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Señores

SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO
DIVISION DE NUEVAS CREACIONES

E. S. D.

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1029

SE
Radicacion: 1008992 0222204 Folio: 9
Fecha (05): 25-12-05 16:18:41
Tramite: 1 011 PCT-PRONT / 079 FASE NACI 538 P.TICRON
Dependencia: 000 DIVISION DE NUEVAS CREACIONES

REF.: Expediente No. 03 108.992 solicitud de Patente FASE NACIONAL
Corresp. a la Solicitud Internacional PCT/US02/18284
a nombre de: **KIMBERLY – CLARK WORLDWIDE, INC.**
Titulada: **ALMOHADILLA LABIAL QUE TIENE UN APÉNDICE**

JUAN PABLO CADENA SARMIENTO, vecino de Bogotá, portador de la tarjeta profesional No. 57492 del C.S.J., obrando como apoderado sustituto de la Sociedad **KIMBERLY – CLARK WORLDWIDE, INC.**; según lo acredita el documento de poder anexo; ratifico la solicitud presentada por el doctor Ramiro Castro Duque, ASUMO el conocimiento del expediente en referencia y de acuerdo con el Artículo 44 de la Decisión 486 de la Comisión de la Comunidad Andina, me permito solicitar que se examine si la invención contenida en la solicitud en referencia es patentable.

De acuerdo con lo anterior, me permito anexar el recibo oficial de caja No. 05-57,939 por valor de \$186.000.

De la Señora Jefe atentamente,


JUAN PABLO CADENA SARMIENTO
C.C. No. 80.410.337 de Usaquén
T.P. No.57492 del C.S.J.
Cra 7 No. 18-56 Piso 9

Diciembre 05, 2005
CHP/MEV/hsr

2180
183

SUBPREFECTURA USMILU
Radicación : 800176089-2
Fecha OFC : 2005-12-06 16:18:41
Trámite : 011 PCT-PATENT 379 FREE NDL 500 PETICION
Dependencia : 2-22 DIVISION DE NUEVAS CREACIONES

NIT : 800176089-2

RECIBO OFICIAL DE CAJA : 5 - 57,939
FECHA : AGOSTO 3 DE 2005

***** CONSIGNACION *****

DEPOSITANTE	TIPO PAGO	BANCO	CUENTA	No. PAGO	FECHA PGO	Vr. PAGO
BRIGARD & CASTRO LTDA	CONSIGNACION	BANCO POPULAR	050-00110-6	34158526	03/08/2005	25,590,000.00

***** CONCEPTO *****

CANT.	RENTISTICO	CONCEPTO	TOTAL CONCEPTO
1	50005-01-01 SOLICITUDES	114 PTC CAP-II EXAMEN DE PATENTABILIDAD	186,000.00
		TOTAL :	\$ 186,000.00

SON: CIENTO OCHENTA Y SEIS MIL PESOS

RESPONSABLE : ZDP

RECIBO DE CAJA APLICADO AL ASUNTO No.

THE STATE OF WISCONSIN

Office of the
Secretary of State

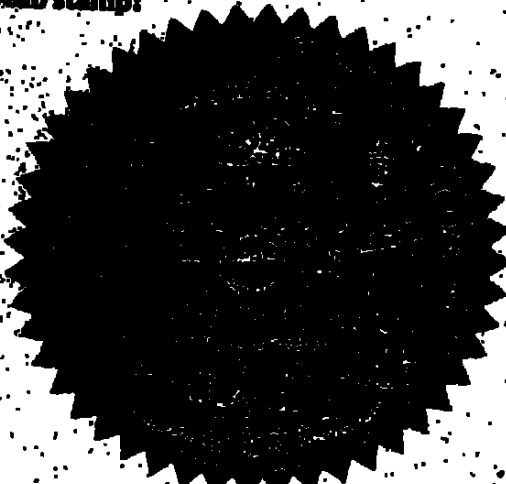
APOSTILLE

(Convention de La Haye du 5 octobre 1961)

1. Country: United States of America.
2. This public document has been signed by Cheryl R Gorges
3. acting in the capacity of Notary Public, State of Wisconsin.
4. bears the seal/stamp of Notary Public, State of Wisconsin

CERTIFIED

5. at Madison, Wisconsin
6. August 16, 2002
7. by the Secretary of State of Wisconsin
8. No. 73756
9. Seal/stamp:
10. Signature:



Douglas La Follette
DOUGLAS LA FOLLETTE
Secretary of State



PODER

Yo (nosotros)

domiciliado(s) en

Nombro(amos) a: **RAMIRO CASTRO DUQUE y/o JUAN PABLO CADENA SARMIENTO y/o BEATRIZ JARAMILLO S.** de Santafé de Bogotá, Colombia, apoderados verdaderos y legales con poder especial, amplio y suficiente, para recabar de las oficinas y autoridades colombianas administrativas, judiciales y de policía, en cualquier instancia o recurso, la obtención de patentes de invención, registros de marcas, diseños industriales, modelos de utilidad, depósitos de nombres comerciales y enseñas, registros de derechos de autor y contratos sobre los mismos, obtención de certificados de obtentor de variedades vegetales, así como sus prórrogas, renovaciones, anotaciones de traspaso, cambios de nombre y/o domicilio; elaborar, tramitar y registrar contratos de licencia y licencias de cualesquiera clases; intervenir como demandante o como demandado en cualquier instancia y recurso ante cualquier juez, corporación, funcionario público o autoridad en acciones judiciales, administrativas y de policía tales como: oposiciones al registro de marcas; acciones de caducidad, cancelación y nulidad; acciones reivindicatorias, acciones derivadas de la obtención o explotación de licencias; acciones de competencia desleal; demandas penales; acciones de indemnización de perjuicios, reclamos y observaciones a solicitudes de patentes, diseños industriales, modelos de utilidad, en el ejercicio de medidas cautelares y en otras acciones o medidas similares.

A este efecto, lo(s) faculto(amos) para elevar solicitudes, formular descripciones, enmiendas, protestas, declaraciones, oposiciones, cancelaciones, nulidades, apelaciones y reclamos; pagar impuestos, cuotas y gravámenes prescritos por la ley; renunciar o desistír a derechos concedidos o en curso de concesión; recibir toda clase de documentos y valores, dando el descargo respectivo, y, en general, para dar ante dichas autoridades todos los pasos necesarios al efecto indicado y tomar todas las medidas que creyeren conducentes al resguardo de mis (nuestros) intereses, con todas las demás facultades regales necesarias.

Este poder comprende la facultad de ratificar o

POWER OF ATTORNEY

I (We) Kimberly-Clark Worldwide, Inc.

domiciled in 401 N. Lake Street, Neenah, Wisconsin, 54956, USA.

Hereby appoint **RAMIRO CASTRO DUQUE** and/or **JUAN PABLO CADENA SARMIENTO** and/or **BEATRIZ JARAMILLO S.** of Santafé de Bogotá, Colombia, my (our) true and lawful attorneys with special, ample and sufficient power to obtain from the Colombian administrative, judicial and police offices and authorities, in any instance, privileges of patents of invention, registration of trademarks, industrial designs and utility models; registration of commercial names and emblems, registration of copyright and contracts related thereto, certificates of obtainment of vegetable varieties, as well as extensions, renewals and recordal of assignments and changes of name and domicile related to the above; to prepare, prosecute and register licenses of any kind; to act as plaintiff or defendant in any instance or recourse, and before any judge, corporation, public official or authority in judicial, administrative and police actions, such as: oppositions to the registration of trademarks; caducity, cancellation and nullity actions; claim actions derived from the obtaining or exploration of licenses, action of unfair competition; penal demands, actions of indemnities for damages; claims or observations on patent applications, models, industrial designs and utility models; in the exercise of preventive measures; and in other actions or similar proceedings.

To that effect they are hereby empowered to file applications, formulate descriptions, amendments, protests, declarations, oppositions, cancellations, nullifies, appeals and claims; to pay taxes, quotas and assessments prescribed by law, renounce or waive the rights granted or in the process of granting; to receive all kind of documents and valuables, giving the respective release of receipt, and, in general, to take before said authorities the necessary steps to such effect, and any measures that they may deem pertinent to the safeguard of my (our) interests with all the other necessary legal powers.

This power includes the faculty to ratify or confirm desist, settle and compromise on my (our) behalf and



**CERTIFICADO NOTARIAL
(SOCIEDAD)**

Hoy de de personalmente compareció ante mí

a quien conozco, y de quien me consta que
firmó el anterior documents, debidamente
juramentado declaró y dijo que él es

de

Sociedad legalmente constituida para un
período de duración que aún no ha terminado;
que el declarante está autorizado por dicha
compañía para conferir este poder; que el selló
estampado por él al pie de tal poder, en
nombre y representación de la expresada
compañía, es el sello oficial de ella; y que el
objeto para el cual se confiere este
instrumento está comprendido dentro del de la
sociedad.

El suscrito Notario hace constar que tuvo a la
vista las pruebas de la existencia de la
sociedad.

Estado de
con fecha

y que quien confiere el presente poder es su
representante.

Notario Público (sello)

**NOTARIAL CERTIFICATE
(CORPORATION)**

On this day of of personally appeared before
me Nancy Lee Carter

to me known, and known to me to be the
person who signed the foregoing instrument
who being by me duly sworn did depose and
say that he (she) is the Assistant Secretary

of Kimberly-Clark-Worldwide, Inc.

Which is legally constituted for a term not yet
expired, that deponent is authorized by said
Company to confer this Power of Attorney:
that the seal affixed hereunto by the deponent
in the name and on behalf of said Corporation
is the corporate seal thereof; and that the
purpose for which this instrument is granted
is included within the corporate purpose of
company.

The undersigned Notary Public attests that he
has seen the documents that prove the
existence of the company.

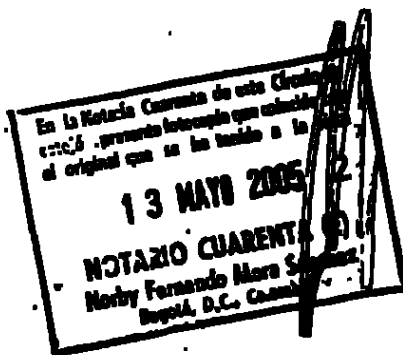
State of Wisconsin
under date of

and that he (she) who grants the
power of attorney is its Representative.

Cheryl R. Gorges
Notary Public (Seal)

My commission expires September 11, 2005

NOTARIAL CERTIFICATE



184
107

TRADUCCIÓN SIMPLE AL ESPAÑOL de la apostilla que vienen junto con el poder dado por Kimberly-Clark Worldwide, Inc, domiciliada en 401 N. Lake Street, Neenah, Wisconsin, 54956 Estados Unidos de América a Ramiro Castro Duque y/o Juan Pablo Cadena Sarmiento y/o Beatriz Jaramillo S. domiciliados en la Carrera 7 # 16-56 P. 9, Bogotá.

APOSTILLE

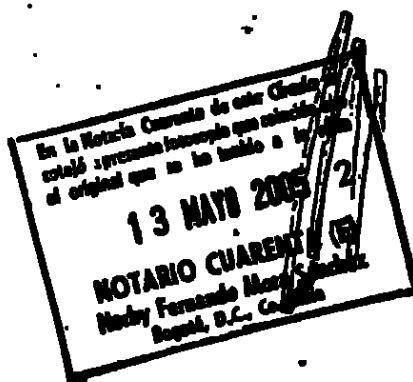
(Convención de La Haya del 5 de Octubre de 1961)

1. País: ESTADOS UNIDOS DE AMERICA
2. Este documento público ha sido firmado por Cheryl R. Gorges
3. actuando en capacidad de Notario Público, Estado de Wisconsin
4. lleva el sello/timbre del Notario Público, Estado de Wisconsin

CERTIFICADO

5. en Madison, Wisconsin
6. Agosto 6 de 2002
7. por Secretario de Estado de Wisconsin
8. No. 73756
9. Sello/Timbre
10. Firma

Douglas La Follette (Firma)
DOUGLAS LA FOLLETTE



185
100

TRADUCCION OFICIAL NO.236/2005-.

TRADUCCION DE LOS SELLOS QUE SE ENCUENTRAN EN EL PODER OTORGADO POR KIMBERLY-CLARK WORLDWIDE, INC., DOMICILIADA EN 401 N. LAKE STREET, NEENAH, WISCONSIN 54956, ESTADOS UNIDOS DE AMERICA, A LOS DOCTORES RAMIRO CASTRO DUQUE Y/O JUAN PABLO CADENA SARMIENTO Y/O BEATRIZ JARAMILLO S.

OTORGADO Y FIRMADO EN NEENAH, WISCONSIN, EL DIA 6 DE AGOSTO DE 2002

FIRMADO: NANCY LEE CARTER, SECRETARIO ASISTENTE
KIMBERLY-CLARK WORLDWIDE, INC.

CERTIFICADO NOTARIAL (SOCIEDAD)

HOY PERSONALMENTE COMPARECIO ANTE MI NANCY LEE CARTER, A QUIEN CONOZCO Y DE QUIEN ME CONSTA QUE FIRMO EL ANTERIOR DOCUMENTO, DEBIDAMENTE JURAMENTADO DECLARO Y DIJO QUE EL ES EL SECRETARIO ASISTENTE DE KIMBERLY-CLARK WORLDWIDE, INC., SOCIEDAD LEGALMENTE CONSTITUIDA PARA UN PERIODO DE DURACIÓN QUE AUN NO HA TERMINADO; QUE EL DECLARANTE ESTA AUTORIZADO POR DICHA COMPAÑIA PARA CONFERIR ESTE PODER; QUE EL SELLO ESTAMPADO POR EL AL PIE DE TAL PODER, EN NOMBRE Y REPRESENTACIÓN DE LA EXPRESADA COMPAÑIA, ES EL SELLO OFICIAL DE ELLA; Y QUE EL OBJETO PARA EL CUAL SE CONFIERE ESTE INSTRUMENTO ESTA COMPRENDIDO DENTRO DEL DE LA SOCIEDAD.

EL SUSCRITO NOTARIO HACE CONSTAR QUE TUVO A LA VISTA LAS PRUEBAS DE LA EXISTENCIA DE LA SOCIEDAD.

Y QUE QUIEN CONFIERE EL PRESENTE PODER ES SU REPRESENTANTE.

FIRMADO: CHERYL R. GORGES, NOTARIO PUBLICO, CON COMISIÓN
HASTA EL 11 DE SEPTIEMBRE DE 2005



APOSTILLA

CONVENIO DE LA HAYA DEL 5 DE OCTUBRE DE 1961

1. PAIS: ESTADOS UNIDOS DE AMERICA - ESTADO DE WISCONSIN
EL PRESENTE DOCUMENTO PUBLICO
2. HA SIDO FIRMADO POR: CHERYL R. GORGES .
3. ACTUANDO EN SU CAPACIDAD DE: NOTARIO PUBLICO
4. LLEVA EL SELLO DE: NOTARIO PUBLICO, ESTADO DE WISCONSIN.

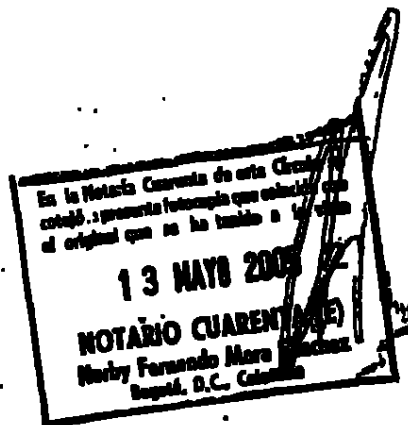
CERTIFICADO

5. EN: MADISON, WISCONSIN
6. EL: 16 DE AGOSTO DE 2002
7. POR: SECRETARIO DE ESTADO, ESTADO DE WISCONSIN
8. BAJO EL NO.: 73756
9. SELLO: ESTADO DE WISCONSIN
10. FIRMADO: DOUGLAS LA FOLLETTE, SECRETARIO DE ESTADO.

LA TRADUCTORA OFICIAL



HELENA URIBE DE LEMOINE





GAVIRI

ORGANIZACION ELECTORAL
REGISTRADURIA NACIONAL DEL ESTADO CIVIL

REGISTRO CIVIL DE DEFUNCION

Indicativo
Serial 5562241

Datos de la oficina de registro							
Clase de oficina:	Registraduría	Notaría	☒	Consulado	Corregimiento	Insp. de Policía	Código 9995
País - Departamento - Municipio - Corregimiento o Inspección de Policía							
COLOMBIA CUNDINAMARCA BOGOTA D.C.				NOTARIA 32.			

