IDS) PTO-1449 ☐ Copies of IDS Citations 13. ☐ Preliminary Amendment 14. ☒ Return Receipt Postcard (MPEP 503) (Should be specifically itemized) 15. ☐ Certified Copy of Priority Document(s) (if foreign priority is claimed) 16. ☐ Request and Certifications under 35 U.S.C. 122 (b)(2)(B)(i). Applicant must attach form PTO/SB/35 or its equivalent. 17. ☒ Other: EXPRESS MAIL CERTIFICATE #EV138495255US	
18. ☐ If a CONTINUING APPLICATION, check appropriate box and supply the requisite information below and in a preliminary amendment, or in an Application Data Sheet under 37 CFR 1.76: ☐ Continuation ☐ Divisional ☐ Continuation-in-Part (CIP) of prior application No.: , filed . Prior application information: Examiner Group Art Unit: For CONTINUATION or DIVISIONAL APPS only: The entire disclosure of the prior application, from which an oath or declaration is supplied under Box 5b, is considered a part of the disclosure of the accompanying continuation or divisional application and is hereby incorporated by reference. The incorporation <u>can only</u> be relied upon when a portion has been inadvertently omitted from the submitted application parts.			
19. CORRESPONDENCE ADDRESS ☒ Customer Number or Bar Code Label 000027777 or ☐ Correspondence Address below Name: Philip S. Johnson, Esq. Address: Johnson & Johnson One Johnson & Johnson Plaza New Brunswick, NJ 08933-7003 USA			
20. TELEPHONE CONTACT Please direct all telephone calls or telefaxes to Timothy E. Tracy at: Telephone: (732) 524-8588 Fax: (732) 524-2808			
21. SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT REQUIRED			
NAME	Timothy E. Tracy Reg. No. 39,401		
SIGNATURE			
DATE	August 29, 2003		

76 ;

FEE TRANSMITTAL	<i>Complete if Known</i>	
	Application Number	
	Filing Date	
	First Named Inventor	Annamaria Devine Joseph
	Group Art Unit	
	Examiner Name	
	Attorney Docket Number	PPC-5015-USNP

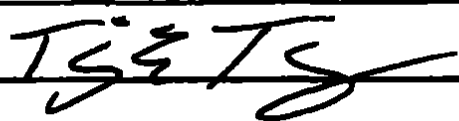
FEE CALCULATION

CLAIMS AS FILED

(1)	(2)	(3)	(4)	(5)
FOR:	NUMBER FILED	NUMBER EXTRA	RATE	BASIC FEE \$750.00
TOTAL CLAIMS	33 - 20 =	13	x 18.00	\$ 234.00
INDEPENDENT CLAIMS	4 - 3 =	1	x 84.00	\$ 84.00
MULTIPLE DEPENDENT CLAIMS	☐	N/A	\$280.00	
			TOTAL FEES	\$1,088.00

METHOD OF PAYMENT

- ☒ Please charge Deposit Account No. 10-0750/PPC-5015/TT in the amount of \$1,088.00. Three copies of this sheet are enclosed.
- ☒ The Commissioner is hereby authorized to charge any additional fees which may be required in connection with the filing of this communication, or credit any overpayment, to Account No. 10-0750/PPC-5015/TT. Three copies of this sheet are enclosed.

SUBMITTED BY:			<i>Complete (if applicable)</i>
Typed or Printed Name	Timothy E. Tracy		Reg. No. 38,401
Signature		Date: 08/29/2003	Deposit Account No. 10-0750

DOCKET NO. PPC-5015-USNP

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Annemarie Devine Joseph, Vincent P. Lasko and Gail O'Malley

For : DISPOSABLE ABSORBENT ARTICLES

Express Mail Certificate

"Express Mail" mailing number: EV 138495255 US

Date of Deposit: August 29, 2003

I hereby certify that this complete application, including specification pages, claims, abstract, informal drawing, and unexecuted Declaration and Power of Attorney, is being deposited with the United States Postal Service "Express Mail Post Office to Addressee" service under 37 CFR 1.10 on the date indicated above and is addressed to the Mail Stop Patent Application, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

Karen Hall-Morgan

(Typed or printed name of person mailing paper or fee)



(Signature of person mailing paper or fee)

DISPOSABLE ABSORBENT ARTICLES

BACKGROUND OF THE INVENTION

Disposable absorbent articles such as, pantliners, sanitary napkins, interlabial devices, adult incontinence devices, bandages, and diapers are well known in the art. These articles typically have a fluid permeable body-facing side and fluid impermeable garment facing side and may include an absorbent core for retaining fluids therebetween. Such absorbent structures have traditionally been made from readily available and relatively inexpensive materials, such as, cotton fibers, wood pulp fluff, cellulosic tissue, or wadding, or other absorbent materials. These materials have provided satisfactory absorbency of fluids both in terms of absorbency rate and overall absorbent capacity.

It has been found that absorbent articles that are thin and flexible tend to offer enhanced fit and comfort. One way to obtain thinness is to decrease the amount of material in the absorbent core. Unfortunately, absorbency often decreases if the absorbent core is made from less material. Another way to obtain thinness is to compress the material. Unfortunately, the absorbent article may also become stiffer as the layers are compressed.

Another problem that absorbent structures may suffer from is the tendency to collapse ("wet collapse") when wetted, thereby losing some of their void volume. Such structures may also allow absorbed fluid to be squeezed back out of the structure onto the user of the absorbent article. Furthermore, when such structures have absorbed fluid, they may present an uncomfortable wet feeling against the skin of the user.

More recently, superabsorbent polymer particles have been combined with the more traditional absorbent materials to provide structures with enhanced absorbency and retention, which may help to eliminate the problems of squeeze-out and wet surface feel. Replacement of traditional absorbent materials with superabsorbent polymer particles may also allow for absorbent products to be thinner while retaining the absorbent capacity of thicker, bulkier products. A drawback to superabsorbent polymer particles, however, is their relatively high cost compared to the more traditional absorbent materials.

Additionally, since superabsorbent polymer particles tend to swell as they absorb fluid, they may cause what is commonly known as gel-blocking. In other words, as fluid is absorbed by the particles of superabsorbent polymer, those particles swell and may form an occlusive layer of swollen superabsorbent particles. This occlusive layer then prevents the passage of additional fluid into the structure. Thus, the superabsorbent polymer particles must be properly placed within an absorbent structure to allow for this swelling and to most fully utilize their absorbent capacity. Generally, prevention of gel-blocking has been realized by mixing superabsorbent polymer particles with spacer materials, such as, absorbent or nonabsorbent fibers, or by placing the superabsorbent polymer particles toward the bottom of the absorbent structure, e.g., away from the body. However, although these methods of superabsorbent polymer placement may minimize gel-blocking, they do not effect the most efficient use of the superabsorbent polymer's absorbent capacity.

Latex binders have also been used in a variety of nonwoven applications to enhance the absorbent structure of the resultant absorbent

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article. For example, binders are used to bind together loosely assembled masses of fibers to form a self-sustaining web, which can then be used to produce rolled goods that form an absorbent core.

Such binders may include one that incorporates cross-linking monomers
5 into the latex. The cross-linking monomers may be chemically or thermally activated during processing of the web. Whatever the specific conditions, this cross-linking may help to improve the stability, absorption properties and/or durability of the nonwoven. See, for example, U.S. Pat. Pub. 2003/0039817 A1, U.S. Pat. Nos. 5,656,367; 6,433,245; and WO 02/060498 A2. Choosing
10 the appropriate binder for a specific property may lead to other undesirable attributes. For example, a specific binder may enhance the stability of the absorbent material but may result in an absorbent structure that is rough to the touch. Another binder may improve the fluff of an absorbent material but the binder may require an acidic pH to be activated and thus requiring additional
15 steps during processing.

