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Superintendencia de Industria y Comercio
E. S. D.

SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO
Unidad Ejecutiva 100-41367 100-41367
Fecha: 2002-06-07 10:41:15
Trámite: 100-41367-2 100-41367-2
Dependencia: 100-41367-2 100-41367-2

TRÁMITE : 002

EVENTO : 001

ACTUACIÓN : 538

Referencia : Expediente No. 00-042.367

Asunto : Solicitud de patente para: ARTICULO
ABSORBENTE QUE CONTIENE UN ADITIVO ACTIVO.

Solicitante : SCA HYGIENE PRODUCTS AB

Fecha de solicitud : 07 de junio de 2000

Publicada en : la Gaceta No. 519 del 29 de agosto de 2002

1. Yo, Emilio FERRERO, identificado como aparece al pie de mi firma, actuando como apoderado en el asunto de la referencia, atentamente, solicito se efectúe el examen de patentabilidad de la solicitud en referencia según lo establecido en el artículo 44 de la Decisión 486 de la Comisión de la Comunidad Andina. Para tal efecto presento junto con este escrito el recibo No. 03-13,517 por valor de \$335.000.00, que corresponde a la tasa fijada según lo dispuesto en la resolución No. 41687 del 24 de diciembre de 2002.

2. Ruego atentamente a la Señora Jefe se sirva ordenar que se anexe este recibo, para que se efectúe dicho examen y se continúe con el trámite de la solicitud.

Bogotá, 25 FEB 2003
Señora Jefe,


EMILIO FERRERO
T.P.A. No. 31.929

COLO 11256 801 038 6
JBP/JFR/ID-000697/WPC11256



Industria y Comercio

SUPERINTENDENCIA

Superintendencia de Industria y Comercio
Solicitud: 80042387 80000000
Fecha: 2003. FEB. 24-02 10:10:10
Tipo: 1. 800 PATENTES D. 4. PATENTES/ 25A PARTE D.
Dependencia: 8003 MINISTERIO DE JUSTIA ECONOMICA

NIT : 800176089-2

RECIBO OFICIAL DE CAJA : 03 - 13,517
FECHA : FEBRERO 24 DE 2003

***** CONSIGNACION *****

DEPOSITANTE	TIPO PAGO	BANCO	CUENTA	Nº. PAGO	FECHA PGO	Vr. PAGO
CAVELIER ABOGADOS	CONSIGNACION	BANCO POPULAR	050-00110-6	3136963	24/02/2003	25,680,000.00

***** C O N C E P T O *****

CANT.	RENTISTICO	CONCEPTO	TOTAL CONCEPTO
1	50005-01-01 SOLICITUDES	112 PTC CAP-I EXAMEN DE PATENTIBILIDA	335,000.00
		TOTAL :	\$ 335,000.00

SON: TRESCIENTOS TREINTA Y CINCO MIL PESOS

RESPONSABLE :

RECIBO DE CAJA APLICADO AL EXPEDIENTE No. _____

036 11296-801-038-6

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376

SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO
DIVISIÓN DE NUEVAS CREACIONES

2020
Bogotá D.C., Junio 21 de 2005

Doctor
EMILIO FERRERO
Apoderado **SCA HYGIENE PRODUCTS AB**

ASUNTO Radicación 00-42367
 Trámite 002
 Evento 001
 Actuación 430
 Oficio
 Folios 015

10038

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 tuvo en cuenta el capítulo descriptivo, comprendido en los folios 2 a 6 del expediente correspondiente a la solicitud en estudio, tal como fue radicado al inicio del trámite.
- B. El capítulo reivindicatorio tomado en cuenta para el presente estudio comprende 7 reivindicaciones y se encuentra en el folio 7, tal como fue radicado al inicio del trámite.
- C. Conforme lo establecen 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 07 de junio de 2000, en el momento de la radicación se reclamó prioridad. La copia certificada de la solicitud cuya prioridad fue reivindicada (SE 9902207 del 11 de junio de 1999 y SE 9904648 de diciembre 17 de 1999) aparece junto con la traducción de las reivindicaciones en los folios 20 a 51. El contenido de las reivindicaciones del documento SE 9902207 no corresponde a la materia reivindicada ante esta Superintendencia, luego no será tenida en cuenta dicha prioridad.

2. Objeto de la invención:

- A. Las reivindicaciones 1 a 7 de la solicitud en estudio se refieren a: un artículo absorbente, tal como un pañal, un protector de panty, un protector contra incontinencia, una compresa o un tampón, que incluye una sustancia aditiva activa, caracterizado porque el artículo absorbente incluye un indicador visual que indica el estado de actividad del aditivo activo.
- B. El objeto de la solicitud se puede clasificar según la clasificación internacional como A 61 F 13/15 y A 61 L 15/20.