Datos del inscrito	
Apellidos y nombres completos	
CASTRO DUQUE RAMIRO	
Documento de identificación (Clase y número)	Sexo (en Letras)
C.C. No. 170322 DE BOGOTA	MASCULINO

Datos de la defunción			
Lugar de la Defunción: País - Departamento - Municipio - Corregimiento o Inspección de Policía			
COLOMBIA CUNDINAMARCA BOGOTA D.C.			
Fecha de la defunción		Hora	Número de certificado de defunción
Año 2004	Mes 10	Día 30 04:10 PM	A- 2094375.
Presunción de muerte			
Jurado que profiere la sentencia		Fecha de la sentencia	
-----		Año Mes Día	
Documento presentado		Nombre y cargo del funcionario	
Autorización judicial ☐	Certificado Médico ☒	ANDRES DIAZ CAMPOS.- R. M. No. 79982662	

Datos del denunciante	
Apellidos y nombres completos	
EDGAR DAVID REGINO II.	
Documento de identificación (Clase y número)	Firma
C.C. No. 15.030.154 DE LORICA/ CORDOBA	

Primer testigo	
Apellidos y nombres completos	

Documento de identificación (Clase y número)	Firma
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Segundo testigo	
Apellidos y nombres completos	

Documento de identificación (Clase y número)	Firma
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Fecha de inscripción		Nombre y firma del funcionario que inscribe	
Año 2004	Mes 11	Día 02	BLANCA DEL PILAR RESTREPO NOTARIA

PADRES: ALFONSO CASTRO		ESPACIO PARA NOTAS
MERCEDES DUQUE.		

ORIGINAL PARA LA OFICINA DE REGISTRO

NOTARIA 32

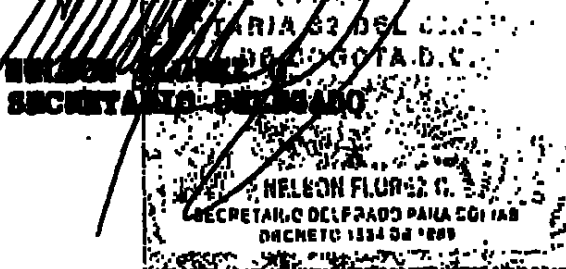
DEL CIRCULO DE SANTA FE DE BOGOTA, D.C.

Germán Eleázar Moreho L.
Notario

COMO SECRETARIO DELEGADO DE LA NOTARIA TREINTA Y DOS (32) DEL
CIRCULO DE BOGOTA

CERTIFICO, QUE:

La presente acta es fiel copia del original tomada del registro
civil de defunciones serial indicativo número: **556224**
que expido en la ciudad de Bogotá D.C. hoy: **05 NOV 2004**



DIVISION DE NUEVAS CREACIONES

RADICACIÓN EXPEDIENTE No. 03-106992

**EL EXTRACTO DE LA PRESENTE SOLICITUD DE PATENTE DE INVENCION -
PCT FUE PUBLICADO EN LA GACETA DE PROPIEDAD INDUSTRIAL No 554,
DE FECHA 29 DE JULIO DE 2005, EL TERMINO HABIL SEÑALADO POR LA
LEY EXPIRA EL 25 DE OCTUBRE DE 2005.**

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

SE PRESENTARON OPOSICIONES POR PARTE DE TERCEROS.

SI _____ NO ☒ _____

**SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO
DIVISIÓN DE NUEVAS CREACIONES**

2020

Bogotá, D. C., 29 de Diciembre de 2006

Doctor

JUAN PABLO CADENA SARMIENTO

Representante **KIMBERLY – CLARK WORLDWIDE, INC.**

ASUNTO

Radicación No. 03-106992
Trámite 002
Evento 001
Actuación 430
Oficio 0427
Folios 045

Como resultado del examen de fondo, realizado con fundamento en el artículo 45 de la Decisión 486 de la Comisión de la Comunidad Andina, se le comunica

1) Documentos estudiados:

- a) Para el presente estudio se tendrán en cuenta el capítulo descriptivo, comprendido en los folios 34 a 87 de la solicitud en estudio.
- b) Para el presente estudio se tendrá en cuenta el capítulo reivindicatorio que comprende 26 reivindicaciones en los folios 88 a 93 de la solicitud en estudio.
- c) Conforme lo establece los artículos 9, 10 y 11 de la Decisión 486 de la Comisión de la Comunidad Andina, la presente solicitud en estudio fue presentada el 4 de diciembre de 2003, y en el momento de la radicación se presentó como solicitud PCT FASE NACIONAL y donde SI se reclamó prioridad de las primeras solicitudes presentadas en Estados Unidos US 60/297001, US10/036981 y US 10/036970.

2) Objeto de la Invención

- a) Las reivindicaciones 1 a 26 de la solicitud en estudio se refieren a un artículo absorbente que comprende un absorbente, el artículo absorbente está configurado para colocarse dentro del vestíbulo de una usuaria hembra, el artículo absorbente además tiene un eje longitudinal principal, un eje transversal principal, una superficie de cara al cuerpo, una superficie opuesta a la superficie de cara al cuerpo, una longitud, un ancho, un grosor, los lados longitudinales espaciados y separados primero y segundo y por lo menos un apéndice que se extiende hacia afuera desde por lo menos un lado longitudinal.
- b) El anterior producto busca mejorar las propiedades de artículos absorbentes desechables.

- c) Según la Clasificación Internacional de Patentes, la codificación para esta solicitud corresponde a: A 61 F 13/15

3) Claridad de la Solicitud

- a) El artículo 28 de la Decisión 486 de la Comisión de la Comunidad Andina de Naciones establece

"La descripción deberá divulgar la invención de manera suficientemente clara y completa para su comprensión y para que una persona capacitada en la materia técnica correspondiente pueda ejecutarla"

La descripción no es clara toda vez que el documento no presenta los dibujos que deben acompañar a la solicitud en Colombia. Es necesario anexarlos.

- b) El artículo 30 de la Decisión 486 de la Comisión de la Comunidad Andina establece que

"Las reivindicaciones definirán la materia que se desea proteger mediante la patente. Deben ser claras y concisas y estar enteramente sustentadas por la descripción. Las reivindicaciones podrán ser independientes o dependientes. Una reivindicación será independiente cuando defina la materia que se desea proteger sin referencia a otra reivindicación anterior. Una reivindicación será dependiente cuando defina la materia que se desea proteger refiriéndose a una reivindicación anterior. Una reivindicación será dependiente cuando defina la materia que se desea proteger refiriéndose a una reivindicación anterior.- Una reivindicación que se refiera a dos o más reivindicaciones anteriores se considerará reivindicación dependiente múltiple."

El capítulo reivindicatorio no es claro toda vez que no se precisa la materia sobre la cual se solicita protección. Como se explicará en el punto 4), la presente solicitud no posee unidad de invención, por lo que no está definida la materia sobre la cual se solicita protección.

De acuerdo a lo anterior, el capítulo reivindicatorio no cumple con el requisito de claridad de acuerdo a lo establecido en el Art. 30 de la Decisión 486.

4) Evaluación de la Unidad de Invención

El artículo 25 de la Decisión 486 de la Comisión de la Comunidad Andina establece

"La solicitud de patente sólo podrá comprender una invención o un grupo de invenciones relacionadas entre sí, de manera que conformen un único concepto inventivo"

La presente solicitud carece de unidad de invención toda vez que configura DOS diferentes objetos. La definición de la materia que caracteriza a cada una de las reivindicaciones independientes 1 y 14 es muy diferente entre sí. Esto permite afirmar que no se trata del mismo producto. Todo el problema radica en configurar

varias reivindicaciones independientes con materia diferente. El solicitante debe establecer una sola reivindicación independiente dirigida al producto en la forma más simple de la solicitud de invención. Partiendo de allí establecer reivindicaciones dependientes que amplíen esa forma más simple hasta su forma más compleja.

De acuerdo a lo anterior, la presente solicitud no cumple con el requisito de unidad de invención de acuerdo al Art. 25 de la Decisión 486. De continuar con el impedimento, esta oficina procederá a estudiar solo el primer grupo de invenciones que conformen un único concepto inventivo.

5) Determinación del Estado de la Técnica

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

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

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

Consultadas las bases de datos, los informes presentados en virtud del tratado PCT y los archivos con que cuenta la entidad, especialmente bajo las clasificaciones A 61 F 13/15 y las más cercanas a ellas, se encontró que antes del 8 de junio de 2001 (fecha para determinar el estado de la técnica) habían sido publicados los documentos que se enumeran en la siguiente tabla los cuales se relacionan con artículos absorbentes desechables.

De acuerdo con lo establecido en el artículo 16 se determinó el estado de la técnica y se encontró el siguiente antecedente:

Nº	Documento	Título	Fecha de Publicación
D1	US 4 595 392	Interlabial pad	1986.06.17
D2	US 2 682 875	Catamenial tampon	1954.07.06
D3	US 2 328 795	Catamenial device	1943.09.07
D4	GB 2 306 888	An absorbent article	1996.11.05
D5	US 6 007 528	Sanitary napkin having stabilized members in the end regions	1999.12.28
D6	US 4 589 876	Sanitary napkin	1986.05.20
D7	WO 9829078	Thin comfortable interlabial absorbent structure	1998.07.09

6) Evaluación de los requisitos de patentabilidad

El artículo 14 de la Decisión 486 de la Comisión de la Comunidad Andina establece:

"Los Países Miembros otorgarán patentes para las invenciones, sean de producto o procedimiento, en todos los campos de la tecnología, siempre que sean nuevas tengan nivel inventivo y sean susceptibles de aplicación industrial".

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

a) Evaluación de la novedad y el del Nivel Inventivo

El art. 16 de la Decisión 486 de la Comisión de la Comunidad Andina establece:

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

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

El art. 18 de la Decisión 486 de la Comisión de la Comunidad Andina establece:

"Se considerará que una invención tiene nivel inventivo, si para una persona del oficio normalmente versada en el arte en la materia técnica correspondiente, esa invención no hubiese resultado obvia ni se hubiese derivado de manera evidente del estado de la técnica".

Todas las referencias citadas señalan artículos absorbentes desechables, que en esencia están configurados para colocarse dentro del vestíbulo de una usuaria, y además tienen un eje longitudinal principal, un eje transversal principal, una superficie de cara al cuerpo, una superficie opuesta a la superficie de cara al cuerpo, una longitud, un ancho, un grosor, los lados longitudinales espaciados y separados primero y segundo y por lo menos un apéndice que se extiende hacia afuera desde por lo menos un lado longitudinal. Como se observa, la presente solicitud se encuentra anticipada por las referencias citadas. Por consiguiente, la presente solicitud no tendría los requisitos necesarios para que se le concediera el privilegio solicitado.

b) Resumen

En conclusión los requisitos de patentabilidad de la presente solicitud se podrían ver afectados así:

Nº	Documento	Relvindicaciones afectadas	Requisito que afecta
D1	US 4 595 392	1 - 26	Novedad
			Nivel Inventivo
D2	US 2 682 875	1 - 26	Novedad
			Nivel inventivo
D3	US 2 328 795	1 - 26	Novedad
			Nivel Inventivo
D4	GB 2 306 888	1 - 26	Novedad
			Nivel Inventivo
D5	US 6 007 528	1 - 26	Novedad
			Nivel inventivo
D6	US 4 589 876	1 - 26	Novedad
			Nivel inventivo
D7	WO 9829078	1 - 26	Novedad
			Nivel Inventivo

7) Notificación

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

Notifíquese el presente oficio conforme a lo dispuesto por el numeral 5.2, literal e) del capítulo quinto del título primero de la Circular Única N° 10 de 2001


ALIX CARMENZA CÉSPEDES DE VERGEL
Jefe División de Nuevas Creaciones

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

Concepto Técnico N°	EXAMINADOR TÉCNICO	EXAMINADOR JURÍDICO
2051	Código No. 202003	Código No.

4,595,392

INTERNAL PAD

FIELD OF THE INVENTION

This invention relates to a sanitary appliance and particularly an absorbent pad designed for menstrual use.

BACKGROUND OF THE INVENTION

Traditional sanitary hygiene protection generally comes from two sources, i.e., either sanitary napkins or tampons. Both of these sources suffer from certain disadvantages.

The sanitary napkins are designed to be worn externally and as such they are susceptible to failure due to misplacement or sliding of the napkin during use. Because sanitary napkins are to be worn externally, they may be visible under certain types of clothing. Also, they are relatively bulky and therefore require a certain amount of storage.

Tampons, on the other hand, are relatively smaller in size because they are designed to be worn internally. Tampons also, however, suffer from certain disadvantages. Depending upon the particular tampon, there are difficulties associated with insertion and removal as well as the psychological requirement faced by certain women over vaginal insertion.

Several attempts have been made in the past to produce a so-called absorbent pad which would combine the best features of tampons and napkins while avoiding at least some of the disadvantages associated with each. Absorbent pads are designed to be positioned between the vaginal area and adjacent to the vaginal orifice. While several patents have issued in this area, they have been unsuccessful for a variety of reasons ranging from difficulty of construction to discomfort and inconvenience in use. Improving the definition of absorbent pads heretofore, a list of relevant U.S. patents are:

- U.S. Pat. No. 36,137, Reiter
- U.S. Pat. No. 34,381, Frazier
- U.S. Pat. No. 271,626, Goff
- U.S. Pat. No. 1,251,533, Lohry
- U.S. Pat. No. 1,132,720, Schmitt
- U.S. Pat. No. 1,335,760, Fahn
- U.S. Pat. No. 1,331,532, Strangman
- U.S. Pat. No. 1,662,544, Milton
- U.S. Pat. No. 1,666,561, Brown
- U.S. Pat. No. 1,676,594, Milton
- U.S. Pat. No. 1,682,372, Brown
- U.S. Pat. No. 1,771,532, Leopold
- U.S. Pat. No. 1,971,640, Dugoff
- U.S. Pat. No. 1,933,080, Reiter
- U.S. Pat. No. 1,406,680, Hilde et al
- U.S. Pat. No. 1,406,224, Phelps
- U.S. Pat. No. 1,406,235, Hurman
- U.S. Pat. No. 1,328,480, Hilde
- U.S. Pat. No. 1,669,351, Strangman
- U.S. Pat. No. 1,726,277, Strangman
- Reichl No. 754,461, Neuman
- Reichl No. 625,357, Ryan
- U.S. Pat. No. 1,936,372, Dushinger
- U.S. Pat. No. 1,683,373, Strangman
- U.S. Pat. No. 1,683,562, Strangman
- U.S. Pat. No. 1,432,476, Strangman
- U.S. Pat. No. 1,175,541, Strangman
- U.S. Pat. No. 1,194,588, Strangman

The three points of most relevance to the subject invention are believed to be U.S. Pat. Nos. 1,961,572; 1,771,532; and 1,662,572. U.S. Pat. No. 1,771,532 teaches the longitudinal folding of a pad blank along a central axis while U.S. Pat. Nos. 1,961,572 and 1,662,572 disclose a pad having a central control area.

SUMMARY OF THE INVENTION

According to this invention, an absorbent pad is provided having an elongated applanately-shaped portion positioned in the longitudinal center and extending substantially along the length of the pad and flaps extending laterally from the bottom edge of each side of the applanately shaped central member. The applanately shaped central member is formed to allow for the insertion of at least one finger so that the absorbent pad can be properly guided and positioned. While the flaps on either side of the central member provide a shield during insertion and positioning.

DETAILED DESCRIPTION OF THE INVENTION AND DRAWINGS

The invention may more readily be understood by reference to the drawings in which:

FIG. 1 is a plan view of a pad blank for the total pad of this invention;

FIG. 2 is a perspective view taken along the line 2-2 of FIG. 1; and

FIG. 3 is a perspective view illustrating the pad in situ ready to be inserted.

In a preferred embodiment, an anatomically shaped absorbent pad blank 1 as shown in FIG. 1. The pad blank has an elongated core 2 made of any suitable absorbent material (the particular choice of material not being part of the inventive concept of this invention) and a field 3 of porous tissue over 1. As shown in FIGS. 1 and 2, the pad 1 is folded along line 1 with the laterally folded flaps 4 on each side of the central member 2. The flaps 4 are folded to form a shield 5 extending from the central member 2 to the outer edges of the pad 1. The flaps 4 are folded to form a shield 5 extending from the central member 2 to the outer edges of the pad 1. The flaps 4 are folded to form a shield 5 extending from the central member 2 to the outer edges of the pad 1.