Absorbent articles may include wicking layers in order to optimize fluid management and distribution. Wicking layers will typically have higher wicking capability than the absorbent material used in the absorbent structure and may be placed below the absorbent structure. For example, U.S. Pat. No.
20 5,454,800 discloses a tissue-wicking layer made from softwood and/or hardwood fibers, which can be creped, wet pressed or through-air dried. See also U.S. Pat. Nos. 5,873,869 and 6,492,574. Tissue may also be used to form the absorbent structure. For example, an absorbent article sold under the name of CAREFREE® Coverage Plus™ Pantiliner (sold by Personal Products

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Company, Division of McNeil-PPC, Inc., Skillman, NJ) contains a tissue layer placed between the absorbent core and the barrier.

What has been surprisingly found is that when combining an absorbent core and a tissue layer to form an absorbent structure, one can add a self-
5 crosslinking latex binder to achieve superior properties, such as, rapid fluid penetration, low rewet and drape stiffness that results in comfort and a desired thickness.

SUMMARY OF THE INVENTION

The present invention is directed to an absorbent structure comprising,
10 consisting of and/or consisting essentially of an absorbent core having an upper surface and a lower surface, a tissue layer having an upper surface and a lower surface, and a self-cross-linking binder, wherein the lower surface of the first absorbent core is juxtaposed to the upper surface of the tissue and the binder applied to the lower surface of the tissue layer such that the binder
15 penetrates through the tissue to the absorbent core.

The present invention is also directed to an absorbent article comprising, consisting of and/or consisting essentially of an absorbent structure having an absorbent core having an upper surface and a lower surface, a tissue layer having an upper surface and a lower surface and a self-
20 cross-linking binder, wherein the lower surface of the first absorbent core is juxtaposed to the upper surface of the tissue and the binder applied to the lower surface of the tissue layer such that the binder penetrates through the tissue to the absorbent core, and a barrier layer.

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The present invention is further directed to an absorbent article comprising, consisting of and/or consisting essentially of a cover having a body contacting surface and an absorbent structure contacting surface, an absorbent structure comprising an absorbent core having an upper surface and a lower surface, a tissue layer having an upper surface and a lower surface and a self-cross-linking binder, wherein the lower surface of the first nonwoven material is juxtaposed to the upper surface of the tissue and the binder applied to the lower surface of the tissue layer such that the binder penetrates through the tissue to the absorbent core; and, a barrier layer.

10 **BRIEF DESCRIPTION OF THE DRAWINGS**

FIG. 1 is a top plan view of an absorbent article according to the invention and

FIG. 2 is a cross-sectional view taken across line A-A of the embodiment shown in FIG. 1.

15 **DETAILED DESCRIPTION OF THE INVENTION**

This invention provides a disposable absorbent article including an absorbent structure containing an absorbent core, a tissue layer, and a self-cross-linking binder, where the binder is applied to the lower surface of the tissue layer such that the binder penetrates through the tissue to the nonwoven absorbent core. The absorbent structure provides the ability to control stiffness and increased watability and wicking. Additionally, the invention also provides a cover-transfer layer laminate.

Disposable absorbent articles, such as, pantliners, sanitary napkins, interlabial devices, adult incontinent devices, breast pads, shoe insoles,

bandages, and diapers are well known in the art. These articles typically have a fluid permeable body-facing side and fluid impermeable garment facing side. Additionally, such articles may include an absorbent core for retaining fluids therebetween.

5 Cover

Although not required, the absorbent article of the present invention may include a cover overlaying the absorbent material. The exterior of the cover would then form the body-facing surface of the absorbent article. As known by those skilled in the art, the cover may be formed from any fluid pervious
10 material that is generally compliant, soft feeling, and non-irritating to the user's skin and permits fluid to penetrate to the absorbent core, which retains the fluid. The cover generally functions to transport fluid away from the wearer into the absorbent article. In this manner, fluid and moisture are removed from contacting the wearer, thus making the wearer feel dry and comfortable. In
15 addition to transporting fluid, the cover may also absorb and/or retain fluid as well.

The cover can be made from any of the materials conventional for this type of use. Non-limiting examples of suitable materials that can be used as the cover layer 10 are woven and nonwoven fabrics formed from cellulose,
20 polyester, polypropylene, nylon, and/or rayon fibers or the cover layer may be an apertured thermo-plastic film and formed films. Other materials used in making covers include gauze or any known porous material with a suitable body contacting surface, including, but not limited to nonwoven webs, plastic nets, and the like. The cover 10 could also be made from a fibrous nonwoven
25 composite of bicomponent fibers and pulp fluff.

Bicomponent fibers are known in the art and are composed of two polymers with different melting points. At least a portion of the outer surface of each bicomponent fiber has the lower melting polymer. The two polymers may be arranged such that a cross-section of the fiber shows the two polymers in a side-by-side array. Alternatively, the polymers may be positioned in a so-called sheath/core arrangement, in which a core of higher melting polymer is surrounded by a sheath of lower melting polymer. A useful bicomponent fiber is a 3.0 denier, 1.5" long staple fiber made of a polyester core and a high density polyethylene sheath. Similar fibers (polyethylene sheath and polypropylene core) are available as Danaklon ES-C or ES Bico (Danaklon A/S, Varde Denmark). Pulp fibers may be obtained as IP "SUPERSOFT" ELM supplied by the International Paper Company (Memphis, Tennessee), "RAYFLOC" XJ-HM E-Type Cellulosic Fluff Pulp, (ITT Rayonier), or Koranas Vigorfluf-EN White (Korsnäs, Gävle, Finland).

The cover layer 10 may optionally be treated with surfactant to manipulate the hydrophobicity/hydrophilicity thereof to facilitate optimal fluid transport properties. The fibers or other materials that make up the cover layer should not collapse or lose their resiliency when subjected to body fluid. The fibers may be oriented by a carding process and thermally bonded via embossing. The fiber or filament can be single denier or multidenier.

The thickness of the cover 10 may vary from about 0.025 mm to about 5 mm, depending on the material chosen. The weight of the body-facing layer material should be between about 5 to about 150 grams per square meter (gsm).

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Generally, the optional cover is a single sheet of material having a width sufficient to form the body-facing surface of the absorbent article. The cover may be longer and wider than the absorbent core.

The cover 10 may be embossed with shapes within a given area. For example, a series or a number of features, e.g., circles, triangles, squares, lines, honeycomb, diamond, floral, etc. are embossed over the entire length and width of the outer surface of web. Each embossed feature has a major and minor axis extending therethrough, the major axis length being greater or equal to the minor axis length. The embossed features may be in a repetitive pattern.

In one embodiment of the invention, the cover layer 10 includes a spunlace nonwoven. In particular, the spunlace material may be made from about 0 to about 100% rayon and from about 0 to about 100% polyester. The spunlace material may also be made from about 10 to about 65% rayon and from about 35 to about 90% polyester may be used. Optionally, the material used for the body-facing layer may include binders, such as, thermoplastic binder fibers and latex binders.

Transfer layer

Optionally, the absorbent article of the present invention may include a transfer or distribution layer. The transfer layer or distribution layer, if present, is generally positioned beneath the cover 10 and the transfer layer usually
 5 directly contacts the absorbent core. If included, the transfer layer may be made of any known material that will take up fluid and then distribute and release it to an adjacent absorbent layer for storage. Transfer layers have a relatively open structure that allows for movement of fluid within the layer. Suitable materials for such transfer layers include fibrous webs, resilient foams,
 10 and the like.

The transfer layer provides a means of receiving body fluid from the fluid-pervious cover layer 10 and holding it until the absorbent core has an opportunity to absorb it. The transfer layer is, preferably, more dense than the cover layer 10 and has a larger proportion of smaller pores than does the cover
 15 layer 10. These attributes allow the transfer layer to contain body fluid and hold it away from the outer side of the cover layer 10, thereby preventing the fluid from re-wetting the cover layer 10 and its outer surface. However, the transfer layer is preferably not so dense as to prevent the passage of the fluid through the transfer layer and into the underlying absorbent core.

20 The transfer layer may include various materials, including, for example, fibrous webs, resilient foams, and the like. The transfer layer may include cellulose fibers such as from wood pulp, single component or bicomponent fibers that include thermoplastic materials (such as, polyester, polypropylene, polyethylene, among others) in fiber or other forms, rayon, organic binders
 25 (such as, copolymers of vinyl, acrylic and/or other monomers that may be

coated onto thermoplastic fibers or otherwise incorporated into the transfer layer) among other materials known to the art. The transfer layer may, for example, have a basis weight in a range from about 40 gsm to about 120 gsm, a thickness in a range from about 0.5 mm to about 4 mm, a density in a range
5 from about 0.03 g/cc to about 0.15 g/cc.

The mass of materials making up the transfer layer may be absorbent, although the materials themselves are not absorbent. Thus, transfer layers that are made of hydrophobic, nonabsorbent fibers may be able to accept large volumes of fluid into interfiber void spaces while the fibers themselves do not
10 absorb any significant quantities of fluid. Likewise, open-celled foam structures that are made from nonabsorbent materials may also absorb fluid into the cells of the foam. The walls of the cells, however, do not absorb any fluid. The cumulative spaces within the transfer layer, i.e., the interfiber void spaces in the fibrous transfer layer or the open cells in the foam transfer layer, function
15 much like a container to hold fluid.

Typically, transfer layer fibrous webs are made of resilient, nonabsorbent materials to provide void volume and to allow for free movement of fluid through the structure. Transfer layers that are made from webs of mostly absorbent fibers absorb the fluid as it enters the structure and do not
20 distribute it throughout the rest of the structure as efficiently as webs containing non-absorbent materials.

Transfer layers that are made from webs of mostly absorbent fibers absorb the fluid as it enters the structure and do not distribute it throughout the rest of the structure as efficiently as webs containing non-absorbent materials.
25 Preferred transfer-layer fibrous webs include nonabsorbent materials to provide

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void volume and to allow for free movement of fluid through the structure.

Examples of such materials include polypropylene, polyethylene, polyester, bicomponent materials, nylon and mixtures or combinations thereof. The transfer layer does not have to be apertured film; it can be any other nonwoven material, such as, foam or netting, which transports fluid and in combination with the cover, provides masking of the absorbent core. However, in one embodiment, the transfer layer is a 25 gsm apertured film made from polyethylene.

Cover/Transfer Layer Laminate

10 A laminate formed from the cover and transfer layers may be used. In an embodiment, the composite layer includes an embossed pattern on the outer surface. For example, flowers and rails depicted in U.S. Des. Pat. No. 439,057 are embossed after the composite is formed, which results in an embossed pattern having flowers, rails, and squares

15 In one embodiment of the present invention, the cover and transfer layers are joined to form a laminate 12. This two layer structure is particularly useful in personal care products such as feminine sanitary protection products having body-contacting, facing or cover layers, such as, transfer or fluid handling layers, or as other components of personal care products. The laminates of the invention have been found to exhibit improved fluid-handling properties when used in disposable absorbent articles, such as, for instance, feminine sanitary protection products.

The first layer 14, which is in one embodiment a body-contacting layer, may be made from any one of a variety of fluid permeable materials. As a body-contacting layer, the first layer 14 is preferably compliant, soft feeling, and

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non-irritating to a user's skin. The first layer 14 should further exhibit good
striethrough and a reduced tendency to rewet, permitting bodily discharges to
rapidly penetrate it and flow toward subsequent underlying layers, while not
allowing such discharges to flow back through the body-contacting layer to the
5 skin of the user.

The first layer 14 may be made from a wide range of materials including,
but not limited to, woven or knitted fabrics, nonwovens, apertured films, hydro-
formed films, porous foams, reticulated foams, reticulated thermoplastic films,
and thermoplastic scrims. In addition, the first layer 14 may be constructed
10 from a combination of one or more of the above materials, such as, a
composite layer of a nonwoven and apertured film.

Likewise, the second layer 24 may also be made from a variety of fluid
permeable materials including, but not limited to woven or knitted fabrics,
nonwovens, apertured films, hydro-formed films, porous foams, reticulated
15 foams, reticulated thermoplastic films, thermoplastic scrims, and combinations
thereof.

Nonwovens and apertured films are preferred for use as both the first
layer 14 and the second layer 24. Suitable nonwovens may be made from any
of a variety of fibers as known in the art. The fibers may vary in length from a
20 quarter of an inch or less to an inch and a half or more. It is preferred that
when using shorter fibers (including wood pulp fiber), the short fibers be
blended with longer fibers. The fibers may be any of the well known artificial,
natural or synthetic fibers, such as cotton, rayon, nylon, polyester, polyolefin, or
the like. The nonwoven may be formed by any of the various techniques

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known in the art, such as, carding, air laying, wet laying, melt-blowing, spunbonding and the like.

Apertured films are typically made from a starting film that is a thin, continuous, uninterrupted film of thermoplastic polymeric material. This film
5 may be vapor permeable or vapor impermeable; it may be embossed or unembossed; it may be corona-discharge treated on one or both of its major surfaces or it may be free of such corona-discharge treatment; it may be treated with a surface active agent after the film is formed by coating, spraying, or printing the surface active agent onto the film, or the surface active agent
10 may be incorporated as a blend into the thermoplastic polymeric material before the film is formed. The film may comprise any thermoplastic polymeric material including, but not limited to, polyolefins, such as, high density polyethylene, linear low density polyethylene, low density polyethylene, polypropylene; copolymers of olefins and vinyl monomers, such as, copolymers
15 of ethylene and vinyl acetate or vinyl chloride; polyamides; polyesters; polyvinyl alcohol and copolymers of olefins and acrylate monomers, such as, copolymers of ethylene and ethyl acrylate and ethylenemethacrylate. Films having mixtures of two or more of such polymeric materials may also be used. The machine direction (MD) and cross direction (CD) elongation of the starting
20 film to be apertured should be at least 100% as determined according to ASTM Test No. D-882 as performed on an Instron test apparatus with a jaw speed of 50 inches/minute (127 cm/minute). The thickness of the starting film is preferably uniform and may range from about 0.5 to about 5 mils or about 0.0005 inch (0.0013 cm) to about 0.005 inch (0.078 cm). Coextruded films can
25 be used, as can films that have been modified, e.g., by treatment with a

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surface-active agent. The starting film can be made by any known technique, such as casting, extrusion, or blowing.

Aperturing methods are known in the art. Typically, a starting film is placed onto the surface of a patterned support member. The film is subjected to a high fluid pressure differential while on the support member. The pressure differential of the fluid, which may be liquid or gaseous, causes the film to assume the surface pattern of the patterned support member. Portions of the film overlying apertures in the support member are ruptured by the fluid pressure differential to create an apertured film. A method of forming an apertured fibrous film is described in detail in commonly owned US Pat. No. 5,827,597, which is incorporated herein by reference.

In one embodiment, the first layer 14 and the second layer 24 contact one another substantially only through a plurality of spaced apart, disconnected macrofeatures. By this is meant the layers are joined to one another substantially only at macrofeatures. The macrofeatures may be located on the first layer or the second layer. When the macrofeatures are located on the first layer, they project in the direction of the second layer. When the macrofeatures are located on the second layer, they project in the direction of the first layer.