As illustrated in FIG. 2, a field 3 of porous tissue 3 can be applied to the bottom of the absorbent pad 1. Though this is not essential to the pad of this invention, this field 3 can be readily positioned in the area used for vaginal insertion. It is also possible to cut the field 3 on the pad blank 1 prior to shaping and if this is done the field 3 will follow the bottom of the pad during shaping.

An outline in the field 3 may be provided if desired.

What is claimed is:

1. A method for making an absorbent pad comprising:

(a) providing a pad blank having a field 3 of porous tissue, a bottom surface, side edges, a central member 2 extending along the length of the pad and flaps 4 extending laterally from the bottom edge of each side of the central member 2.

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padding means overlying the field 3 of porous tissue of said absorbent layer.

(b) folding said pad blank along said center line into applanately shaped halves with said field 3 of porous tissue being folded over said center line, a folded edge thereby being defined along said center line; and

(c) folding said halves together at two function points which are each spaced from both said folded edge and said side edges so as to form a shield, further, applanately shaped, centrally disposed portion designed to engage the field 3 of the woman, said portion extending generally along and adjacent said folded edge, and a pair of lateral flaps extending away from the shield applanately portion, wherein the leading and following edges of said shield portion are applanately shaped, said two function points being sufficiently spaced from each other to provide a finger receiving channel between said flaps and

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extending into said shield portion for use in inserting said pad.

2. The method for making an absorbent pad of claim 1 further including the step of attaching a field 3 of porous tissue to the bottom surface of said lateral flaps, said field 3 extending inward for providing a finger to

3. The method for making an absorbent pad of claim 1 wherein said pad blank is elongated in shape.

4. The method for making an absorbent pad of claim 1 wherein only said two function points are used and comprise said flaps.

5. The product made according to claim 1.

6. The product made according to claim 2.

7. The product made according to claim 3.

8. The product made according to claim 4.

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action and removal. The ends 54 are each related as at 53, thereby holding the pad 12 and the liner 14 tightly in place so as to hold the pad 12 against its tendency to unfold.

The groove-structure lampoon 13 is placed in turn in the manner illustrated in Figs. 1 and 4 of the drawing, whereby the female pointed regions are clearly illustrated. Vertical passages or apertures 55 are in articles 53 completely covered by the lampoon 13 through direct engagement of the latter with the hole of the lampoon 13, thereby holding the article 54, it being noted in Fig. 1 of the drawing, that the lampoon 13 is disposed in groove-structure relationship to the article 53 with the longitudinal axis of the lampoon 13 substantially intersecting the longitudinal axis of the vagina cavity 53.

It is contemplated that the entire lampoon 13, with the exception only of the extension of each 54, be enclosed by the external female member 53 and particularly between the hole 53 and 54 of the vagina. As shown in Fig. 4 of the drawing, hole 53-54 completely surrounds the lampoon 13 through direct engagement of the lampoon 13 in direct relationship to the article 53. Pad 12 is therefore, in a position to receive and closely the structural changes from cavity 53 and the hole 53 in groove-structure relationship to the cavity from the vagina between said hole 53-54 of structural changes collected by pad 12, particularly within covered portion-like structure 55 on opposite sides of the hole 53. By virtue of the fact that the pad 12 tends to spring outwardly in its normal position, the structure 55 will cause the lower ends of the hole 53-54 as well as the passage 55 or cavity 53 and thereby prevent movement of the structural changes toward opening 55 between the proximal ends of hole 53-54. The inter-connection of the lampoon 13 with the hole 53-54 of the vagina, aided by the natural tendency of said walls, serve to cause the lampoon to enter therein and in place, as illustrated.

The extended ends 54 not only facilitate the insertion and removal of the lampoon 13, but indicate the tendency of change by virtue of increasing weight and downward through apertures within the vagina covering 55 in its direct engagement with the structural member forming the hole 54 of the pad 12.

Perhaps the most advantageous feature of the invention consisting from the provision of ends 54 is that both of the related portions 53 are in effect supported or held by the hole 53-54 between which ends 54 extend. The hole 53-54 is placed in the manner illustrated, substantially intersecting the vertical axis of the vagina cavity 53, thereby preventing the hole 53-54 from being tilted or tilted.

By virtue of the provision of hole 53, the entire pad 12 will become completely supported by the tendency of change. Thus it tends to lift the pad 12 through the hole 53 and prevent the tendency of the hole 53 to downwardly through the center of pad 12 which hole 53 would cause the hole 53 to be tilted or tilted.

Having thus described the invention what is claimed as new and desired to be secured by Letters Patent is:

1. A subcutaneous lampoon adapted for insertion between the hole of the vagina for sole support thereby in substantially covering relationship to the vagina cavity, said lampoon comprising an elongated pad provided with a downwardly-dis-

posed, longitudinally elongated, transversely V-shaped groove extending longitudinally throughout the length of the pad, and a transversely elongated, longitudinally straight uppermost face, substantially intersecting with the longitudinal axis of the pad throughout the length of said face, and provided in length with the pad, and provided with a pair of opposed, parallel edges meeting with the groove a flange within the groove, said flange for holding the hole within the groove, said pad being appreciably more abundant than the hole.

2. A subcutaneous lampoon adapted for insertion between the hole of the vagina for sole support thereby in substantially covering relationship to the vagina cavity, said lampoon comprising an elongated pad provided with a downwardly-disposed, longitudinally straight, transversely V-shaped groove extending longitudinally throughout the length of the pad, and a transversely elongated, longitudinally straight uppermost face, substantially intersecting with the longitudinal axis of the pad throughout the length of said face, and provided in length with the pad, and provided with a pair of opposed, parallel edges meeting with the groove, a flange within the groove, said flange for holding the hole within the groove, said pad being appreciably more abundant than the hole.

3. A subcutaneous lampoon adapted for insertion between the hole of the vagina for sole support thereby in substantially covering relationship to the vagina cavity, said lampoon comprising an elongated pad provided with a downwardly-disposed, longitudinally straight, transversely V-shaped groove extending longitudinally throughout the length of the pad, and a transversely elongated, longitudinally straight uppermost face, substantially intersecting with the longitudinal axis of the pad throughout the length of said face, and provided in length with the pad, and provided with a pair of opposed, parallel edges meeting with the groove, a flange within the groove, said flange for holding the hole within the groove, said pad being appreciably more abundant than the hole.

4. A subcutaneous lampoon adapted for insertion between the hole of the vagina for sole support thereby in substantially covering relationship to the vagina cavity, said lampoon comprising an elongated pad provided with a downwardly-disposed, longitudinally straight, transversely V-shaped groove extending longitudinally throughout the length of the pad, and a transversely elongated, longitudinally straight uppermost face, substantially intersecting with the longitudinal axis of the pad throughout the length of said face, and provided in length with the pad, and provided with a pair of opposed, parallel edges meeting with the groove, a flange within the groove, said flange for holding the hole within the groove, said pad being appreciably more abundant than the hole.

5. A subcutaneous lampoon adapted for insertion between the hole of the vagina for sole support thereby in substantially covering relationship to the vagina cavity, said lampoon comprising an elongated pad provided with a downwardly-dis-

posed, longitudinally straight, transversely V-shaped groove extending longitudinally throughout the length of the pad, and a transversely elongated, longitudinally straight uppermost face, substantially intersecting with the longitudinal axis of the pad throughout the length of said face, and provided in length with the pad, and provided with a pair of opposed, parallel edges meeting with the groove, a flange within the groove, said flange for holding the hole within the groove, said pad being appreciably more abundant than the hole.

6. A subcutaneous lampoon adapted for insertion between the hole of the vagina for sole support thereby in substantially covering relationship to the vagina cavity, said lampoon comprising an elongated pad provided with a downwardly-disposed, longitudinally straight, transversely V-shaped groove extending longitudinally throughout the length of the pad, and a transversely elongated, longitudinally straight uppermost face, substantially intersecting with the longitudinal axis of the pad throughout the length of said face, and provided in length with the pad, and provided with a pair of opposed, parallel edges meeting with the groove, a flange within the groove, said flange for holding the hole within the groove, said pad being appreciably more abundant than the hole.

being within the groove, and a flange around said flange covering the pad and the hole, said flange having opposed ends substantially intersecting the proximal ends of the pad, said ends being related to hold the hole in the groove, the pad against unfolding, and the hole-structure against separation.

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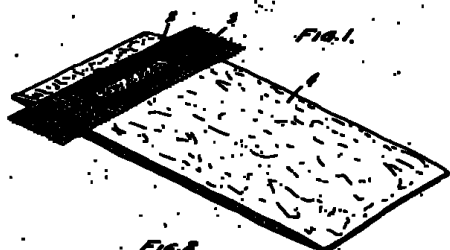
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Sept. 7, 1942.

F. W. FROST
ORIGINAL DESIGN
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Francis Weston Frost

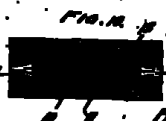
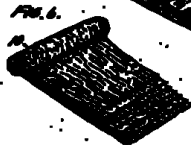
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ORIGINAL DESIGN
Filed June 22, 1942

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Francis Weston Frost

Lawrence, Karpis & Lawrence

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operation are primarily due to the construction of the material used and to its construction. While, the purpose of this invention, several views of the drawings have been shown, it is to be understood that the views described in Figures 1 to 5 may be substituted with parts described in Figures 6 to 10, and, therefore, it is not intended that the invention be limited to the specific parts shown. For example, if desired, the horizontal case 10 shown in one form of the invention can be substituted with the frame 9 shown in Figure 1. Moreover, if desired, the frame 9 or other suitable material can be used without the tube 8 and 7.

In addition, it is not intended that the invention be limited to the specific parts and details of construction shown, as it is shown that other materials, similarly constructed and having the same general properties and purposes as those constructed, could be substituted without leaving the invention.

It is therefore, intended that this invention be limited by the prior art and the scope of the appended claims.

1. A device for educational and continuous use comprising a sheet of absorbent material disposed in tight spiral formation to provide a support substantially cylindrical case, said case having the property of expanding when subjected to compression this covering of permeable material for retaining the compact condition of the case and of sufficient elasticity to permit expansion of the case due to absorption of moisture, and an outer covering of heavily padded absorbent material, said device having a substantially cylindrical formation of a length that will permit the device to be placed horizontally, while the person is standing, in the female vehicle between the labia interna against the exterior, and of a diameter that will enable it to be retained in position.

2. A device for educational and continuous use comprising a plurality of superimposed sheets of thin absorbent material disposed in tight spiral formation to provide a support substantially cylindrical case, said case having the property of

expanding when subjected to compression this covering of permeable material for retaining the compact condition of the case and of sufficient elasticity to permit expansion of the case due to absorption of moisture and an outer covering of heavily padded absorbent material, said inner covering and outer covering extending spirally about the case and said device having a substantially cylindrical formation of a length that will permit the device to be placed horizontally, while the person is standing, in the female vehicle between the labia interna against the exterior, and of a diameter that will enable it to be retained in position after insertion.

3. A device for educational and continuous use comprising a sheet of highly stretched elastic material disposed in tight spiral formation to provide a support substantially cylindrical case, said case having the property of expanding when subjected to compression and an outer covering of heavily padded absorbent material which retains the case in compact condition, but is of sufficient elasticity to permit expansion of the case due to absorption of moisture, said device having a substantially cylindrical formation of a length that will permit the device to be positioned horizontally, while a person is standing, in the female vehicle between the labia interna against the exterior, and of a diameter that will enable it to be retained in position.

4. A device for educational and continuous use comprising a case of compressed and highly stretched elastic material, said case having the property of expanding when subjected to compression this covering of permeable material for retaining the case in compact condition, and of sufficient elasticity to permit expansion of the case due to absorption of moisture, and an outer covering of heavily padded absorbent material, said device having a substantially cylindrical formation of a length that will permit the device to be positioned horizontally, while the person is standing, in the female vehicle between the labia interna against the exterior, and of a diameter that will enable it to be retained in position.

FRANK W. STICKEL

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(62) Application No. 9908983.7	(67) INT. CL. ⁷ A61F 15/75
(63) Date of Filing 05.11.1998	(68) UK CL. (Section C) A61F 15/75
(69) Priority Date (71) 9908983 (52) 05.11.1998 (53) 05	(69) Documents Cited GB 2327746 A EP 0457504 A1 EP 0458805 A2 GB 2327746 A WO 94/07403 A1 LA 0458805 A
(71) Applicant SCA Hygiene AB (Incorporated in Sweden) S-400 05 Göteborg, Sweden	(51) Field of Search UK CL. (Section C) A61F 15/75 INT. CL. ⁷ A61F 15/75 15/45
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(54) An absorbent article

(57) A sanitary napkin, a pantyliner or a protuber for light incontinent people, intended to be worn in the crotch part inside a pair of underpants, having two long sides 2 and 3 and two short sides 4 and 5, comprising an elongated absorption body 8 and flaps 9 and 10 on the long sides formed of a separate piece of material 11 applied on the side of the elongated absorption body which is intended to face away from the user. The piece of material comprises a layer of liquid-impermeable material and may include a layer of an absorbent material. The napkin may also include leakage barriers comprised of corrugations, fused fibres in the covering or absorbing layers, water insoluble adhesive, super-absorbent material, or dyes arranged longitudinally or transversely.

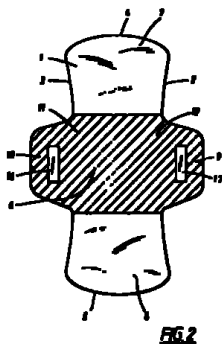


FIG. 2

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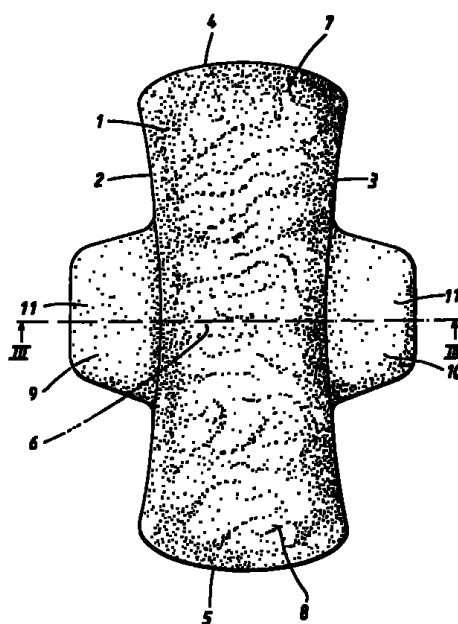


FIG. 1

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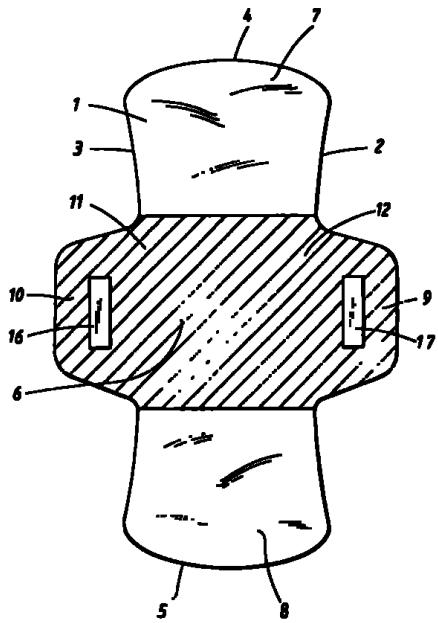


FIG. 2

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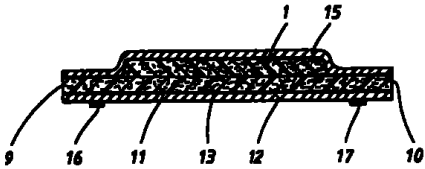


FIG. 3

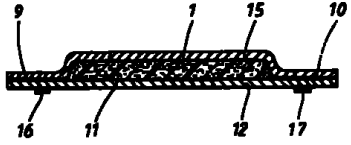


FIG. 4

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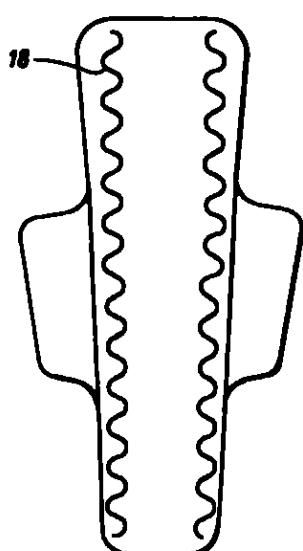


FIG. 5

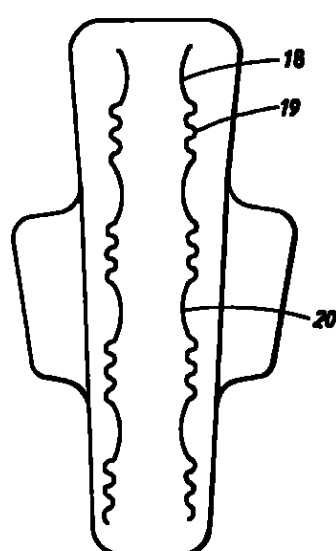


FIG. 6

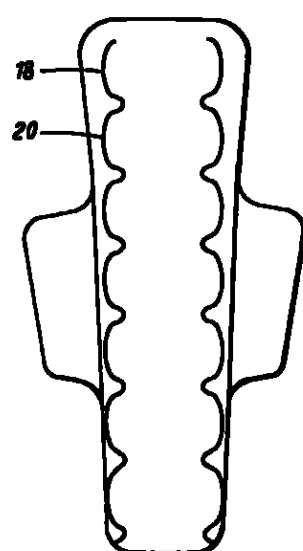


FIG. 7

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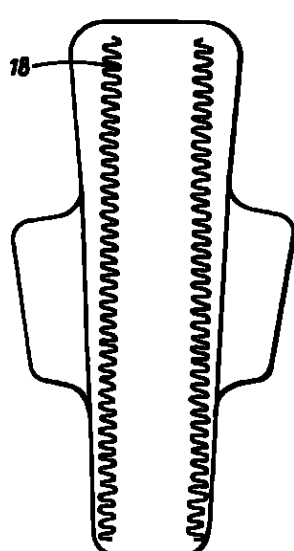


FIG. 8

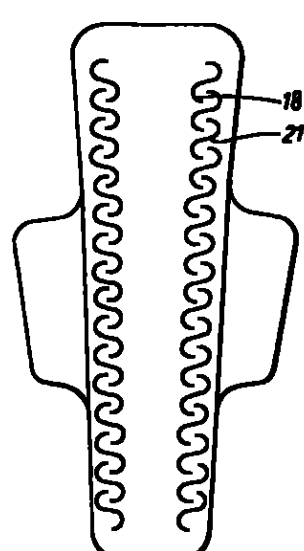


FIG. 9

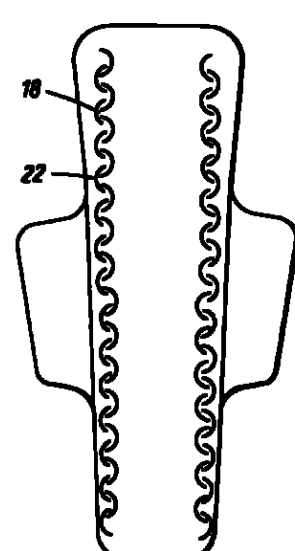


FIG. 10

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5 Absorbent product, such as a sanitary napkin, an
incontinence protector, a pantyliner or the like

TECHNICAL AREA:

The invention refers to an absorbent product, such as a sanitary napkin, a pantyliner or a protector for light incontinent people, intended to be worn in the crotch part inside a pair of underpants, which product has essentially elongated shape and has two long sides, two short sides, two end parts and a centre part lying between the end parts and comprising an elongated absorption body and a flexible side flap arranged at each of the long sides of the product, which side flaps during use are intended to be applied around the leg edges of the underpants.

20 BACKGROUND OF THE INVENTION:

Absorbent products of the type intended here are used when the requirement for absorption capacity is relatively small. Pantyliners and mini-napkins are thereby used at the end of the menstruation period when the flow is smaller, or between menstruations in order to collect any possible discharges. Protectors for light incontinent people can be used more or less continually as necessary. People who suffer from light incontinence only leak occasional drops of urine but have in general control over the emptying of the bladder. Light incontinence is, for example, so-called drop incontinence which occurs when the incontinent, usually a man, has difficulties with completely emptying the urethra after urinating. Another type of light incontinence, which is usual among women, can occur through physical exertion, e.g. during running, jumping, coughing or sneezing.

For these categories of users, where there is no requirement for a large absorption capacity, other product requirements such as user comfort and a discrete shape will

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be able to be complied with to a greater extent than with products intended to absorb a relatively large liquid quantity.

- 5 An absorbent product, such as a sanitary napkin, an incontinence protector or a pantyliner usually comprises a liquid-permeable surface layer, a liquid-impermeable barrier layer and an absorption body arranged therebetween. The surface layer is arranged on the side of the absorbent product which during use is intended to be facing towards the body of the user and the barrier layer is applied on the side of the absorbent product which during use is intended to be facing away from the body of the user.
- 10
- 15 Sanitary napkins, pantyliners and incontinence protectors are usually attached to the crotch of the underpants of the user with the help of adhesive applied in rows or other patterns on the barrier layer on the back side of the product. In order to protect the surfaces provided with adhesive during storage and transport these are covered before use by a release agent-treated protective tape which is removed by the user when the absorption product is applied to the underpants.
- 20
- 25 In order for the absorption product to be removable from the underpants the adhesion of the adhesive should be balanced against its releasability. This means that the user may experience a problem in that the product during use becomes detached from the underwear either partially or completely. Even if the product only comes partially detached it will in all likelihood become wrinkled. As a consequence of this, leakage of body fluid can occur, particularly on the edges of the underclothes.
- 30
- 35 In order to solve this problem it is known to provide the absorbent product with side flaps extending out from its

long sides. Such side flaps are intended to be folded around the edges of the underpants of the user and fastened on the outside thereof, usually with the help of adhesive applied on the back side of the flaps. In this way the flaps reduce leakage of body fluids out onto the underpants partially by in themselves physically protecting the edges of the underpants, partially through insuring a better fastening of the product in the underpants. Fastening flaps of this type are described in, for instance, SE 455 668, US 4 285 343, EP 130 848, EP 134 006 and US 4 608 047.

- 5
- 10

Another problem with the type of product which the invention concerns is that it can be felt by the user as being airtight and sweaty. This is a consequence of the, as described above, side of the product which during use faces away from the body of the user being equipped with a liquid-impermeable layer in order to prevent leakage through the product.

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A number of different attempts to solve the problem by forming an absorbent product which is leakproof but at the same time airy and comfortable have been made earlier. In EP 104 906, for instance, a pantyliner is described having a barrier layer of a material which is waterproof but vapour-permeable. Materials with this property are however expensive to manufacture and it is difficult to give them a textile-like surface structure. The latter means that the user can still perceive the article as airtight and sweaty. An alternative solution described in US 4 681 578 is to shape the barrier layer so that it only covers a longitudinal centre part of the back side of the product. The barrier layer covers the whole length of the pantyliner but leaves the longitudinal edge parts free. A major disadvantage with this solution is that in this manner parts of the centre part of the napkin, i.e. the middle

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third of the napkin which is intended to receive the main part of the liquid emitted by the user, does not have a liquid barrier back side. This increases dramatically the leakage risk for such napkins.

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THE OBJECT OF THE INVENTION:

The object of the invention is to remedy the above problems and produce an absorbent product for small liquid flows which can be securely fastened in the underwear of the user and which has a liquid-impermeable back side in the region of the product where this is required. Through the achievement of this an absorbent product is obtained which has a high security against leakage but still feels airy and comfortable to wear.

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Another object of the invention is to produce an absorbent product which has the absorption material distributed so that more absorption material is available where it is needed.

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SHORT DESCRIPTION OF THE INVENTION:

A product of the type described in the introduction, in which the problems associated with prior art products of the same type is essentially avoided, is distinguished according to the invention by the side flaps being formed of a separate piece of material which extends transversally over the absorption body at the centre part of the product and extends out from the long sides of the absorption body on both sides of the absorption body whereby the separate piece of material comprises at least one liquid-impermeable barrier layer applied to the side of the piece of material which is facing away from the absorption body of the product.

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According to an alternative embodiment of the invention it is further characterized by the piece of material

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comprising a layer of absorbent material applied to the side of the piece of material which is facing towards the absorption body.

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The surfaces of the product which are not covered by the liquid-impermeable layer on the separate piece of material can be at least partially covered by a liquid-permeable layer of material. Such a liquid-permeable layer of material can in this way on the one hand form a liquid-permeable surface layer on the side of the product which during use is intended to be facing towards the user, on the other hand form a surface layer on the opposite side of the product intended during use to be facing away from the user. In the latter case the liquid-permeable surface layer may be applied only over the parts of the absorption body which are not covered by the liquid-impermeable layer on the separate piece of material, or it can extend over the whole of the surface of the absorption body. Thereby, such a liquid-permeable layer can either be applied between the separate piece of material and the absorption body of the product or it can be applied outside the separate piece of material. It can be an advantage to arrange the liquid-permeable layer outside the separate piece of material because the back side of the product, i.e. the side which during use is facing away from the user, in this manner displays a unitary, aesthetically attractive surface. A soft, skin-friendly, tactile or textile-like material such as nonwoven or the like is advantageously chosen for such a surface layer.

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On the long sides of the elongated absorption body the product can further have side leakage barriers formed by longitudinal compressions, fused-together fibres in the absorption body or covering layer, liquid-insoluble glue applied between the side flaps and the absorption body, superabsorbent material mixed in the longitudinal edge

parts of the absorption body or slits arranged in the side edges of the absorption material.

5 Leakage barriers can further be arranged across the longitudinal direction of the product between its centre part and its end parts, in order to limit wicking in the longitudinal direction. The transverse leakage barriers, i.e. those arranged across the longitudinal direction of the product, can suitably be made in the same way as described above for the side leakage barriers, through compressions, fused fibres in the covering material or absorption body, water-insoluble glue, superabsorbent material or slits.

13 DESCRIPTION OF THE INVENTION:

The combination of security against side leakage and breathability is by the present invention achieved by means of the side flaps extending from the long sides of the absorption body being formed of a separate piece of material. The absorption body of the product lacks a liquid-impermeable back side in the parts lying outside the piece of material.

25 The liquid-impermeable back side which is conventionally found on absorbent products of the type which the invention concerns are the main cause of the product being felt to be airtight and sweaty. With sanitary napkins, pantyliners or protectors for light incontinent people made according to the present invention, it is possible to increase comfort without giving rise to a decreased security against leakage. Now this is brought about will be described more closely in the following.

35 In order to minimise the risk of any body fluids which might have been absorbed outside the centre part of the product leaking out through the back side of the product,

a further hydrophobic covering layer can be arranged on the back side. Such a covering layer rejects fluid and prevents the small quantities of fluid which manage to come out to the end parts of the product from running out of the product, but still permits air circulation and the passage of water vapour out of the product.

10 A further effect of this is that the parts of the back side of the product, i.e. the side of the product which during use is facing away from the user, which are not covered by the separate piece of material are free from waterproof material.

15 Within these regions, which constitute the front and rear and parts of the product, the back side of the product consists of the surface of the absorption body which faces away from the user or of a further liquid-permeable covering layer. By the front and back end parts of the product is meant the parts lying nearest the short sides of the product and which are intended during use to be facing forwardly respectively rearwardly on the user. The end parts of the product surround its centre part. The centre part is the part of the absorption body of which the long sides are lined by the side flaps. It can be seen that the absorbent product can be roughly divided up into three parts: the centre part and the end parts constituting each one third of the full length of the product.

30 According to an alternative embodiment of the invention, the piece of material has a surface of absorbent material facing towards the absorption body of the product and a surface of liquid-impermeable material facing away from the absorption body of the product.

35 In this manner a larger absorption capacity in the region in which the absorption body of the product is overlapped

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by the piece of material forming the side flaps is achieved. The region with overlapping absorption material corresponds essentially with the middle third of the absorption product seen in the longitudinal direction. As this is also the region of the product which during use shall receive and absorb the greatest part of the body fluid which is eliminated, it is extremely advantageous that this region has good absorption capacity.

Through the construction according to the invention with the side flaps which guarantee a secure fastening during use and with an increase of absorption material in the centre part of the product, the risk of leakage in the end parts of the product is minimal. It is therefore possible to leave the end parts free from liquid-barrier material and in this way allow these parts to have a high permeability for air and water vapour.

Another way of further minimising the risk that body fluids which may have been absorbed outside the centre part of the product can leak out through the back side of the product is to mix in superabsorbents in the absorption material in the end parts of the product. By the term superabsorbents is meant such polymer absorption materials in the form of powder, particles, granules, film or such like which can absorb many times their own weight of fluid by forming an aqueous gel. Superabsorbents prevent the spreading of liquid in the absorption body by absorbing and chemically binding the fluid. In this way superabsorbents function both as an absorption material and as a barrier against leakage out from the absorbent body.

Owing to the product being equipped with side flaps which hold it in position in the underpants of the user, the product cannot slide out of its position or wrinkle up. Fluid emitted by the user will therefore meet the product in its

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centre part and be absorbed by the part of the absorption body which lies between the flaps.

Because the piece of material which forms the side flaps comprises an absorption material which can lie under the absorption body of the product near the reception area for fluid, this area will have sufficient absorption capacity to be able to absorb essentially all the fluid which is received by the product during use. The absorbed body fluid will not spread out from the reception area to any noticeable extent, as the quantity of fluid is relatively small. The parts of the product which lie in the longitudinal direction outside the area surrounded by the flaps of the absorption body of the product do not therefore have to have a liquid barrier back side.

In order to prevent liquid leakage out of the side flaps it can be appropriate to arrange edge leakage barriers along the longitudinal side edges of the absorption body between these and the projecting side flaps. Such edge leakage barriers can be compression patterns of different types, produced for example through mechanical, or thermomechanical compression or by ultrasound. It is also conceivable to form edge leakage barriers through melting thermoplastic material in for example the covering layer of the product or in its absorption body by means of heat or ultrasound so that liquidproof barriers are formed between the absorption body of the product and its side flaps. The thermoplastic material can be in the form of a thermoplastic film or fibres or particles comprised in a nonwoven covering layer or mixed in the absorption body. Liquid barriers can further be produced through the application of liquid-resistant adhesive between the side flaps and the absorption body or through the incorporation of superabsorbent in the edge parts of the absorption body. Such superabsorbents bind the absorbed body fluid and in

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this manner prevents it being transported out to the side flaps. A further method of achieve an obstacle for preventing body fluid passing the side edges of the product and coming out into the side flaps is to arrange slits or cuts in the absorption material along the side edges of the product.

If it is found to be appropriate it is possible to arrange corresponding liquid barriers in the direction transverse to the longitudinal direction of the product between the centre part of the product and its end parts in order to limit the spreading of fluid in the longitudinal direction of the product.

Conventional absorbent products which are equipped with side flaps are most often cut out of a running band of material formed of the different material layers comprised in the product. In this way the cutting out of the side flaps causes a comparatively large quantity of material to be lost as waste. With a product according to the invention it is however possible to cut the longitudinal components of the product out of one band of material and the piece of material which forms the side flaps out of another band of material and join the two parts together to a unit. Because the parts cut out in this way both have an essentially rectangular form, only a small quantity of material is wasted and therefore the product can be manufactured with a minimum waste of material.

It is however not necessary for the invention that the separate piece of material which forms the side flaps and the liquid barrier back side of the product are completely rectangular. With products which are intended to receive and absorb somewhat larger quantities of fluid it can be appropriate that the part of the piece of material which covers the absorption body is somewhat wider than the parts

of the piece of material which form the side flaps. In this manner a larger area of the centre part of the product is covered by the liquid-impermeable layer on the separate piece of material. In the case that the separate piece of material also comprises absorbent material such an alternative shape also adds to the absorption capacity of the product.

The invention will be described more closely in the following by means of embodiments shown in the appended Figures. The invention is not limited to the embodiments shown in the Figures but these are just intended to explain and illustrate the invention.

SHORT DESCRIPTION OF THE DRAWINGS:

Figure 1 shows a pantyliner according to the invention seen from the side of the pantyliner which during use is intended to face towards the body of the user.

Figure 2 shows the pantyliner in Figure 1 seen from the side of the liner which during use is intended to face away from the body of the user.

Figure 3 shows a cross section along the line III-III through the pantyliner shown in Figure 1.

Figure 4 shows a cross section through a pantyliner according to an embodiment which is an alternative to that shown in Figure 3.

Figures 5-11 show different shapes of the edge leakage barriers on a sanitary napkin according to the invention.

Figure 12 shows a sanitary napkin having transversely placed leakage barriers.

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Figure 13 shows a sanitary napkin according to the invention seen from the side of the sanitary napkin which during use is intended to face away from the body of the user.

CLOSER DESCRIPTION OF THE DRAWINGS AND EMBODIMENTS:

The pantyliner shown in Figures 1-3 comprises an absorption body 1. The absorption body 1 has, like the pantyliner, an essentially elongated rectangular shape and is limited in plan by two long sides 2,3 and two short sides 4,5. The pantyliner further has a centre part 6 arranged in the longitudinal direction of the product between its two end parts 7,8. Each of the centre part 6 and the end parts 7,8 take up approximately one third of the length of the product.