In another embodiment, the first layer 14 and the second layer 24 contact one another through macrofeatures and the surface of the film containing a plurality of apertures.

As used herein, the term "macrofeature" means a surface projection visible to the normal, unaided human eye at a perpendicular distance of about 300 mm between the eye and the surface. Preferably, the macrofeatures each

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have a maximum dimension of at least about 0.15 mm. More preferably, the macrofeatures each have a maximum dimension of at least about 0.305 mm. Most preferably, the macrofeatures each have a maximum dimension of at least about 0.50 mm. The macrofeatures are discrete and disconnected from one another. That is, if an imaginary plane, i.e., a first plane, were lowered onto the first surface of the three-dimensional layer, it would touch the layer at the top of the macrofeatures in multiple discrete areas separated from one another. It is not necessary for each and every macrofeature to touch the imaginary plane; rather, the first plane is thus defined by the uppermost portions of the macrofeatures, that is, those parts of the macrofeatures projecting the farthest from the second surface of the layer.

Where the layer with macrofeatures comprises an apertured film, the film has a first surface, a second surface, and a caliper defined by a first plane and a second plane. The film comprises a plurality of disconnected macrofeatures and a plurality of apertures. The apertures are defined by sidewalls that originate in the film's first surface and extend generally in the direction of the film's second surface to terminate in the second plane. The first surface of the film is coincident with the first plane at the disconnected macrofeatures.

Where the layer with macrofeatures comprises a nonwoven, the nonwoven has a first surface, a second surface, and a caliper defined by a first plane and a second plane. The nonwoven further comprises a plurality of disconnected macrofeatures, wherein the first surface of the nonwoven is coincident with the first plane at the disconnected macrofeatures.

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In one embodiment, the macrofeatures are arranged in a regular pattern relative to each other. Moreover, if the macrofeatures project from a layer that is an apertured film, the macrofeatures and the apertures are arranged in a regular configuration relative to each other on said layer. The apertures and
5 macrofeatures recur at fixed or uniform intervals with respect to one another. The spatial relationship between the apertures and the macrofeatures define a geometric pattern that is consistently repeated throughout the surface area of the film. The apertures and macrofeatures are arranged in a regular, defined pattern uniformly repeated throughout the film.

10 The apertures and macrofeatures may be arranged so that there are more apertures than macrofeatures, although the relative arrangement of apertures and macrofeatures is regular. The exact sizes and shapes of the apertures and macrofeatures are not critical, as long as the macrofeatures are large enough to be visible to a normal unaided human eye at a distance of
15 about 300 mm, and as long as the macrofeatures are discrete and disconnected from one another.

In one embodiment, the first layer 14 and the second layer 24 contact one another substantially only through the macrofeatures. That is, the macrofeatures function much like spacers to hold the first layer 14 away from
20 the surface of the second layer 24 except where they contact one another at the macrofeatures. Accordingly, fluid communication is provided around the macrofeatures. Fluid entering the space between the first layer and the second layer is directed around the macrofeatures. This advantageously distributes the fluid in the X-Y direction across the surface of the second layer.
25 As a consequence, the fluid is also more readily transported downward through

the structure in the Z direction since the X-Y spread provides more surface area through which the fluid can penetrate into the lower layers in the Z direction.

In another embodiment of the invention, the first layer 14 includes a
5 nonwoven, while the second layer 24 includes either a nonwoven or an apertured film. The macrofeatures may be located on either the first layer or the second layer.

In yet another embodiment, the first layer 14 includes an apertured film, while the second layer 24 includes either a nonwoven or an apertured film. In
10 this embodiment, the macrofeatures may also be located on either the first layer or the second layer. However, when the macrofeatures are present on the first layer, the macrofeatures on the first layer preferably contain apertures, i.e., apertured macrofeatures, and are disconnected from all other apertured macrofeatures on the first layer. Each apertured macrofeature is a discrete
15 physical element.

Such a three-dimensional apertured film is preferably formed by placing a thermoplastic film across the surface of an apertured support member with a pattern of macrofeatures and apertures. A stream of hot air is directed against the film to raise its temperature to cause it to be softened. A vacuum is then
20 applied to the film to cause it to conform to the shape of the surface of the support member. Portions of the film lying over the apertures in the support member are ruptured to create apertures in the film.

A suitable apertured support member for making these three-dimensional apertured films is a three-dimensional topographical support
25 member made by laser sculpting a workpiece. The workpiece comprises a thin

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tubular cylinder. The workpiece has non-processed surface areas and a laser sculpted center portion. A preferred workpiece for producing the support member of this invention is a thin-walled seamless tube of acetal, which has been relieved of all residual internal stresses. The workpiece has a wall
5 thickness of from about 1 to about 8 mm, more preferably from about 2.35 to about 6.5 mm. Exemplary workpieces for use in forming support members are one to six feet in diameter and have a length ranging from two to sixteen feet. However, these sizes are a matter of design choice. Other shapes and material compositions may be used for the workpiece, such as, acrylics,
10 urethanes, polyesters, high molecular weight polyethylene and other polymers that can be processed by a laser beam.

Methods of making an apertured film are disclosed in copending application USSN# __/____, TWO LAYER STRUCTURE FOR ABSORBENT ARTICLES, filed 08/29/2003 and is herein incorporated by
15 reference in its entirety.

The two-layer structure may advantageously be used as a cover/transfer layer of an absorbent article, such as, a sanitary napkin, pantliner, diaper, incontinence pad, or other similar product for absorbing exudates from the body, such as, menses, urine, feces, or sweat.

20 Absorbent Structure

The absorbent structure 70 of the present invention may contain an absorbent core 30 made from any known absorbent materials including, but not limited to, absorbent fibers, such as, cellulose fibers, including, but not limited to wood pulp, regenerated cellulose fibers, and cotton fibers, rayon

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fibers and the like; superabsorbent powders (SAP) like Sumitomo SA-70 or fibers (SAF), other naturally occurring absorbent materials, such as, sphagnum or peat moss; and other synthetic absorbent materials, such as, foams and the like. The absorbent core 30 may also include one or more of the following:

5 binders, such as, thermoplastic and latex, odor-controlling compounds, e.g., perfumes, EDTA (ethylenediaminetetraacetic acid), anti-microbial agents, wetting agents, wetness indicator material, materials for administering or delivering medicaments, such as encapsulated medicaments, and materials for maintaining skin moisture, such as encapsulated moisturizers.

10 For example, the absorbent core 30 may be made from material such as a fluffy batt cut from a relatively loose web of non-woven fibers having a relatively high absorptive capacity. While the absorbent core can have any shape or silhouette, it usually has an asymmetric configuration. The absorbent core 30 may also be made from material such as a fibrous batt having an

15 integral densified layer. In such a case, if a backsheet is desired, the absorbent core is positioned on the backsheet of the absorbent article so that the densified layer adjoins the backsheet. The densified layer has relatively higher wettability and liquid retentivity than the rest of the aforesaid batt and usually is formed by slightly moistening one surface of the batt and thereafter

20 compressing the moistened surface. The absorbent core 30 may also be formed from multiple layers, each having a different density such that the uppermost layer (closest to the body) is less dense than the outer (closest to the garment).

Additionally, the absorbent core 30 may be formed of absorbent material made from an offline-formed, homogeneously mixed, air-laid layer, roll good laminate or any other offline-formed absorbent composite.

The absorbent material of this invention may be made from a number of processes, including, but not limited to, airlaying, spunbonding, bonding and carding, meltblowing, and coforming. In one embodiment, the absorbent core is absorbent core air-laid pulp.