Two side flaps 9,10 formed of a separate piece of material 11 extend out from the long sides 2,3 of the absorption body 1 on each side of the absorption body 1. The separate piece of material 11 extends transversely over the absorption body 1 at the centre part of the product and is formed of a liquid-impermeable barrier layer 12 and a layer of absorbent material 13.

The barrier layer 12 is formed of a liquid-impermeable material. Thin waterproof plastic films are suitable for this purpose but it is also possible to use material which from the beginning is liquid-permeable but which is equipped with a coating of plastic, resin or another waterproof material. In this way leakage of fluid from the underside of the absorbent product is prevented. Barrier layer 12 can naturally be formed of any sort of material which fulfils the criteria of liquid-impermeability and which has a sufficient flexibility and lack of irritation to the skin for this purpose. Examples of materials suitable as a barrier layer are plastic films, nonwovens

and laminates of these. The plastic film can for example be polyethylene, polypropylene or polyester. The barrier layer can alternatively be formed of a laminate of a liquid-impermeable plastic layer which faces towards the absorption body and a nonwoven facing towards the underclothes of the user. Such a construction gives a leakage-proof barrier layer with the feel of a textile.

The absorption layer 13 is suitably formed from cellulose pulp just like the absorption body 1 of the pantyliner. This is obtainable in rolls, bales or sheets which are dry-defibrated and transferred in the fluffed form to a web of pulp occasionally with the inclusion of so-called superabsorbents which as described earlier are polymers with the ability to absorb several times their own weight of water or body fluids. Examples of other useable materials are different types of natural fibres such as cotton fibre, peat or the like. It is naturally also possible to use absorbent synthetic fibres or a mixture of natural fibres and synthetic fibres. The absorption material can further comprise further components, such as shape-stabilising means, fluid-spreading means or binding material such as for example thermoplastic fibres which are heat-treated to hold together short fibres and particles to form a coherent unit. It is also known to use different types of absorbent foam material in the absorption body.

The absorption body 1 can be considered to be formed of a porous, loosely held together material or of a more compact absorption material with good holding together properties. In the case that a more porous material is chosen the side of the absorption body 1 which during use is intended to face towards the underpants of the user should be covered by a covering layer of e.g. nonwoven. This is so that the absorption body should hold together and not disintegrate

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or form lumps during use. If the absorption body at the end parts of the pantyliner does not have a special outer material layer it puts special requirements on the absorption material. This must then be made of a material with a high abrasion resistance and good integrity, i.e. ability to stay together in the dry condition and preferably even in the wet condition. Examples of absorption material with high abrasion resistance are polymer foam materials, bound absorbent nonwoven material and pulp with blended-in binding means.

The piece of material 11 is fastened to the absorption body 1 of the pantyliner, for example by being glued, welded or sewn and has the absorption layer 13 facing towards the absorption body 1 of the pantyliner and has the liquid-impermeable barrier layer against the back side 14 of the pantyliner away from the absorption body 1. Figure 2 shows the liquid-impermeable barrier layer 13 as a dashed surface on the back side of the pantyliner.

Figure 13 shows an alternative shaping of the piece of material 11. The Figure shows a sanitary napkin having a piece of material of essentially rhombic form, where the two diametrically lying corners are formed of the side flaps 9,10 and the other two diametrically lying corners form flaps 27,28 which extend towards or partially over the end parts 7 and 8 of the sanitary napkin. Whether these flaps 27,28 on the piece of material 11 according to this embodiment extend in over the end parts 7,8, is dependant on the definition of the centre part 6 and the end parts 7,8 and on the size relationships of the sanitary napkin.

Because the flaps 27,28 of the piece of material 11 cover a large part of the back side of the napkin it follows as a consequence of this that a large part of the back side of the absorption body 1 will be covered by a liquid-

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impermeable barrier layer 13, which gives an increase of the security against leakage. In the case that the piece of material 11 also comprises an absorption layer 13 there is also an increased absorption ability in these regions which in itself also contributes to an increased security against leakage.

The absorption body 1 of the pantyliner is covered by a surface layer 15 arranged over the surface of the absorption body 1 facing towards the user during use. The material in the surface layer can for example be a perforated plastic film, a net of plastic or textile material, a nonwoven or a laminate of for example a plastic layer and nonwoven layer. The plastic can be a thermoplastic, for example polythene. The nonwoven material can be of natural fibres, such as cellulose or cotton, or synthetic fibres, such as polythene, polypropylene, polyester, polyurethane, nylon or regenerated cellulose.

The main function of the top layer 15 in the pantyliner is to lead fluid into the absorption body 1, to be soft and comfortable against the body of the user, and to prevent so-called rewetting, i.e. that absorbed body fluid is forced back towards the skin of the user. It is important for the sake of comfort and in order to prevent skin irritations that the surface on the part of the pantyliner which lies in contact with the skin of the user should be held as dry as possible during use. A dry surface on the pantyliner is experienced furthermore by the user as being cooler and more comfortable during use and when the pantyliner is to be changed it is more attractive to look at and to manipulate than a soiled wet surface.

If the absorption layer 13 comprised in the piece of material 11 is made of hard wearing material with good coherency, the surface layer 15 does not need to cover the

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part of the piece of material 11 which forms the side flaps 9,10. However, in the Figures the surface layer 15 extends over both the surface of the pantyliner and the side flaps 9,10.

Each of the side flaps 9,10 is equipped with an attachment means 16,17 for attachment of the pantyliner in the underparts of the user. The attachment means are formed from a surface of self-adhesive glue, but as mentioned earlier the attachment means can be of any other type, such as Velcro®, clips, buttons or similar. When the pantyliner is to be used the side flaps 9,10 are folded around the leg edges on the underparts of the user and fastened with the help of the attachment means 16,17 against the material on the outside of the crotch part of the underpants.

It is naturally possible to conceive a series of further usable patterns for the attachment glue in addition to that shown in Figure 2. The attachment glue can further be used in order to control and check the liquid-permeability of the back side of the product in the region which is not covered by the liquid-impermeable barrier layer of the separate piece of material.

Figure 4 shows an embodiment which is an alternative to that shown in Figure 1. In the embodiment according to Figure 4 the piece of material consists only of a barrier layer 13. The absorbent material layer 13 has been left out. This embodiment is most suitable for products intended for an extremely limited flow of body fluids, such as pantyliners for discharges between menstruations.

As mentioned previously the absorption body is equipped with edge leakage barriers 18 in order to prevent leakage out onto the flaps. Different appearances of these barriers are shown in Figures 5-11. The edge leakage barriers can

extend along the whole length of the absorption body but they can also only cover the region between the flaps.

Figures 5 and 8 show edge leakage barriers 18 having a sinusoidal shape. Figure 6 shows edge leakage barriers with two different alternating repeating patterns. A sinusoidal wave shape 19 is interrupted by a curved section 20 on the edge leakage barrier 18. The edge leakage barriers 18 shown in Figure 7 have only curved portions 20. Figure 9 shows edge leakage barriers 18 with an interrupted pattern. Each interrupted part has an S-shape 21. These S-shaped portions 21 lie somewhat overlapping in an essentially straight row one after another forming together the edge leakage barrier 18. Figures 10 and 11 also show edge leakage barriers with interrupted patterns. In Figure 10 the edge leakage barriers 18 comprise a repeating design of somewhat overlapping semicircles 22. In Figure 11 the edge leakage barriers 18 are formed of a repeating pattern with an S-shaped appearance 23. The S-shaped portions 23 lie overlapping so that the openings alternatively face towards the edge 24 of the napkin and alternatively towards the centre 25 of the napkin.

The absorbent product can on the side intended to be facing towards the body of the user also be equipped with leakage barriers placed transversely in order to prevent spreading in the longitudinal direction of the product.

Figure 12 shows how leakage barriers 26 can also be placed transversely on a sanitary napkin. In the Figure the same pattern 22 as used in Figure 10 for edge leakage barriers 18 is shown. It is merely one example. Naturally all the patterns which are suitable as edge leakage barriers 18 and which are shown in Figures 5-11 are equally suitable as

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transverse leakage barriers 26 with the same appearance as the edge leakage barriers 10.

5 The transverse leakage barriers are suitably placed aligned with the side flaps 9,10 where they go out from the absorption body 1, i.e. two transverse leakage barriers enclose the part of the pantyliner which on the opposing surface is equipped with a liquid barrier material, on the surface which is intended to face towards the user. The leakage barriers are also arranged on both sides of the separate piece of material. If the piece of material has a shape other than that shown in the Figures the leakage barriers appropriately follow that shape.

15 The patterns which are given above as possibilities for leakage barriers are only examples. Many other patterns are conceivable. The main criteria for functioning of the pattern is naturally that it prevents liquid from spreading out past the pattern and that it does not make the product too stiff or chafe the user. With the help of such patterns as described in the Figures other purposes can be achieved apart from leakage security. They can stiffen the product where this is required or they can shape the product, for example give it a three-dimensional shape.

25 Even if the invention in the above has for the sake of simplicity been described with reference to a pantyliner, it is naturally possible that the embodiments shown could equally likely have shown light incontinence protectors, mini-napkins or similar absorbent products which are under the scope of the invention.

CLAIMS

1. Absorbent product, such as a sanitary napkin, a pantyliner or a protector for light incontinent people, intended to be worn in the crotch part inside a pair of underpants, which product has essentially elongated shape and has two long sides (2,3), two short sides (4,5), two end parts (7,8) and a centre part (6) lying between the end parts and comprising an elongated absorption body (1) and a flexible side flap (9,10) arranged at each of the long sides (2,3) of the product which side flaps (9,10) during use are intended to be applied around the leg edges of the underpants, characterised in that the side flaps (9,10) are formed of a separate piece of material (11) which extends transversely over the absorption body (1) at the centre region (6) of the product and projects out from the long sides (2,3) of the absorption body (1) on both sides of the absorption body (1), wherein the separate piece of material (11) comprises at least one liquid-impermeable barrier layer (12) applied to the side of the piece of material (11) which faces away from the absorption body (1) of the product.

2. Absorbent product according to Claim 1, characterised in that the piece of material has a layer of absorbent material (13) applied on the side of the piece of material (11) which faces towards the absorption body.

3. Absorbent product according to Claims 1-2, characterised in that the surfaces of the absorption body (1) of the product which are not covered by the piece of material (11) are at least partially covered by a liquid-permeable surface layer.

4. Absorbent product according to Claim 3, characterised in that the liquid-permeable layer (12) is arranged on the

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side of the product which has the liquid-permeable surface layer.

5 5. Absorbent product according to Claims 3-4, characterized in that the liquid-permeable surface layer is arranged on the side of the product which does not have the liquid-impermeable layer.

10 6. Absorbent product according to any of Claims 3-5, characterized in that the liquid-permeable surface layer is arranged on both sides of the product.

15 7. Absorbent product according to any of the above claims, characterized in that the edges on the long sides of the elongated absorption body have edge leakage barriers (18).

20 8. Absorbent product according to Claim 7, characterized in that the edge leakage barriers (18) are comprised of longitudinal compressions.

9. Absorbent product according to Claim 7, characterized in that the edge leakage barriers (18) are comprised of fused fibres in the covering layer.

25 10. Absorbent product according to Claim 7, characterized in that the edge leakage barriers (18) are comprised of fused fibres in the absorption body.

30 11. Absorbent product according to Claim 7, characterized in that the edge leakage barriers (18) are comprised of water-insoluble adhesive applied between the side flaps and the absorption body.

35 12. Absorbent product according to Claim 7, characterized in that the edge leakage barriers (18) are comprised of

super-absorbent material mixed in the longitudinal edge parts of the absorption body.

5 13. Absorbent product according to Claim 7, characterized in that edge leakage barriers (18) are comprised of slits arranged in the side edges of the absorption material.

10 14. Absorbent product according to Claim 1-6, characterized in that it has transverse the longitudinal direction of the product leakage barriers (26) between the centre part of the product and the end parts of it, in order to limit spreading of fluid in the longitudinal direction of the product.

15 15. Absorbent product according to Claim 14, characterized in that the leakage barriers (26) are comprised of compressions.

20 16. Absorbent product according to Claim 14, characterized in that the leakage barriers (26) are comprised of fused fibres in the covering layer.

25 17. Absorbent product according to Claim 14, characterized in that the leakage barriers (26) are comprised of fused fibres in the absorption body.

30 18. Absorbent product according to Claim 14, characterized in that the leakage barriers (26) are comprised of water-insoluble adhesive.

19. Absorbent product according to Claim 14, characterized in that the leakage barriers (26) are comprised of superabsorbent material mixed into the absorption body.

35 20. Absorbent product according to Claim 7, characterized in that the leakage barriers (26) are comprised of slits.

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21. Absorbent product according to any one of the previous claims, characterized in that the end parts of the absorption body comprise mixed-in superabsorbent.

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22. Absorbent product according to any one of the previous claims, characterized in that the piece of material (11) has flaps (27,28) which extend towards, or partially cover, the end parts (7,8) of the sanitary napkin.

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23. Absorbent product as claimed in claim 1 substantially as hereinbefore described with reference to and as illustrated in any one of Figures 1 to 3, 4, 5, 6, 7, 8, 9, 10, 11, 12 or 13 of the accompanying drawings.

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THEN COMFORTABLE INTERLABIAL ABSORBENT STRUCTURE

FIELD OF THE INVENTION

The present invention is directed to an absorbent article such as an external device, incontinence pad, or the like. More particularly, the present invention is directed to interlabial absorbent structures that are thin and flexible such that they conform to and remain in contact with the walls of a woman's interlabial space.

BACKGROUND OF THE INVENTION

Disposable absorbent articles have been commercially available for many years and have met with great success world wide. For example, continuing improvements to external devices have freed women from much of the inconvenience of their monthly menstrual period. However, further improvements are still needed.

One class of external device, interlabial pads, has the potential to provide even greater freedom from inconvenience because of their small size and reduced risk of leakage. Numerous attempts have been made in the past to produce an interlabial pad which would combine the best features of tampons and sanitary napkins while avoiding at least some of the disadvantages associated with each of these types of devices. Examples of such devices are described in U.S. Patent 2,917,049 issued to Delaney on December 15, 1959, U.S. Patent 3,420,235 issued to Herman on January 7, 1969, U.S. Patent 4,593,382 issued to Johnson, et al. on June 17, 1986, and U.S. Patents 5,074,835 and 5,336,208 issued to Rasmussen, et al. on December 24, 1991 and August 9, 1994 respectively, and U.S. Patent 5,484,429 issued to Vukun, et al. on January 16, 1996. A commercially available interlabial device is the Fresh 'n Fit® Padette which is marketed by ATHENA Medical Corp. of Portland, OR and described in U.S. Patents 3,981,873 and 4,173,561 issued to Hirschman on October 5, 1976 and November 27, 1979 respectively.

However, many of these devices have not met with great commercial success. There are drawbacks associated with all of the devices listed above. For example, the

device described in the Delaney patent does not appear to be capable of easy insertion, due to the possibility of the layers of absorbent material opening up during insertion. The commercially available Padette product may cause wearer discomfort even if properly inserted. Also, the Padette product may not completely cover the urethra or the vaginal introitus and may not provide protection when a wearer squats. Thus, there is opportunity to provide an improved interlabial pad.

The walls of the interlabial space are quite convoluted with many folds and wrinkles. Thus, it is desirable to provide interlabial absorbent structures having flexibility such that the absorbent structure can conform, at least partially, to the walls of a woman's interlabial space. Such conformity, particularly throughout a wide range of wearer motions, can result in improved retention of bodily fluids in the absorbent structure and less risk of leakage and staining of undergarments, clothing, or bedding.

Also, because the volume of the interlabial space is small, an interlabial device should be sized so as not to exert undue pressure on the walls thereof. Otherwise, a wearer may experience discomfort due to improper sizing. Such sizing should also take into account the possibility that, when a fresh interlabial device is inserted, it may not be inserted in an optimal position for comfort.

Thus, it is an object of the present invention to provide an interlabial absorbent structure with performance properties (such as wearer comfort, leakage resistance, and the like) equaling or exceeding those of contemporary interlabial devices. It is a further object of this invention to provide an interlabial absorbent structure that has sufficient flexibility to conform to the convoluted surface of a female wearer's interlabial space and remain in contact therewith throughout a wide range of wearer movements. It is still a further object of the present invention to provide an interlabial absorbent structure having a volume and mechanical properties such that the device exerts minimal pressure on the walls of a woman's interlabial space (i. e. the inner surfaces of the labia minora and majora).