The air laid process is well known. A fibrous nonwoven composite made from Buckeye Foley Fluff™ (Memphis, TN) pulp, Trevira or KoSa T255 (Houston, TX) bicomponent fibers can be formed by the separation of bundles of short fibers entrained into an air stream. These fibers are deposited onto a forming screen, typically a horizontal or rotary drum, with the aid of a vacuum supply. There may be multiple forming sections (forming heads). The random web is bonded together via a hot-air activated latex-bonding adhesive, thermal bonding fibers, or combination as taught in, for example, U.S. Pat. Nos. 4,640,810 and 5,885,518.

The binder may be in the form of fibers, liquid or particles. Binders may aid in preventing wet collapse of the material. Suitable fiber binders that can be used with this invention include sheath core conjugate fibers available from KoSa Inc. (Houston, TX) under the designation T-255 and T-256, both with a polyolefin sheath, or T-254, which has a low-melt co-polyester sheath. Other fiber binders are known to those skilled in the art, and are available by many manufacturers such as Chisso and Fibervisions LLC of Wilmington, Del. A suitable liquid binder is KYMENE® 557LX available from Hercules, Inc. of Wilmington, Del. Other suitable liquid binders include ethylene vinyl acetate

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emulsion polymers sold by National Starch and Chemical Company (Bridgewater, N.J.) under the tradename DUR-O-SET® ELITE® series (Including ELITE® 33 and ELITE® 22). Other suitable binders are sold by Air Products Polymers and Chemicals under the name AIRFLEX®.

5 Some binders require catalysts, elevated temperatures, and/or acidic conditions in order to cross-link. Monomers derived from the reaction of a polymerizable amide with an aldehyde are conventionally used for such purposes. The binder can be applied to the top, bottom, or both of the layers at various add on levels. Different types of latex binders, e.g., high Tg, e.g.,
10 about +10 to about +35°C, or low Tg, e.g., about -3 to about -30°C, those binders having Tg between the high and low have differing degrees of stiffness and softness and may be applied independently or in combination depending on the desired properties of the resulting structure. See for example, U.S. Pat. Nos. 4,449,978 and 5,143,954. Other binders such as those disclosed in U.S.
15 Pat. No. 5,415,926, the entire disclosure incorporated herein in its entirety, are considered to be self-crosslinking. In these polymer systems, a reactive functional group allows the polymer to crosslink with itself, as well as chemically bond to the substrate such as pulp or tissue. The self-crosslinking reaction can be accelerated through the use of acid catalysts. An example of a
20 self-crosslinking binder includes "X-LINK 25-033A", a self-crosslinking vinyl acrylic copolymer emulsion having a high glass transition temperature, available from National Starch and Chemical Company (Bridgewater, NJ).

 The absorbent material may also be deposited onto a carrier substrate, e.g., tissue 40 or other air permeable composition to form an absorbent
25 structure 70. In this configuration, the layers are typically sprayed with a binder

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to stabilize the resulting absorbent structure 70. The structure 70 can further be pattern embossed to achieve aesthetics and/or functionality, e.g., wicking, densification, and the like. The resulting structure can be used as an absorbent structure into absorbent products, such as, sanitary napkins or
5 pantliners.

In one embodiment, the absorbent structure 70 contains an absorbent core 30 made from absorbent material and a tissue layer 40. In one embodiment, the tissue layer 40 is placed between the absorbent material and barrier layer 50. The tissue layer may be made from softwood and/or
10 hardwood fibers and can be creped, wet pressed, or through-air dried.

Other additives may be incorporated into the absorbent core, such as, surfactants, SAP, and SAF. These additives may provide additional benefits such as enhanced fluid penetration and increased fluid absorption. For example, in one embodiment, the absorbent layer is made of absorbent
15 material that is made from a layer of pulp. In another embodiment, SAP is mixed with the pulp to form an absorbent composite. This composite may be condensed to form a dense, thin layer. One example of such a material is Novathin® available from Rayonier, Jesup, GA.

SAP are particles that are capable of absorbing many times, at least 10,
20 more preferably 15, and still more preferably over 15, their weight in exudate, under a pressure of 0.5 psi. It should be noted that, in the context of the present invention, there is no restriction that the superabsorbent particles actually be particulate. This expression is intended to cover superabsorbent fibers, and other superabsorbent materials, whatever their form and shape.
25 These superabsorbent particles generally fall into three classes, namely starch

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graft copolymers, cross-linked carboxymethylcellulose derivatives and modified hydrophilic polyacrylates. Examples of such absorbent polymers are hydrolyzed starch-acrylonitrile copolymer graft copolymer, a neutralized starch-acrylic acid graft copolymer, a saponified acrylic acid ester-vinyl acetate
5 copolymer, a hydrolyzed acrylonitrile copolymer or acrylamide copolymer, a modified cross-linked polyvinyl alcohol, a neutralized self-cross-linking polyacrylic acid, a cross-linked polyacrylate salt, carboxylated cellulose, and a neutralized cross-linked isobutylene-maleic anhydride copolymer. In one
10 embodiment of the invention, the superabsorbent particle is a cross-linked polyacrylate salt.

The superabsorbent particles are incorporated into the absorbent core in an amount no greater than about 60% on a weight per weight basis. Preferably, they are incorporated in an amount between about 0% and about 25% on a weight per weight basis. More preferably, they are incorporated in
15 an amount between about 5% and about 20% on a weight per weight basis. For example, in the present context, 7% superabsorbent on "a weight per weight basis" is meant to mean 0.07 grams of superabsorbent particles per 1 gram of all components in the absorbent core.

The absorbent layer or core of the present invention may be constructed
20 according to conventional techniques, e.g., by air-laying a mixture of wood pulp fibers and superabsorbent material. All such conventional techniques are within the scope of the present invention. In one embodiment, an absorbent layer is as described in U.S. Pat. No. 5,866,242, which is herein incorporated by reference in its entirety.

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The ratio of SAP to wood pulp may be varied over a wide range. If desired, a layer or multilayer of drylaid type material can be used as the absorbent material to form the absorbent core. The absorbent material may be made of a SAP of the type used in the art and wood pulp fibers having the

5 desired density.

Any tissue known in the art may be used to produce an absorbent structure 70 of the present invention, e.g., air-laid tissue and a wet-laid tissue.

Barrier Layer

The barrier layer, also called backsheet 50, may be located adjacent to

10 the absorbent structure 70 and to the cover 10 in portions elsewhere. The barrier layer 50 of the present invention is a body fluid impervious material, which is at least substantially impermeable to liquids. Its exterior forms the garment-facing surface of the absorbent article. The backsheet 50 may be any thin, flexible, body-fluid impermeable material, such as, but not limited to, a

15 polymeric film, e.g., polyethylene, polypropylene, or cellophane, or a normally fluid pervious material that has been treated to be impervious, such as impregnated fluid repellent paper or non-woven material, including nonwoven fabric material, or a flexible foam, such as polyurethane or cross-linked polyethylene.

20 Optionally, the backsheet 50 may be breathable, i.e., permits vapor to transpire. Known materials for this purpose include nonwoven materials, monolithic and microporous films in which microporosity is created by, inter alia, stretching an oriented film. Single or multiple layers of permeable films, fabrics, melt-blown materials, and combinations thereof that provide a tortuous

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path, and/or whose surface characteristics provide a liquid surface repellent to the penetration of liquids may also be used to provide a breathable backsheet.

Bonding Methods

The layers of the absorbent article may be, but not necessarily, bonded, e.g., glued or adhered, to the adjacent layer. For example, the underside of the cover 10 may be adhered to the topside of the absorbent structure 70. The underside of the absorbent structure 70 may be adhered to the topside of the barrier layer 50. Any methods known in the art, such as, fusion bonding, adhesive attachment, or by any other securement means can be used to secure the individual layers together to form the final absorbent article. Included within such methods are coembossing, thermobonding, mechanical bonding, and the like. Fusion bonding includes heat bonding, ultrasonic bonding, and the like.