SUMMARY OF THE INVENTION

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This invention relates to absorbent structures. More particularly, the invention relates to an absorbent structure that is worn interlabially by female wearers for catamenial purposes, incontinence protection, or for other non-menstrual vaginal discharges.

In a preferred embodiment of the present invention, the interlabial absorbent structure comprises a pair of absorbent panels that are joined by a longitudinally extending labium. In use the labium is inserted into a wearer's interlabial space such that it is in proximity to her vaginal floor. The panels extend laterally outward from the labium and contact the walls of the wearer's vaginal vestibule providing resistance to leakage around the interlabial absorbent structure.

The absorbent panels are sufficiently flexible such that they at least partially conform to the convoluted surface of the walls of the interlabial space. This flexibility also allows the interlabial absorbent structure to respond to a wide range of wearer movement without becoming a source of discomfort to the wearer. The panels also have sufficient absorbent capacity provided with sufficient absorbency to absorb and retain exudates discharged from a wearer's body. Preferably, each panel comprises a fibrous web. More preferably, each panel comprises a tissue web.

The labium joins the proximal edges of the panels to form the interlabial absorbent structure. The labium can comprise an extension of the panels or a separate element to which the panels are joined. Preferably, the labium comprises an extension of the panels. In a preferred embodiment, the labium also directs any fluids that may be deposited thereon to flow in the longitudinal direction making fuller use of the absorbent capacity of the panels. In various embodiments this flow directing property can be provided by a demarcated portion of the fibrous structure, a "V" shaped channel, or an extension of the pinuality of piles of tissue that comprises the preferred embodiment of each panel.

BRIEF DESCRIPTION OF THE DRAWINGS

While the specification concludes with claims particularly pointing out and distinctly claiming the subject matter which is regarded as forming the present invention,

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it is believed that the invention will be better understood from the following description taken in conjunction with the accompanying drawings, in which:

Figure 1 is a plan view of a preferred interlabial absorbent structure embodiment of the present invention shown fully flat out with the body contacting surface thereof facing the viewer;

Figure 2 is a perspective view of the interlabial absorbent structure of the present invention in a folded configuration ready for insertion into a wearer's interlabial space;

Figure 3 is an end view of an alternative embodiment of the interlabial absorbent structure of the present invention;

Figure 4 is an end view of the interlabial absorbent structure of the present invention showing a second alternative embodiment of the invention; and

Figure 5 is an end view of the interlabial absorbent structure of the present invention showing a third alternative embodiment of the present invention.

DETAILED DESCRIPTION OF THE INVENTION

As used herein, the term "absorbent article" refers to devices which absorb and contain body exudates, and, more specifically, refers to devices which are placed against or in proximity to the body of the wearer to absorb and contain the various exudates discharged from the body. The term "disposable" is used herein to describe absorbent articles which are not intended to be laundered or otherwise restored or reused as an absorbent article (i.e., they are intended to be discarded after a single use, and, preferably, to be recycled, composted or otherwise disposed of in an environmentally compatible manner). A "unitary" absorbent article refers to absorbent articles which are formed of separate parts united together to form a coordinated entity so that they do not require separate manipulative parts like a separate holder and pad. A preferred embodiment of a unitary disposable absorbent article of the present invention is the interlabial absorbent structure 20 shown in Figure 1. As used herein, the term "interlabial absorbent structure" describes an absorbent article which resides at least partially within a wearer's interlabial space. As used herein the term "interlabial space" refers to the distal space in the pudendal region of the female anatomy which is located between the inside

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surfaces of the labia majora extending into the vestibule. Located within this interlabial space are the labia minora, the vestibule and the principal urogenital members including the clitoris, the orifice of the urethra, and the orifice of the vagina. Standard medical authorities teach that the vestibule refers to the space bounded laterally by the labial surfaces of the labia minora and extending laterally to the floor between the clitoris and the orifice of the vagina. Therefore, it will be recognized that the interlabial space as defined above may refer to the space between the labial surfaces of the labia majora, including the space between the labial surfaces of the labia minora also known as the vestibule. The interlabial space for purposes of the present description does not extend beyond the orifice of the vagina into the vaginal interior.

The term "labia" as used herein refers generally to both the labia majora and labia minora. The labia terminate anteriorly and posteriorly at the anterior commissure and the posterior commissure, respectively. It will be recognized by those skilled in the art that there is a wide range of variation among women with respect to the relative size and shape of their labia majora and labial minora. For purposes of the present description, however, such differences need not be specifically addressed. It will be recognized that the disposition of the interlabial structure into the interlabial space of a wearer as defined above will require placement between the labial surfaces of the labia majora without regard to the precise location of the boundary between the labia majora and the labia minora for a particular wearer. For a more detailed description of this portion of the female anatomy, attention is directed to *Gray's Anatomy, Running Press 1901 Ed. (1974)*, at 1023-1027.

As used herein, the term "perineal" refers to the externally visible female genitalia.

General Description of the Interlabial Absorbent Structure of the Present Invention

The interlabial absorbent structure 20 shown in Figure 1, at least partially, blocks and absorbs and more preferably completely blocks, interrupts, and absorbs the flow of menses, urine, and other bodily exudates from a wearer's vaginal introitus and urethra. The interlabial absorbent structure 20 should be of a suitable size and shape that allows at least a portion thereof to fit comfortably within the wearer's interlabial space and to cover

the vaginal introitus, and, preferably, also the wearer's urethra. The interlabial absorbent structure 20 is, at least partially, held in place by exerting a slight laterally outwardly-oriented pressure on the walls of a wearer's interlabial space and by the capillary forces between the panels 22 thereof and the naturally moist walls of the interlabial space. The interlabial absorbent structure 20 of the present invention can be worn as a "stand alone" product. Alternatively, it can be worn as a back up to a tampon or in combination with a sanitary napkin, a pantliner, or incontinence pad for menstrual or incontinence use. The interlabial absorbent structure 20 can be worn with conventional panties or it can be used with menstrual shorts.

As is shown in Figure 1, the interlabial absorbent structure 20 has two centerlines, a longitudinal centerline L and a transverse centerline T. The term "longitudinal", as used herein, refers to a line, axis or direction in the plane of the interlabial absorbent structure 20 that is generally aligned with (e.g., approximately parallel to) a vertical plane which bisects a standing wearer into left and right body halves when the interlabial absorbent structure 20 is worn. The terms "transverse" or "lateral" as used herein, are interchangeable, and refer to a line, axis or direction which lies within the plane of the interlabial absorbent structure 20 that is generally perpendicular to the longitudinal direction.

The interlabial absorbent structure 20 also has a body surface 20T, which contacts the walls of a wearer's interlabial space, and an opposed rear surface 20R. The body and rear surfaces of other elements of the present invention will be described in a similar manner with a "T" being appended to the reference number of the element to designate the body surface thereof and a "R" being appended to designate the rear surface thereof.

The present invention is directed to an interlabial absorbent structure. Figure 1 is a plan view of the interlabial absorbent structure 20 showing a preferred embodiment of the present invention. As shown in Figure 1, the interlabial absorbent structure 20 preferably comprises a pair of laterally opposed panels 22A and 22B. (Similar nomenclature will be used with respect to other elements comprising the panels. That is, the letters A and B will be appended to the reference numbers for the various elements of

a panel whenever it is necessary or advantageous to relate an element to a specific panel.) The panels 22A, 22B are connected by a narrow isthmus 24.

Although other shapes, such as oval, trapezoidal, irregular (e.g. butterfly), and the like, are suitable, each panel preferably has an approximately rectangular configuration (rounded rectangular). Each panel has a distal longitudinal side edge 21, a proximal longitudinal side edge 23, and a pair of transversely extending end edges 25, the end edges 25, the distal edge 21, and the proximal edge 23 defining a periphery for each panel 22. The panels 22 also have a longitudinal length X and a transverse width Y.

The interlabial absorbent structure 20 of the present invention further comprises an isthmus 24 which connects the panels 22A, 22B. The isthmus 24 also comprises at least one fold line so the interlabial absorbent structure is able to better conform to the complex anatomy of a woman's interlabial space. The isthmus 24 is the portion of the interlabial absorbent structure that is positioned furthest forward into a woman's interlabial space. The isthmus 24 also preferably directs any bodily fluids that may be deposited thereon in a longitudinal direction. Each of these components is discussed in greater detail in the following sections.

The interlabial absorbent structure 20 may optionally further comprise extension means (not shown), such as a string, a loop, a tab, or the like, to aid in the removal of a soiled device. Such extension means would be attached to the rear surface 20R (i.e., the surface opposite the body surface 20T of the interlabial absorbent structure 20) and would extend at least partially outside a woman's labial region.

A tab may also serve as an insertion aid by providing a stiffened member for gripping, so a woman's fingers are protected from rolling by the panels 22 when the interlabial absorbent structure 20 is inserted. Such an insertion tab may have a dimension in the longitudinal direction of between about 0.8 inches (20 mm) and about 3.0 inches (76 mm) and a caliber of less than 0.12 inches (3 mm). The tab may have a length of between about 0.4 inches (10 mm) and about 2.4 inches (60 mm), preferably, between about 0.6 inches (15 mm) and about 1.6 inches (40 mm). It should be stiff enough so it is easily grasped by a woman's fingers as the interlabial absorbent structure 20 is inserted

into her interlabial space. The tab should also be sufficiently flexible to accommodate the deformation of the interlabial space caused by a sitting position so as not to be a source of discomfort.

The interlabial absorbent structure 20 also preferably breaks up into a plurality of small fragments when the structure 20 is exposed to water and mild agitation. For example, a soiled interlabial absorbent structure 20 preferably breaks up into at least two fragments when it is deposited into a conventional toilet and exposed to the relatively mild agitation caused by flushing and passage through a typical household sewage system.

Still more preferably, the interlabial absorbent structure comprises biodegradable components. As used herein, the term "biodegradable component" is intended to describe a material having greater than about 70% biodegradation (percentage of theoretical carbon dioxide evolution) after 28 days when measured according to the Modified Sturm Test which has been designated Method 301B by the Organization for Economic Cooperation and Development. Preferably, the materials comprising the present invention have a biodegradation greater than about 80% and, more preferably, biodegradation is greater than about 90%.

The Panels

Since the panels 22A, 22B preferably mirror each other, the structure of a single panel 22 will be described with the understanding that the same structure is preferably repeated in the opposing panel. Each panel 22 contacts the walls of a woman's interlabial space helping to maintain the interlabial absorbent structure 20 in a desired position throughout a wide range of woman movements and also maintaining leakage of bodily fluids around the interlabial absorbent structure 20. The panels 22 also provide absorbent capacity to the interlabial absorbent structure 20 for storing such bodily fluids. The structure of a panel 22 is shown most clearly in Figure 2. As can be seen therein, a panel 22 comprises a plurality of individual plies 26, such plies can be provided, for example, by folding a web of material into a plurality of pleats or by disposing sheets of material

on top of each other and joining the sheets along at least one edge thereof. Preferably, the piles 26 are formed by folding a web of material into a plurality of pleats.

A panel 22 may comprise any absorbent source which is capable of absorbing or retaining liquids (e.g., menses and/or urine). A panel 22 may be manufactured from a wide variety of liquid-absorbent materials commonly used in sanitary napkins and other absorbent articles such as comminuted wood pulp which is generally referred to as airlaid. Examples of other suitable absorbent materials include creped cellulose wadding; meltblown polymers including cotton; chemically stiffened, modified or cross-linked cellulosic fibers (e.g., rayon); synthetic fibers such as polyester fibers, including crimped fibers and fibers having channels of capillary dimension provided thereto by the extrusion process; past mases including combinations of past mases and other materials; dams including tissue wraps and tissue laminates; absorbent foams (both blown foams and high internal phase emulsion (HIPE) foams); absorbent sponges; superabsorbent polymers; absorbent gelling materials; or any equivalent material or combinations of materials, or mixtures of these. Preferred absorbent materials comprise: tissue webs (air laid and wet laid webs are both suitable); webs of woven materials, nonwoven webs (e.g., carded webs, spun bonded webs, melt blown webs, and the like); and thin layers of foam. In the preferred embodiment shown in Figures 1 and 2 each panel 22 comprises a folded web of tissue.

The preferred tissue web preferably is provided with a temporary wet strength additive to enable the tissue web to resist loss of strength due to absorbed liquids which can cause the interlabial absorbent structure 20 to shred and bunch as it is exposed to water movement. The level of the temporary wet strength additive should be high enough such that the absorbent structure 20 resists shredding and bunching but not so high that the interlabial absorbent structure 20 fails to "break apart" in a domestic plumbing system (interlabial absorbent articles are frequently disposed of by flushing them down a toilet). The interlabial absorbent structure 20 of the present invention will be dispersed into at least two fragments within about 120 minutes of being placed into mildly agitated room temperature water as described in the TEST METHOD section below. Preferably, the disposable interlabial absorbent structure 20 will be dispersed into

a plurality of small fragments within about 30 minutes of being placed into mildly agitated room temperature water, more preferably, within about 15 minutes of being exposed to such mildly agitated room temperature water. Suitable temporary wet strength additives are the glycosylated polyacrylamide resins available from Cytec Industries Inc. of Stamford, CT under the designation Pares™. Particularly preferred is Pares™ 631 NC. When Pares™ 631 NC is used at a level between about 0.5% and about 1.0% in the wet laid structured tissue, the interlabial absorbent structure 20 has a satisfactory balance of mechanical integrity during use and dispersibility during disposal.

Wet burst strength has also been used by the art as a measure of the sensitivity of a tissue paper to water exposure. Preferably, the wet strength additive provides the tissue web with a wet burst strength of between about 15 grams and about 200 grams. More preferably the wet burst strength is between about 15 grams and about 30 grams. A method for measuring wet burst strength is described in the TEST METHOD section below.

Suitable tissue webs comprise at least 50% cellulosic fibers and have a basis weight between about 10 grams per square meter and about 60 grams per square meter. Such tissue webs can be produced using wet papermaking techniques as are known to the art or using air laying techniques as are also known to the art. Such tissue webs can also further comprise thermoplastic fibers which when melted provide strength and sealability to the web. Webs comprising at least 90% cellulosic fibers are preferred. Particularly preferred tissue materials comprise a wet laid tissue having a basis weight of about 35 pounds per 3000 square feet (50 grams per square meter) which is available from Fort Howard Corp. of Green Bay, WI or the wet laid tissue having a basis weight of about 18 pounds per 3000 square feet (30 grams per square meter) which is available from the Procter & Gamble Company as CHARMIN bathroom tissue.

As noted above and shown in Figure 2, the preferred structure of a panel 22 is provided by folding a web of tissue into a plurality of pleats to create the piles 26. As can also be seen in Figure 2, the piles 26 are arranged in a laterally side by side relationship. The tissue web can be folded so that it has any suitable number of piles 26. Preferably the number of piles 26 is sufficient to provide the requisite absorbent capacity to the

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interlabial absorbent structure 20 (unless auxiliary capacity in the form of a superabsorbent polymer or the like is provided) yet not so large as to cause wearer discomfort. Preferably, the web of tissue is folded so that the dry caliper of the interlabial absorbent structure 20 is less than about 7 millimeters, more preferably less than about 5.5 millimeters, still more preferably less than about 4.5 millimeters. The number of plies 26 provided to each panel 22 by such folding will depend on the caliper of the web of tissue that is being folded. A method for measuring dry caliper is provided in the TEST METHODS section below.

The plies 26 are preferably connected or joined at least one of their distal edges 21 or their proximal edges 23 in some suitable manner to insure the panels 22 remain in a folded configuration and do not unfold. The plies 26 can be joined by a variety of means including folding, pressure bonding (coldsealing), adhesive means, stitching (e.g. with cotton or rayon thread), and thermal bonding (if the tissue web also comprises thermoplastic binder fibers). Preferably the plies are joined by folding the web of tissue into a plurality of plies so that the plies 26 are at least partially joined at their distal edges 21 and joining the plies 26 at the proximal edges 23 to define the between 24 using means known to the art. Stitching is particularly preferred for joining the plies 26 at the proximal edges 23.

Each panel 22 should be of a suitable size and shape so that the interlabial absorbent structure 20 fits comfortably within a wearer's interlabial space. That is, each panel 22 should be sized so that the panel covers the "direct line of sight" from the distal edge of a woman's labia majora to her vaginal entrance. As noted above, a panel 22 preferably has a rounded rectangular shape as is shown in Figure 1. Preferably, each panel 22 has a surface area of between about 8 square centimeters and about 65 square centimeters. More preferably the surface area of each panel 22 is between about 10 square centimeters and about 35 square centimeters. Said another way, each panel 22 may have an "X" dimension between about 2 inches (5 centimeters) and about 6 inches (15 centimeters) and a "Y" dimension between about 0.6 inch (1.5 centimeters) and about 2 inches (5 centimeters).

The thickness or caliper of each panel 22 is also of significance with respect to the comfort experienced when wearing the interlabial absorbent structure 20 and to the absorbent capacity of the interlabial absorbent structure 20. As noted above, the caliper should be sufficient to provide the requisite absorbent capacity to the interlabial absorbent structure 20 yet not so large as to cause wearer discomfort. Preferably, the caliper of each panel 22 is between about 1 millimeter and about 3.5 millimeters, preferably between about 1.5 and 3 millimeters. More preferably, the caliper of each panel 22 is between about 1.5 and 2.5 millimeters.

When the interlabial absorbent structure 20 is folded for use as shown in Figure 2 and fully saturated with 0.9% aqueous saline solution the caliper should be less than about 15 millimeters, preferably less than about 6 millimeters and more preferably less than about 4 millimeters under a confining pressure of 0.25 psi (1.7 kPa). A method for measuring wet and dry caliper is provided in the TEST METHODS section below.

The interlabial absorbent structure is preferably provided with sufficient absorbency to absorb and retain exudates discharged from a woman's body. The absorbent capacity is controlled by the number and the composition of the individual plies 26, the volume of the interlabial absorbent structure 20 and the presence (or absence) of superabsorbent polymers, absorbent gelling materials, or the like. Depending on the specific structure chosen for a panel 22, the panel can have an absorbent capacity for 0.9% aqueous saline solution of between about 1 gram and about 30 grams. Preferably the absorbent capacity is between about 1 gram and about 15 grams, more preferably between about 2 grams and about 10 grams, of 0.9% aqueous saline solution. A method for measuring absorbent capacity is given in the TEST METHODS section below.

Each panel 22 is also preferably sufficiently flexible so as to conform to the convoluted surface of a woman's interlabial space. Such flexibility also allows the interlabial absorbent structure to respond to wearer movements without exerting a noticeable force on her body (i.e. high flexibility increases wearer comfort). Such flexibility can be characterized as follows. If the panels have a stiffness less than the stiffness of a single sheet of bathroom tissue, such as CHARMIN, they are too flexible

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and the risk of bunching during wear is unacceptably high. If the panels have a stiffness similar to the stiffness of a sheet of conventional typing paper, they are too stiff and the panels would be unable to conform to the convolutions of the walls of the interlabial space and respond to wearer movements.

In an alternative embodiment (not shown), each panel 22 may be provided with a plurality of preferential lines of bending to accommodate the non-symmetric spreading of the labia during certain motions, such as those when one leg is thrust to the side or an asymmetric squatting motion. Furthermore, such a plurality of preferential bend lines is also advantageous because the walls of the interlabial space may not be symmetric—often, one lip of the labia minora or the labia majora is longer than the other.

In one preferred embodiment of the present invention, the inner ply 27 of each panel 22 comprises a tissue having greater wet burst strength than the wet strength of the remaining plies 26. Since a wearer's fingers are most likely to contact the inner ply 27 when inserting and removing the interlabial absorbent product 20, this greater burst strength provides additional resistance to "poke through", particularly when the interlabial absorbent structure 20 is wet with absorbed bodily fluids, without substantially affecting other properties. Such resistance can provide a wearer with additional confidence that her hands will not become unacceptably soiled when inserting or removing the interlabial absorbent structure 20. Suitable tissue materials have a wet burst strength that at least about 30 grams and at least twice the wet burst strength of the tissues comprising the plies 26, preferably the wet burst strength of the inner ply 27 is greater than about 50 grams. A suitable tissue has a basis weight of about 14 pounds per 3600 square feet, comprises the level of temporary wet strength additive required to provide the desired wet burst strength, and can be made using the methods described in U.S. Patent 3,301,746, issued to Seifried, et al. on January 31, 1967.

Since the inner ply 27 of this preferred embodiment comprises a different material than the remaining plies 26, it can be joined to the remaining plies 26 using means known to those skilled in the art. For example, the inner ply 27 can be joined to the remaining plies 26 using a bond of adhesive (not shown) or other such means as may be known for joining two plies of material.

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Optional Panel Components

If desired, each panel 22 can also comprise other optional components. For example, each panel could comprise a topsheet as its body contacting surface 22T and/or a backsheet as its rear surface 22R. If the interlabial absorbent structure 20 also comprises a topsheet and a backsheet, the topsheet and the backsheet are preferably joined to each other along the distal edge 23 and the end edges 25 of each panel 22.

The topsheet is compliant, soft feeling, and non-irritating to the wearer's skin. Further, the topsheet is liquid pervious permitting liquids (e.g., menses and/or urine) to readily penetrate through its thickness. A suitable topsheet may be manufactured from a wide range of materials such as woven and nonwoven materials; polymeric materials such as apertured formed thermoplastic films, apertured plastic films, and hydroformed thermoplastic films; porous foams; reticulated foams; reticulated thermoplastic films; and thermoplastic foams. Suitable woven and nonwoven materials can be comprised of natural fibers (e.g., wood or cotton fibers), synthetic fibers (e.g., polymeric fibers such as polyester, polypropylene, or polyethylene fibers) or from a combination of natural and synthetic fibers. A particularly preferred nonwoven material for use as a topsheet comprises a hydrophilic, spun bonded material having a basis weight of about 0.68 ounces per square yard (23 grams per square meter) such as is supplied by Canovin GmbH of Posen, Germany as Corvelin H23GSM.

The body surface of the topsheet is preferably hydrophilic so as to help liquid to transfer through the topsheet faster than if the body surface was not hydrophilic so as to diminish the likelihood that menstrual fluid will flow off the topsheet rather than flowing into and being absorbed by the absorbent core. For example, surfactant may be incorporated into the polymeric materials of a formed film topsheet such as is described in U.S. Patent Application Serial No. 07/794,743, filed on November 19, 1991 by Asiz, et al., the disclosure of which is incorporated herein by reference. Alternatively, the body surface of the topsheet can be made hydrophilic by treating it with a surfactant such as is

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described in U.S. Patent 4,930,264 issued to Osborn on August 21, 1990, the disclosure of which is incorporated herein by reference.

The backsheet is preferably impervious to bodily fluids (e.g., menses and/or urine) and is preferably manufactured from a thin plastic film, although other flexible liquid impervious materials may also be used. As used herein, the term "flexible" refers to materials which are compliant and will readily conform to the general shape and contours of the human body. The backsheet provides extra protection to a wearer against soiling her pants when inserting or removing an interlabial absorbent structure 20 of the present invention. The backsheet may thus comprise a woven or nonwoven material, polymeric films such as thermoplastic films of polyethylene or polypropylene, or composite materials such as a film-coated nonwoven material. For example, the backsheet can comprise a polyethylene film having a thickness of from about 0.012 mm (0.5 mil) to about 0.251 mm (2.0 mils). Exemplary polyethylene films are manufactured by Clorox Corporation of Cincinnati, Ohio, under the designation F18-0401 and by Eddy Corporation, Virgiana Division, of Tulsa, Oklahoma, under the designation XP-39345. More preferably, the backsheet comprises a tissue web impregnated with a resin so as to cause the tissue web to be water resistant. Such water resistant tissue webs can be produced according to the process described in U.S. Patent 5,358,344, issued in the name of Alar, et al. on November 26, 1996, the disclosure of which is incorporated herein by reference.

The Intima

As noted above, the interlabial absorbent structure 20 comprises two panels 22A, 22B which are joined by an intima 24. The intima 24 joins the panels 22A, 22B and provides a preferential fold line for flexing the interlabial absorbent structure 20 into a configuration suitable for use. Preferably, the intima 24 also provides means for longitudinally directing any fluids that may be deposited thereon.

The intima 24 can comprise an extension of the material comprising the panels 22A, 22B or it can comprise a separate element to which the panels 22A, 22B are joined.

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Preferably, the intima comprises an extension of the material comprising the panels 22A, 22B.

In its simplest extension, the intima is merely a region between the panels 22A and 22B when the panels are folded. As noted above, the panels 22 preferably have a rounded rectangular configuration. This means that the intima 24 would comprise the proximal edges 23A, 23B of the panels 22A, 22B in this simplest extension. Preferably, the intima 24 is defined by preferential fold lines which define the proximal edges 23A, 23B as is shown in Figures 1 and 2.

Preferably, however, the intima 24 has a measurable length (preferably slightly shorter than the length X of the panels 22) and a width which can be defined as the lateral distance between the proximal edges 23A, 23B of the panels 22. The lateral distance between the proximal edges 23A, 23B is between about 1 millimeter and about 7 millimeters. Preferably, this lateral distance is between about 2 millimeters and about 6 millimeters. More preferably, the distance is between about 3 millimeters and about 5 millimeters. One skilled in the art will recognize that this lateral distance may be somewhat greater than the scrubbed caliper of the two panels 22A, 22B which comprise the preferred embodiment of the present invention.

The Applicants have found that the walls of the interlabial space are surprisingly insensitive, except for the portion nearest the external surface of the labia majora and the transition zone between the interlabial space and the vagina (i. e. the hymenal ring). This means any portion of the interlabial absorbent structure 20 that, when the structure is worn, lies in these relatively insensitive portions can have a surprisingly large caliper. Said another way, the intima 24, as mentioned above, may have a caliper (lateral distance) that is larger than the caliper of the panels (a portion of the panels may extend outside the interlabial space placing that portion in the sensitive region of the interlabial space), as a result, the intima 24 may be designed to provide additional performance benefits to the interlabial absorbent structure 20 by taking advantage of this "extra" caliper. Figures 3-6 show end views of interlabial absorbent structures having several alternative embodiments of the intima 24. Each of these embodiments provides

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additional performance benefits to the interlabial absorbent structure 20, they will be discussed individually below.

In Figure 3 the labium 24 comprises a compression zone where the portion of the interlabial absorbent structure 20 lying between the proximal edges 22A, 22B of the panels 22A, 22B (i. e. the labium 24) has been compressed to provide a compression zone to encourage longitudinal distribution of bodily fluids that are deposited on the interlabial absorbent structure 20. As is noted above, the labium 24 is that portion of the interlabial absorbent structure 20 that is positioned furthest into a wearer's interlabial space. Therefore, it will be the first portion of the interlabial absorbent structure 20 to intercept bodily fluids that are released by the vaginal introitus or by the urethra. Thus, bodily fluids deposited on the labium 24 will be encouraged to flow along the labium by the compression zone making more complete use of the absorbent capacity of the panels 22A, 22B.

If desired, the labium 24 of this embodiment can comprise alternating regions of lower and higher density (not shown). This would provide the additional advantage of increased acquisition rate in the lower density zones (i. e. having a density similar to the panels 22) and the flow along the labium 24 when an acquisition zone becomes saturated in the higher density zones (i. e. having the compressed density discussed above).

Compressing the region between the proximal edges 22A, 22B so the labium 24 comprises a compression zone can be done using means known to the art. For example, the portion of the interlabial absorbent structure 20 comprising the labium 24 could be caused to pass through a nip increasing the density thereof while the remainder of the interlabial absorbent structure 20 is not densified. While the density in the compression zone would be increased by such a processing step, it should not be increased so much that the rate of absorbency becomes unacceptably low (it is well known that absorbency rate and density have an inverse relationship for fibrous structures such as the preferred multiply fibrous structure of the present invention). It has been found that a density similar to the density of the channels in ALWAYS® Sanitary Napkins with Channels which are

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available from the Procter & Gamble company, Cincinnati, OH provides a satisfactory balance between longitudinal fluid direction and absorbency rate.

A second alternative embodiment of the labium 124 is shown in Figure 4. In this case, the portion of the interlabial absorbent structure 20 that lies between the proximal edges 22A, 22B has been folded so that the labium 124 takes on a "V" shape. This "V" shape provides a channel 127 for longitudinally directing bodily fluids that may be deposited on the labium 24. One of skill in the art will recognize that a "V" shape is not the only shape that will provide a channel suitable for longitudinal direction of bodily fluids. A nonlimiting list of other suitable shapes includes: semicircular, "U" shaped, and any other shape capable of forming a continuous channel that is open at the top. The "V" shape is preferred because the forming thereof using conventional folding techniques is straightforward. Preferably, the labium 124 further comprises a resilient member 128 that is disposed beneath the fibrous portion 125 of the labium 124 as is also shown in Figure 4.

The "V" shaped channel 127 of the alternative embodiment of the labium 124 shown in Figure 4 distributes deposited bodily fluids in the longitudinal direction in a similar manner to that described above. Such a folded structure has the additional advantage of having a more rapid acquisition rate than the compression zone embodiment shown in Figure 3. This improved acquisition rate is due to the fact that the fibrous dense structure of the preferred embodiment of the interlabial absorbent structure 20 as is described above is not densified. Rather the capillaries thereof are more open with a resulting increase in acquisition rate.

Preferably the labium 124 further comprises a "M" shaped resilient member 128 disposed beneath the fibrous portion 125 as is shown in Figure 4. The resilient member 128 serves two purposes: 1) the resilient member 128 serves to resist the compressive forces due to a wearer's labia which would tend to close off the channel 127 and 2) the legs of the "M" serve to spread the panels 22A, 22B apart with resulting improved contact with the walls of the interlabial space.

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The resilient member 128 needs to be stiff enough to resist complete closure of the channel 127 (i. e. have sufficient compression resistance) yet not be so stiff as to become a source of wearer discomfort. Examples of some suitable nonabsorbent materials which may be placed under the fibrous portion 125 include thermoplastic polyethylene, polypropylene, synthetic foam, film or nonwoven materials having the requisite compression resistance. One exemplary foam material for use as the resilient member 128 is a radiation crosslinked, closed cell polyethylene foam known as VOLARA 2A obtained from Voltek Corp., Lawrence, MA.

The "V" shaped configuration of the embodiment of the inlumen 124 that is shown in Figure 4 can be formed by the following method: 1) providing a resilient member 128 that has been preformed into an "M" shape, 2) providing an attachment means (not shown) for joining the resilient member 128 to the fibrous portion 125 to the upper surface of the resilient member, 3) disposing the resilient member 128 along the longitudinal centerline L and adjacent the lower surface of the fibrous portion 125, and 4) deforming the fibrous portion 125 so that the lower surface thereof contacts the attachment means which joins the fibrous portion 125 to the resilient member 128 and causes the inlumen 124 to assume a "V" configuration.

A third embodiment of the inlumen is shown as 224 in Figure 5. In this embodiment the piles 26 extend a distance "Z" beyond the proximal edges 23A, 23B of the panels 22. The panels 22A, 22B are joined at their proximal edges 23A, 23B by a plurality of discrete securement means 230. As one of skill in the art will recognize, the space between the extended portions of the piles 26 encourages longitudinal distribution of bodily fluids that are deposited on the inlumen 224. Also, since the securement means 230 are spaced apart, the structure shown in Figure 5 provides a pathway for such deposited fluids to flow into the volume between the piles 26 in the panels 22A, 22B (As was discussed above, the void volume between the piles 26 provides capacity for absorption of cellular debris, blood clots, and the like that which would otherwise clog capillaries within the individual piles of tissue).

This embodiment of the inlumen which is described above and shown as 224 in Figure 5 comprises an extended portion 225 of the material comprising the panels 22.

The portion 225 extends a distance "Z" beyond the proximal edges 23A, 23B of the panels 22 to create the inlumen 224. As will be recognized, the distance "Z" is important in that: 1) if "Z" is too short, the inlumen 224 will be difficult to fabricate or 2) if "Z" is too large, the extended portion 225 will have a tendency to fold over which could block the pathway in the void volume between the piles 26. Difficulty of insertion may also be increased if "Z" is too large. Preferably "Z" is between about 1 millimeter and about 5 millimeters. More preferably, "Z" is between about 1 millimeter and about 3 millimeters.

The "Z" dimension, in combination with the properties of the material which comprises the piles 26, also defines the compression stiffness of the inlumen 224. The stiffness of the inlumen 224 will affect the wearing comfort of the interlabial absorbent structure 20. The compression stiffness should be less than or equal to about 300 grams. Preferably, the compression stiffness is less than about 300 grams and more preferably less than or equal to about 200 grams. A method for compression stiffness is given in the TEST METHODS section below.