Adhesive is typically used to attach the layers into a single absorbent article. For example, in one embodiment, the body facing cover 10 is attached to the barrier layer 50 with adhesive HL 1491 available from H.B Fuller and Company (St. Paul, MN). The adhesive may be applied in any method.

Adhesive may include pressure sensitive adhesive that is applied as strips, swirls, or waves, and the like. As used herein, the term pressure-sensitive adhesive refers to any releasable adhesive or releasable tenacious means. Suitable adhesive compositions, include, for example, water-based pressure-sensitive adhesives such as acrylate adhesives. Alternatively, the adhesive composition may include adhesives based on the following: emulsion or solvent-borne adhesives of natural or synthetic polyisoprene, styrene-butadiene, or polyacrylate, vinyl acetate copolymer or combinations thereof;

hot melt adhesives based on suitable block copolymers - suitable block copolymers for use in the invention include linear or radial co-polymer structures having the formula (A-B)_x wherein block A is a polyvinylarene block, block B is a poly(monoalkenyl) block, x denotes the number of polymeric arms, and wherein x is an integer greater than or equal to one. Suitable block A polyvinylarenes include, but are not limited to Polystyrene, Polyalpha-methylstyrene, Polyvinyltoluene, and combinations thereof. Suitable Block B poly(monoalkenyl) blocks include, but are not limited to conjugated diene elastomers such as for example polybutadiene or polyisoprene or hydrogenated elastomers such as ethylene butylene or ethylene propylene or polyisobutylene, or combinations thereof. Commercial examples of these types of block copolymers include KratonTM elastomers from Shell Chemical Company, VectorTM elastomers from Dexco, SolpreneTM from Enichem Elastomers and StereonTM from Firestone Tire & Rubber Co.; hot melt adhesive based on olefin polymers and copolymers where in the olefin polymer is a terpolymer of ethylene and a comonomers, such as vinyl acetate, acrylic acid, methacrylic acid, ethyl acrylate, methyl acrylate, n-butyl acrylate vinyl silane or maleic anhydride. Commercial examples of these types of polymers include Ateva(polymers from AT plastics), Nucrel(polymers from DuPont), Escor (from Exxon Chemical).

The absorbent article of the present invention may be applied to the crotch of a garment by placing the garment-facing surface against the inside surface of the crotch of the garment. Various methods of attaching absorbent articles may be used. For example, chemical means, e.g., adhesive, and mechanical attachment means, e.g., clips, laces, ties, and interlocking devices,

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e.g., snaps, buttons, VELCRO (Velcro USA, Inc., Manchester, NH), zipper, and the like are examples of the various options available to the artisan.

Adhesive may be applied to the garment-facing side of the absorbent article. The positioning adhesive may be any adhesive known in the art. As a
5 non-limiting example, pressure sensitive adhesive strips, swirls, or waves may be applied to help maintain the absorbent article in place. As used herein, the term pressure-sensitive adhesive refers to any releasable adhesive, or releasable tenacious means. Suitable adhesive compositions, include, for example, water-based pressure-sensitive adhesives, such as acrylate
10 adhesives. Alternatively, the adhesive composition may include rapid setting thermoplastic "hot melt," rubber adhesives, two-sided adhesive tape, and the like.

Where positioning adhesive is used on the garment-facing side of the barrier layer 50, a release strip may be applied to protect the adhesive on the
15 absorbent article prior to attaching the absorbent article to the crotch. The release strip can be formed from any suitable sheet-like material that adheres with sufficient tenacity to the adhesive to remain in place prior to use but which can be readily removed when the absorbent article is to be used. Optionally, a coating may be applied to release strip to improve the ease of removability of
20 the release strip from the adhesive. Any coating capable of achieving this result may be used, e.g., silicone.

Wings

Wings, also called, among other things, flaps or tabs, may also be part of the absorbent article of the present invention. Wings and their use in
25 sanitary protection articles are described in U.S. Patent No. 4,687,478 to Van

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Tilburg; U.S. Patent No. 4,589,876 also to Van Tilburg, U.S. Patent No. 4,900,320 to McCoy, and U.S. Patent No. 4,608,047 to Mattingly. The disclosures of these patents are incorporated herein by reference in their entirety.

- 5 As disclosed in the above documents, wings are, generally speaking, flexible and configured to be folded over the edges of the underwear so that the wings are disposed between the edges of the underwear.

Miscellaneous

- Any or all of the cover, absorbent layer, transfer layer, backsheet layer, and adhesive layers may be colored. Such coloring includes, but is not limited to, white, black, red, yellow, blue, orange, green, violet, and mixtures thereof. Color may be imparted according to the present invention through dyeing, pigmentation, and printing. Colorants used according to the present invention include dyes and inorganic and organic pigments. The dyes include, but are not limited to, anthraquinone dyes (Solvent Red 111, Disperse Violet 1, Solvent Blue 56, and Solvent Green 3), Xanthene dyes (Solvent Green 4, Acid Red 52, Basic Red 1, and Solvent Orange 63), azine dyes (Jet black), and the like.

- Inorganic pigments include, but are not limited to, titanium dioxide (white), carbon black (black), iron oxides (red, yellow, and brown), chromium oxide (green), ferric ammonium ferrocyanide (blue), and the like.

Organic pigments include, but are not limited to diarylide yellow AAOA (Pigment Yellow 12), diarylide yellow AAOT (Pigment Yellow 14), phthalocyanine blue (Pigment Blue 15), lithol red (Pigment Red 49:1), Red Lake C (Pigment Red), and the like.

The absorbent article may be packaged as unwrapped absorbent articles within a carton, box or bag. The consumer withdraws the ready-to-use article as needed. The absorbent article may also be individually packaged (each absorbent article encased within an overwrap).

5 Also contemplated herein include asymmetrical and symmetrical articles having parallel longitudinal edges, dog bone- or peanut-shaped, circular, oval and the like.

An absorbent article of the present invention may be used with conventional underwear or may be shaped to conform to thong garments. As
10 used herein, the term thong includes, but is not limited to, thong underwear, thong swimming suit bottom, G-strings, Rio cut underwear, Rio cut swimming suit bottom, Brazilian cut underwear, Brazilian cut swimming suit bottom, and any other garment that exposes the buttocks, having a narrow strip of fabric or a cord that passes between the thighs supported by a waistband, a waist cord,
15 belt or the garment itself. The absorbent article may include other known materials, layers, and additives, such as, foam, net-like material, perfumes, medicaments or pharmaceutical agents, moisturizers, odor control agents, and the like. The absorbent article can optionally be embossed with decorative designs.

20 From the foregoing description, one skilled in the art can ascertain the essential characteristics of this invention, and without departing from the spirit and scope thereof, can make various changes and modifications. Embodiments set forth by way of illustration are not intended as limitations on the variations possible in practicing the present invention.

EXAMPLES

Example 1.

A layered composite made from Buckeye Foley Fluff™ (Memphis, TN) pulp, Trevira or KoSa T255 (Houston, TX) bicomponent fibers, and 10% superabsorbent powders were deposited on a Cellu Type 3024 (Cellu Tissue Holdings (East Hartford, CT) tissue carrier. The binder was sprayed on the pulp side and the tissue side of the absorbent structure using a Nordson spray-type nozzle. The binder used was a self-cross-linking vinyl acrylic copolymer emulsion, disclosed in U.S. Pat. No. 5,415,926, available from National Starch & Chemical, Bridgewater, NJ, as X-LINK 25-033A. The binder was added to the tissue side at a load of 5% by wt and to the pulp side at a load of 3% by wt to give a total load of about 8% by weight resulting absorbent structure of binder.

	<u>Control DX239</u>	<u>BUC5B</u>
Basis Weight	162gsm	162gsm
Thickness (mm)	2.16 avg. n=5	2.3 avg. n=5
Fluid Penetration (secs.)	6.3 avg. n=5	4.5 avg. n=5
Rewet (grams)	0.25 avg. n=5	0.14 avg. n=5
Drape Stiffness (cm) EDANA 50.5-99	17 avg. n=3	>20 avg. n=3

Table 1

As the table above indicates, the BUC5B sample exhibited several advantageous properties over the control sample, including, increased bulk at the same basis weight, increased fluid penetration time, lower fluid rewet

values, and increased stiffness. The overall product would have increased bulk and better fluid management. The increased stiffness aids in the antibunching attribute of the product.

Thickness measurements were made using an Ames Digital Thickness gauge. The gauge has a foot of 2.86 cm or 1.125 inches in diameter and also a dead weight of 56.7 g or 2 ounces. This results in a thickness measured under a pressure of .12 psig. The foot was raised and a sample was centered underneath. The foot is slowly lowered to rest on the sample. Readout was stabilized for approximately 5 seconds before reading was recorded.

Penetration times and rewets were determined by using a 1/2 inch plexiglass orifice plate with 1/2 inch diameter opening for dispensing the test fluid and a disposable syringe capable of dispensing 1cc of artificial synthetic menstrual fluid testing fluid. The plexiglass orifice was placed onto the center portion of the samples. With a digital stopwatch accurate to .01 seconds, the time required when the test fluid touches the surface of the sample and until last of the fluid is absorbed was recorded.

For determining the rewet or wet back, a series of 15 ply Whatman # 1 filter papers were weighed and the weight accurate to about 0.01 grams was recorded. A layered composite was made and stained as in the above penetration test procedure. The single weighed filter paper was placed on top of the stain area and then a support-plate plexiglass, 10x3x.2", was placed on top of the filter paper. A 2 kilogram weight was placed on top of support plate for 15 seconds. After 15 seconds, the weight, support plate and filter paper were removed. The filter paper with fluid on it was reweighed and recorded.

The dry filter paper weight was subtracted from the wet filter paper weight.

This value is the Rewet or Wet Back value.

Drape values were determined by using a one-inch precision cut rectangular strip that was supported on a horizontal platform with the long axis of strip parallel to the long axis of the platform. The strip was advanced in the direction of its length so that an increasing part overhangs and bends down under its own weight. The overhang was free on one end and fixed at the other due to the pressure applied by the slide on the part of strip that was still on the platform. When the leading edge of the strip has reached the incline at an angle of 41.5 degrees below the horizontal, the reading (in cm) was recorded. This procedure was repeated on other side of material and average of both readings to obtain the final value.

Example 2.

An additional sample was produced in the same manner as described in Example 1, except this sample had a different binder sprayed on the pulp side of the absorbent structure. This binder was a non-cross-linking acrylic copolymer emulsion binder available from National Starch and Chemical NACRYLIC™ 4401. The binder sprayed on the tissue side of the absorbent structure was the same as used in Example 1. The amounts of binder sprayed on the pulp and the tissue side of the absorbent structure were identical. The addition of the 4401 binder provides softness, drape and heat-sealability to the absorbent structure. The resulting sample had equivalent properties as in Example 1, but also had a softer feel on the top of the absorbent core. Additionally, the heat-sealability of the 4401 binder aids in the attachment of a cover to the absorbent structure and embossment of the finished product.

What is claimed is:

1. An absorbent structure comprising:
 - a) an absorbent core having an upper surface and a lower surface,
 - b) a tissue layer having an upper surface and a lower surface, and
 - c) a self-cross-linking binder, wherein the lower surface of the first absorbent core is juxtaposed to the upper surface of the tissue and the binder applied to the lower surface of the tissue layer such that the binder penetrates through the tissue to the absorbent core.
2. An absorbent structure of claim 1, wherein the self-cross-linking binder is a self-cross-linking vinyl acrylic copolymer.
3. An absorbent structure of claim 1, wherein the self-cross-linking binder has a glass transition temperature of at least about +10°C.
4. An absorbent article comprising an absorbent structure of claim 1.
5. An absorbent structure of claim 1, wherein the self-cross-linking binder is applied to the upper surface of the absorbent core.
6. An absorbent structure of claim 1, further comprising a non-cross-linking binder wherein the non-cross-linking binder is applied to upper surface of the absorbent core.

7. An absorbent structure of claim 1, further comprising superabsorbent polymer.

8. An absorbent structure of claim 6, wherein the non-cross-linking binder has a glass transition temperature between the range of about -3 to about -30°C .

9. An absorbent structure of claim 8, wherein the self-cross-linking binder has a glass transition temperature of about $+20^{\circ}\text{C}$ and the non-cross-linking binder has a glass transition temperature of about -23°C .

10. An absorbent article comprising

a) an absorbent structure comprising an absorbent core having an upper surface and a lower surface, a tissue layer having an upper surface and a lower surface and a self-cross-linking binder, wherein the lower surface of the first absorbent core is juxtaposed to the upper surface of the tissue and the binder applied to the lower surface of the tissue layer such that the binder penetrates through the tissue to the absorbent core and

b) a barrier layer.

11. An absorbent article of claim 10, further comprising a non-cross-linking binder applied to the upper surface of the absorbent core.

12. An absorbent article of claim 10, further comprising a cover layer having an upper body-facing surface and a lower surface, the lower surface of the cover placed in juxtaposition to the upper surface of the absorbent core.

13. An absorbent article of claim 11 further comprising a cover layer having an upper body-facing surface and a lower surface, the lower surface of the cover placed in juxtaposition to the upper surface of the absorbent core.

14. An absorbent article of claim 10, wherein the cover layer comprises a laminate.

15. An absorbent article of claim 14, wherein the laminate comprises a nonwoven layer and an apertured film layer.

16. An absorbent article of claim 15, wherein the apertured film comprises raised macrofeatures.

17. An absorbent article of claim 16, where the nonwoven layer contacts the macrofeatures of the apertured film in the laminate.

18. An absorbent article of claim 10, wherein the self-cross-linking binder is a self-cross-linking vinyl acrylic copolymer.

19. An absorbent article of claim 10, wherein the self-cross-linking binder has a glass transition temperature of at least about +10°C.

20. An absorbent article of claim 11, wherein the self-cross-linking binder is about 5% by weight and the non-cross-linking binder is about 3% by weight of the absorbent structure.

21. An absorbent article of claim 10, wherein the self-cross-linking binder is applied to the upper surface of the absorbent core.

22. An absorbent article of claim 10, further comprising a non-cross-linking binder wherein the non-cross-linking binder is applied to upper surface of the absorbent core.

23. An absorbent article of claim 10, further comprising superabsorbent polymer.

24. An absorbent article of claim 22, wherein the non-cross-linking binder has a glass transition temperature between the range of about -3 to about -30 °C.

25. An absorbent article of claim 22, wherein the self-cross-linking binder has a glass transition temperature of about +20 °C and the non-cross-linking binder has a glass transition temperature of about -23 °C.