The panels 22A, 22B are joined at their proximal edges 23A, 23B using a plurality of discrete securement means 230 to form the inlumen 224. The discrete securement means 230 can comprise any means known to the art to join the panels 22A, 22B at a plurality of spaced apart locations along the proximal edges 23 thereof. For example, the panels could be joined using stitching (e. g. with cotton or rayon thread), thermal bonds (if the piles comprise a thermoplastic material), spots of adhesive, or any other such securement means as is known to the art. Preferably the panels 22A, 22B are joined by stitching them together.

To use the interlabial absorbent structure of the present invention a wearer would fold the structure along its longitudinal centerline L so it assumes a configuration similar to that shown in Figure 2. She would grasp the structure adjacent the distal edges 21A, 21B thereof, spread her labia and insert the structure such that the inlumen 24 is in close proximity to her pelvic floor. When she releases the distal edges 21A, 21B, her labia will close around the interlabial absorbent structure 20 holding it in place. As discussed above, the panels 22A, 22B will conform to and remain in contact with the walls of the wearer's interlabial space throughout a wide range of wearer motions.

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TEST METHODS

Burst Strength

Summary

The test specimen, held between anvil clamps, is subjected to increasing force that is applied by a 0.625 inch diameter, polished stainless steel ball. The burst strength is that force that causes the sample to fail. Burst strength may be measured on wet or dry samples.

Apparatus

Burst Tester Intoluc-II-STD Tensile Test Instrument, Cat. No. 1451-24PGB or the Thwing-Albert Burst Tester are both suitable. Both instruments are available from Thwing-Albert Instrument Co., Philadelphia, PA. The instruments must be equipped with a 2000 g load cell and, if wet burst measurements are to be made, the instruments must be equipped with a load cell shield and a front panel water shield.

Conditioned Room Temperature and humidity should be controlled to remain within the following limits:

Temperature: 73±3°F (23°C±2°C)

Humidity: 50±2% Relative Humidity

Paper Cutter Scissors or other equivalent may be used

Pan For soaking wet burst samples, suitable to sample size

Solution Water for soaking wet burst samples should be equilibrated to the temperature of the conditioned room.

Timer Appropriate for measuring soak time

Sample preparation

- 1) Cut the sample to a size appropriate for testing (minimum sample size 4.5 in x 4.5 in). Prepare a minimum of five samples for each condition to be tested.

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- 2) If wet burst measurements are to be made, place an appropriate number of cut samples into a pan filled with temperature-equilibrated water.

Equipment Setup

- 1) Set the burst tester up according to the manufacturer's instructions. If an Intoluc-II-STD Tensile Test Instrument is to be used the following are appropriate:

Speed: 12.7 centimeters per minute

Burst Sensitivity: 20 grams

Peak Load: 2000 grams

- 2) Calibrate the load cell according to the expected burst strength.

Measurement and Reporting

- 1) Operate the burst tester according to the manufacturer's instructions to obtain a burst strength measurement for each sample.
- 2) Record the burst strength for each sample and calculate an average and a standard deviation for the burst strength for each condition.
- 3) Report the average and standard deviation for each condition to the nearest gram.

Report the average and the standard deviation for each group of four samples.

Dry Cellulose

Principle

Dry collapse of a sample can be determined using a compressor gauge that is weighted to provide a predetermined confining pressure.

Apparatus

A suitable compressor gauge is the Ames, Model 130 with dial indicator Model 401, available from the B. C. Ames, Company of Waltham, MA. The compressor gauge should have a circular compressor foot made of aluminum capable of exerting a loading pressure of 0.25 pounds per square inch (1.7 kPa). It will be recognized that the

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diameter of the compressor foot can be varied to accommodate different sample sizes as long as the loading pressure remains constant.

Operation

1. The compressor gauge is moved according to the manufacturer's instructions.
2. The compressor foot is raised and the sample is placed on the base plate. The sample is positioned on the base plate so that when the foot is lowered it is in the center of the sample. The compressor foot should be at least 5 millimeters from all sample edges. Try to smooth out or avoid any wrinkles in the sample.
3. Gently lower the foot onto the sample.
4. Determine caliper by reading the compressor dial 30 seconds after the foot comes in contact with the sample.
5. Repeat steps 2 through 4 for an additional 2 samples.

Calculations

The average of the three readings is the caliper of the material.

Use Caliper

Principle

The thickness or caliper of a product may be determined using a motor-operated micrometer which measures the perpendicular distance between the two principle surfaces of the product under prescribed conditions. Using this equipment, measurements are made and reported to the nearest 0.1 millimeter.

Apparatus

Blotter Paper or Absorbent Towel	Clean, dry
Conditioned Room	Temperature and humidity controlled within the following limits: Temperature: $73 \pm 2^{\circ}\text{F}$

Flat Pan for Immersing Sample

Timer

Micrometer

Solvents

Solution

Relative Humidity: $50 \pm 2\%$

Pan to be larger than the largest sample by at least 100%.

Digital Stopwatch.

A suitable micrometer is Model 89-11 Electronic Thickness Tester which is available from the Tinsley-Albert Instrument Co., Philadelphia, PA. The sample load should be 0.25 pounds per square inch (1.7 kPa).

Office shaver, 7 in. cut length or equivalent.

Aqueous saline solution (0.9%) at the temperature of the conditioned room used.

General Practices

The following general practices should be followed.

1. Set up and calibrate the micrometer as described in the manufacturer's instructions.
2. Do not use sample portions cut with a die if more sample is available. Some compression of paper takes place during sample cutting in a die which can cause results to be low.
3. Do not make micrometer readings on crosses resulting from folds.
4. Do not make micrometer readings on paper with obvious defects such as wrinkles, tears, holes, etc. If the sample portions selected have defects of this kind, making them unsuitable for testing, discard. Replace with another sample portion which is free of such defects, selecting the replacement sample portion from the same layer or area in the sample. In general, select portions for testing not designated for other tests.

5. Keep handling of the surface area of the sample portions to a minimum. Touch only the edges when possible.
6. Do not test the same area of a sample portion more than once; the pressure of the anvils may cause changes in caliber.
7. Do not allow the instrument cycle to force you to make readings at a pace too fast for proper attention to correct procedure.
8. Upon completion of testing, always turn off the micrometer with the pressure foot down in contact with the anvil.

Sample Preparation

Obtain at least three samples and take the micrometer reading in the center of each sample.

Sample Conditioning

None required.

Pre-measurement Technique

Turn on the meter to the micrometer then adjust the zero setting of the micrometer according to the manufacturer's instructions before analyzing each sample portion or sides of sample portions.

Immediately prior to measurement, lower the sample into a shallow pan of the saline solution such that the sample can be completely submerged.

Immediately upon completion of wetting, start the stop watch and allow the sample to remain submerged for 10 minutes. Remove the sample from the saline solution using both hands and grasping at the two sides adjacent along a longitudinal line (sample hangs vertically in transverse direction). Quickly let the sample drain while holding nearly in this vertical plane but touching the lower edge to a dry absorbent surface (e.g. BOUNTY paper towels). Drain for 30 seconds and begin the measurement as is described below.

Operation

Turn on the meter to the micrometer, then adjust the zero on the micrometer as described in the manufacturer's instructions analyzing each sample portion or sides of sample portions.

When the foot is in the up position, place the sample portion on the micrometer anvil. The sample portion must be located carefully on the anvil so that when the foot comes down, it will be at least 0.50 inches (1.27 cm) from the edges of the sample portion. Read the panel meter of the micrometer to the nearest 0.1 millimeter when the foot is in the down position near the end of the dwell time. Report the micrometer reading to the nearest 0.1 millimeter. Continue in this manner for each sample portion.

Watch the zero setting. In the event the panel meter incorrectly reads 0.1 millimeter or more away from zero, stop testing. Close the surface areas of the foot and anvil and remove the micrometer.

At the completion of the test, if a Thwing-Albert instrument is used, turn the instrument to the "STAND-BY" position with the foot down all the way against the anvil before turning the main power switch off.

Calculations

Calculate the average and standard deviation of the micrometer readings for each sample and report the average caliber for each sample to the nearest 0.1 millimeter.

Absorbent Capacity

Absorbent capacity may be determined as follows. The article is weighed to the nearest 0.1 gram. The article is then submerged in a beaker of sterile 0.9% saline solution (obtainable from the Baxter Travenol Company of Deerfield, IL), such that the article is totally submerged and is not bent or otherwise twisted or folded. The article is submerged for 10 minutes. The article is removed from the saline and suspended for two minutes in a vertical position to allow the saline to drain out to the article. The article is then placed body facing surface down onto an absorbent blotter, such as the filter paper #631 available from the Filtration Science Corp., Easton-Dunham Division of Mount Holly Springs, PA. A uniform 17.6 grams per square centimeter load is placed over the article to squeeze excess fluid out. The absorbent blotter is replaced every 30 seconds

until the amount of fluid transferred to the absorbent blotter is less than 0.5 grams in a 30 second period. Next, the article is weighed to the nearest 0.1 gram and the dry weight of the article is subtracted. The difference in grams is the absorbent capacity of the article.

Compression Stiffness

Apparatus

Tensile/Compression This test requires a constant rate tensile and compression

Tester testing apparatus such as an INSTRON Model 4302 tensile and compression testing machine, which is available from Instron Corporation of Canton, MA.

Load Cell Ten Newton compression load cell suitable for use with tensile/compression tester.

T-Rod The T-rod comprises a pair of 6.40 mm diameter metal rods perpendicularly mounted together in a T configuration. The drive rod (the longer of the rods) is about 125 mm long and the push rod (the shorter of the rods) is about 75 mm long. Preferably, the end of the drive rod is tapered to fit the circumference of the push rod and the two are glued, welded and/or screwed to each other. The opposite end of the drive rod is connected to the crosshead unit of the tensile/compression tester.

Sample Clamp Adjustable clamp having opposed vertical faces and a horizontal top surface

Procedure

1. Set up tensile/compression tester according to manufacturer's instructions.
2. Clamp the sample such that a 1.0 cm long portion of the sample (portion to be compressed) extends vertically above the horizontal surface of the clamp.

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3. Center T-rod on sample with the push rod perpendicular to the long side of the sample surface that is parallel to the horizontal surface of the clamp.
4. Lower T-rod until it exerts a 4.5 ± 0.5 gram force on the sample.
5. Compress the surface of the product for 5.0 mm at a crosshead speed of 2 inches/minute (51 millimeters/minute).
6. Record the peak force.
7. Repeat for at least 10 samples.

Calculations and Reporting

Calculate and report the mean and standard deviation of the peak force for each sample evaluated.

Water Dispersibility

Apparatus

Stirrer Magnetic, Thermomix type Model 57225 or 7300 (no substitution). Permanently inscribe a circle 3.5 inches (8.9 centimeters) on the top surface of the stirrer. The center of the circle must be coincident with the geometric center of the stirrer.

Mixing Bar 2.5 inch (6.2 centimeters) TEFLON coated with spinning ring. Permanently mark one end of the bar with black ink for a distance of 0.5 inch (1.2 centimeters) back from the tip.

Thermometer 30 to 120°F with 1 degree divisions

Timer Digital stopwatch

Stroboscope Variable speed stroboscope, model 964 available from Sirotron, Power Instrument, Inc. of Skokie, IL is suitable

Beaker Kimax brand 2000 milliliter with spout (no substitution), inscribe a fill mark at a height of 5.6 inches (14.3 centimeters) from the flat bottom of the beaker. Do not use any beaker not having a flat bottom.

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Test Setup

1. Fill the beaker to the fill mark with 73 ± 3°F tap water.
2. Place the beaker on the magnetic stirrer centering it in the inscribed circle.
3. Add the stirring bar to the beaker.
4. Turn the strobeoscope on and set the speed to 1000 rpm according to the manufacturer's directions.
5. Turn the magnetic stirrer on with the on/off switch. Adjust the speed of the magnetic stirrer until the stirring bar appears to be stationary and both ends appear to be black. This indicates that the magnetic stirrer is turning at 500 rpm (i.e. half the setting on the strobeoscope). Turn the magnetic stirrer off with the on/off switch.

Procedure

1. Hold a sample 3 to 4 inches (7.6 to 10.2 centimeters) above the surface of the water. Gently drop the sample onto the water surface, starting the timer when the sample touches the water surface.
2. Wait 5 seconds.
3. Start the magnetic stirrer with the on/off switch.
4. Record the time required until the sample separates into at least two pieces.
5. Repeat steps 1 through 4 with an additional 3 samples.

Calculation and Reporting

Calculate and report the mean and standard deviation of the water dispersibility time for the four samples tested.

The disclosure of all patents, patent applications (and any patents which issue thereon), as well as any corresponding published foreign patent applications, and

publications mentioned throughout this description are hereby incorporated by reference herein. It is expressly not admitted, however, that any of the documents incorporated by reference herein teach or disclose the present invention.

While particular embodiments of the present invention have been illustrated and described, it would be obvious to those skilled in the art that various other changes and modifications can be made without departing from the spirit and scope of the invention.

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What is claimed is:

1. An interdigital absorbent structure for wearing within an interdigital space, said interdigital space having opposed walls, said interdigital absorbent structure having a longitudinal centerline, a body contacting surface, and an opposed rear surface and comprising:

a pair of absorbent panels, each panel having a proximal edge, a distal edge, and a pair of opposed end edges wherein each of said panels has sufficient flexibility that it at least partially conforms to a surface of said wall and is capable of maintaining contact with said surface when said interdigital absorbent structure is worn; and

an isthmus which joins said proximal edges of said panels, said isthmus being positioned furthest toward into said interdigital space when said interdigital absorbent structure is worn.

2. The interdigital absorbent structure of Claim 1 wherein said interdigital absorbent structure is disposed into at least two fragments after two hours exposure to mildly agitated water.
3. The interdigital absorbent structure of Claim 1 wherein each of said panels comprises a plurality of piles of tissue, said plurality of piles of tissue being joined at said distal edge of said panel.
4. The interdigital absorbent structure of Claim 3 wherein said tissue comprises a temporary wet strength additive.
5. The interdigital absorbent structure of Claim 3 wherein said tissue has a wet burst strength between about 15 grams and about 200 grams.
6. The interdigital absorbent structure of Claim 1 wherein said isthmus comprises a clarified portion of the materials comprising said panels.
7. The interdigital absorbent structure of Claim 1 wherein said isthmus further comprises a flange portion, said flange portion comprising an extension of said materials comprising said panels, and a resilient member, said resilient member comprising a portion of said rear surface and being disposed along said longitudinal centerline.

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8. The interdigital absorbent structure of Claim 1 wherein said isthmus comprises an extension of the materials which comprise said panels beyond said proximal edges, said panels being joined at said proximal edges by a plurality of discrete improvement means.
9. The interdigital absorbent structure of Claim 1 wherein said interdigital absorbent structure further comprises extension means joined to said rear surface of said isthmus.
10. The interdigital absorbent structure of Claim 3 wherein each of said panels further comprises a topsheet disposed on a body surface thereof and a backsheet disposed on said rear surface thereof, said topsheet and said backsheet being joined along said end edges and said distal edges.

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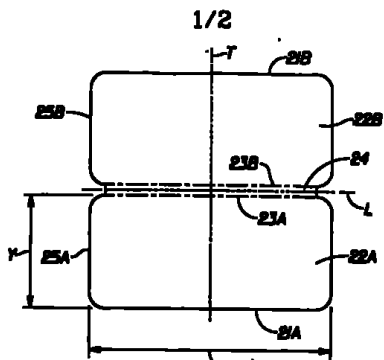


Fig. 1

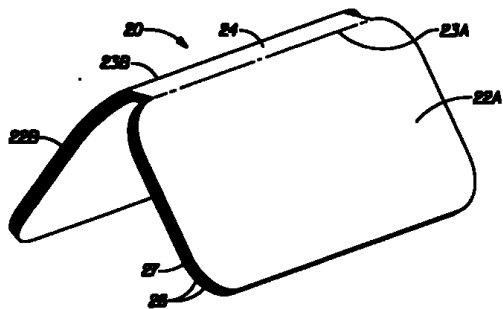


Fig. 2

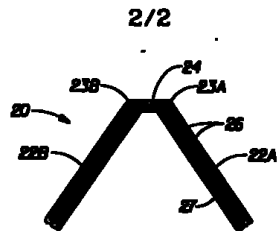


Fig. 3

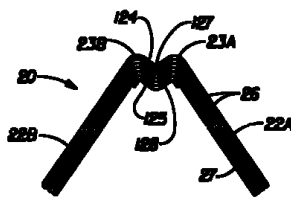


Fig. 4

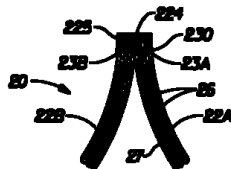


Fig. 5