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26. An absorbent article comprising
- a) a cover having a body contacting surface and an absorbent structure contacting surface;
 - b) an absorbent structure comprising an absorbent core having an upper surface and a lower surface, a tissue layer having an upper surface and a lower surface and a self-cross-linking binder, wherein the lower surface of the first nonwoven material is juxtaposed to the upper surface of the tissue and the binder applied to the lower surface of the tissue layer such that the binder penetrates through the tissue to the absorbent core; and
 - c) a barrier layer.
27. An absorbent article of claim 26, further comprising a non-cross-linking binder applied to the upper surface of the absorbent core.
28. An absorbent article of claim 28, further comprising superabsorbent polymer.
29. An absorbent article of claim 27, further comprising superabsorbent polymer.
30. An absorbent article of claim 28, wherein the cover layer comprises a laminate.

31. An absorbent article of claim 27, wherein the cover layer comprises a laminate.

32. An absorbent article of claim 28, wherein the cover layer comprises a laminate.

33. An absorbent article comprising

a) a cover having a body-contacting surface and an absorbent structure contacting surface;

b) an absorbent structure comprising a absorbent core having an upper surface and a lower surface, a tissue layer having an upper surface and a lower surface, a self-cross-linking binder and a non-cross-linking binder, wherein the lower surface of the first nonwoven material is juxtaposed to the upper surface of the tissue, the self-cross-linking binder applied to the lower surface of the tissue layer such that the binder penetrates through the tissue to the absorbent core and the non-cross-linking binder applied to the upper surface of the absorbent core; and

c) a barrier layer.

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ABSTRACT

Absorbent articles incorporating an absorbent structure that includes an absorbent core having an upper surface and a lower surface, a tissue layer having an upper surface and a lower surface, and a self-cross-linking binder, wherein the lower surface of the first absorbent core is juxtaposed to the upper surface of the tissue and the binder applied to the lower surface of the tissue layer such that the binder penetrates through the tissue to the absorbent core.

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PTO/SB/01 (10-03)
Approved for use through 10/31/2002. OMB 0581-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no person is required to respond to a collection of information unless it carries a valid OMB control number.

DECLARATION AND POWER OF ATTORNEY FOR UTILITY OR DESIGN PATENT APPLICATION (37 CFR 1.63) ☒ Declaration Submitted with Initial Filing ☐ Declaration Submitted after Initial Filing (Surcharge (37 CFR 1.16(e)) required)	Attorney Docket Number	PPC-5015-USNP			
	First Named Inventor	Annemarie Devine Joseph			
	COMPLETE IF KNOWN				
	Application Number				
	Filing Date				
	Group Art Unit				
	Examiner Name				
As a below named inventor, I hereby declare that: My residence, mailing address, and citizenship are as stated below next to my name. I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled: DISPOSABLE ABSORBENT ARTICLES (Title of the invention) the specification of which ☒ is attached hereto OR ☐ was filed on (MM/DD/YYYY) as United States Application Number or PCT International Application Number and was amended on (MM/DD/YYYY) I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment specifically referred to above. I acknowledge the duty to disclose information which is material to patentability as defined in 37 CFR 1.56, including for continuation-in-part applications, material information which became available between the filing date of the prior application and the national or PCT international filing date of the continuation-in-part application. I hereby claim foreign priority benefits under 35 U.S.C. 119(a)-(d) or 365(b) of any foreign application(s) for patent or inventor's certificate, or 365(a) of any PCT international application which designated at least one country other than the United States of America, listed below and have also identified below, by checking the box, any foreign application for patent or inventor's certificate, or any PCT international application having a filing date before that of the application on which priority is claimed.					
Prior Foreign plication Number(s)	Country	Foreign Filing Date (MM/DD/YYYY)	Priority Not Claimed	Certified Copy Attached? YES NO	
			☐ ☐ ☐ ☐	☐ ☐ ☐ ☐	☐ ☐ ☐ ☐
☐ Additional foreign application numbers are listed on a supplemental priority data sheet PTO/SB/02B attached hereto:					

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DECLARATION - Utility or Design Patent Application		
I hereby claim the benefit under 35 U.S.C. 119(e) of any United States provisional application(s) listed below.		
Application Number(s)	Filing Date (MM/DD/YYYY)	☐ Additional provisional application numbers are listed on a supplemental priority data sheet PTO/SB/02B attached hereto.
I hereby claim the benefit under Title 35, United States Code, §120 of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code, §112, I acknowledge the duty to disclose material information as defined in Title 37, Code of Federal Regulations, §1.58(a) which occurred between the filing date of the prior application and the national or PCT international filing date of this application:		
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I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under 18 U.S.C. 1001 and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.			
NAME OF SOLE OR FIRST INVENTOR:		☐ A petition has been filed for this unsigned inventor	
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Mailing Address 3216 Ravens Crest Drive			
City Plainboro	State NJ	ZIP 08538	Country USA
I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under 18 U.S.C. 1001 and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.			
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City New Egypt	State NJ	ZIP 08533	Country USA
I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under 18 U.S.C. 1001 and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.			
NAME OF THIRD INVENTOR:		☐ A petition has been filed for this unsigned inventor	
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City Brielle	State NJ	ZIP 08730	Country USA

2° EXAMEN DE FORMA, PATENTE DE INVENCION

Radicación N° **04-84674**

Folio 121

Concepto Técnico N° **699**

Clasificación Internacional de Patentes: **A61F 13/15**

Practicado el examen de acuerdo a lo establecido en el Art. 38 de la Decisión 486, se determinó que esta solicitud de **Patente**:

- SI ☒ NO ☐ Contiene un resumen de la invención (Art. 26-e)
- SI ☒ NO ☐ Contiene el título o nombre de la invención (Art. 27-d)
- SI ☒ NO ☐ Contiene la descripción de la invención (Art. 26-b)
- SI ☒ NO ☐ NO ES APLICABLE ☐ Contiene los dibujos necesarios para comprender la invención (Art. 26-d)
- SI ☒ NO ☐ Contiene una o más reivindicaciones (Art. 26-c)
- SI ☐ NO ☐ NO ES APLICABLE ☒ Han sido desarrollados los productos a partir de recursos genéticos o de sus productos derivados de los que cualquiera de los Países Miembros es país de origen (Art. 26-h)
- SI ☐ NO ☐ NO ES APLICABLE ☒ Los productos y o procedimientos han sido obtenidos o desarrollados a partir de los conocimientos tradicionales de las comunidades indígenas, afro americanas, o locales de los Países Miembros, de acuerdo a lo establecido en la Decisión 391 y sus modificaciones y reglamentaciones vigentes (Art. 26-i)
- SI ☐ NO ☒ La invención se refiere a un producto relativo a un material biológico (Art. 26-j)
- SI ☒ NO ☐ NO ES APLICABLE ☐ La prioridad coincide con la materia reivindicada.
- SI ☒ NO ☐ **CUMPLE LOS REQUISITOS TÉCNICOS**

OBSERVACIONES Y OTROS: SI ☐ NO ☐ Ver hoja(s) anexa(s)

EXAMINADOR TÉCNICO: 202051

Bogotá D C, septiembre 5 de 2005.

2020
Bogotá D C

Doctor(a):
JIMENA ESCOBAR URIBE.
Apoderado (a)

REFERENCIA:	Radicación N°	04-84674
	Trámite	002
	Evento	001
	Actuación	416
	Oficio N°	854
	Folios	001

Teniendo en cuenta que la solicitud de privilegio de patente que se tramita bajo el expediente indicado en la referencia, reúne los requisitos de forma establecidos en los artículos 26 y 27 de la Decisión 486, de la Comisión de la Comunidad Andina, y en las demás disposiciones vigentes sobre la materia, se envía el extracto de la solicitud a la oficina de comunicaciones para efecto de su publicación en la Gaceta de Propiedad Industrial, conforme lo establece el artículo 40 de la Decisión 486.

Cúmplase
Dado en Bogotá D C, **12 SET. 2005**


ALIX CARMENZA CÉSPEDES DE VERGEL
Jefe División de Nuevas Creaciones.

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