3. Claridad de la Solicitud:

- A. El artículo 28 de la Decisión 486 de la Comisión de la Comunidad Andina establece "la descripción deberá divulgar la invención de una manera suficientemente clara y completa para su comprensión y para que una persona capacitada en la materia

técnica correspondiente pueda ejecutarla”

Las páginas 3 y 5 presentan errores de impresión que impiden su total legibilidad.

De acuerdo con lo anterior, la descripción no cumple con el requisito de claridad según lo establecido en el artículo 28 de la Decisión 486.

- B. En el artículo 30 de la decisión 486 de la Comisión de la Comunidad Andina se establece: “Las reivindicaciones definirán la materia que se desea proteger mediante la patente. Deben ser claras y concisas y estar enteramente sustentadas por la descripción. Las reivindicaciones podrán ser independientes o dependientes. Una reivindicación será independiente cuando defina la materia que se desea proteger sin referencia a otra reivindicación anterior. Una reivindicación será dependiente cuando defina la materia que se desea proteger refiriéndose a una reivindicación anterior. Una reivindicación que se refiera a dos o más reivindicaciones anteriores se considerará una reivindicación dependiente múltiple.” En el artículo 51 se establece además: “El alcance de la protección conferida por la patente estará determinado por el tenor de las reivindicaciones.”

- i. Las reivindicaciones 1 y 7 no son concisas ni están enteramente sustentadas en la descripción porque en ellas se afirma que el artículo absorbente, objeto de la solicitud, incluye una sustancia activa. En realidad, no se trata de cualquier sustancia activa sino de un microorganismo. No necesariamente cualquier sustancia activa tiene cambios de pH.

De acuerdo con lo anterior, el capítulo reivindicatorio no cumple con el requisito de claridad según lo establecido en el artículo 30 de la Decisión 486. El solicitante deberá anexar un nuevo capítulo reivindicatorio con todas las correcciones aquí requeridas.

4. Reivindicaciones de uso

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

El uso no se protege, puesto que no está contemplado en la legislación y es sólo la aplicación industrial de un producto o procedimiento y por lo tanto no puede ser objeto de patente. El uso no corresponde ni a un producto ni a un procedimiento. Por lo tanto, la reivindicación 7, en la que se reclama protección para un uso, no es aceptable según la legislación vigente.

5. Determinación del estado de la técnica:

El artículo 16 de la Decisión 486 de la Comisión establece que: “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.”

“Solo para el efecto de la determinación de la novedad, también se considerará dentro del estado de la técnica el contenido de una solicitud de patente en trámite ante la oficina nacional competente, cuya fecha de presentación o de prioridad fuese anterior a la fecha de presentación o de prioridad de la solicitud de patente que se

estuviese examinando, siempre que dicho contenido esté incluido en la solicitud de fecha anterior cuando ella se publique o hubiese transcurrido el plazo previsto en el artículo 40"

La fecha para determinar el estado de la técnica es el 17 de diciembre de 1999, tomando en cuenta que no se aceptó la prioridad reivindicada con el documento SE 9902207 por no corresponder a la materia reivindicada en la solicitud estudiada.

Consultadas las bases de datos y los archivos con que cuenta la entidad, especialmente bajo las clasificaciones A 61 F 13/15 y A 61 L 15/16, se encontró que antes del 17 de diciembre de 1999 habían sido publicados los documentos enumerados en la siguiente tabla.

No.	Documento	Título	Fecha de publicación
D1	US 5,217,444	Absorbent tampon	1993-06-08
D2	EP 0347657	Wetness indicating hot-melt adhesives	1989-12-27
D3	EP 0021492	Improved disposable diaper type garment having wetness indicator	1981-01-07
D4	US 5,902,669	Disposable paper products with indicator means	1999-05-11
D5	US 5,468,236	Disposable absorbent product incorporating chemically reactive substance	1995-11-21

6. Evaluación de los requisitos de patentabilidad:

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

En cumplimiento del artículo 14 de la Decisión 486, se procedió a evaluar los requisitos de novedad, nivel inventivo y aplicación industrial con el fin de establecer la patentabilidad del objeto de la solicitud reivindicado en la solicitud en estudio.

A. Evaluación del nivel inventivo:

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

El documento D1 divulga el uso de un indicador que cambia de color, como bromo fenol azul, en una toalla higiénica, lo cual cumple la función de informar acerca de los cambios en el pH. En D2 se publica la aplicación de los indicadores de pH en pañales (ver página 3, líneas 27 y 28). En D3 también se publican pañales con indicadores de mojado. En D5 también se describen prendas absorbentes que contienen sustancias reactivas químicamente que indican la presencia en excrementos de otras sustancias. D4 también divulga productos absorbentes desechables que contienen indicadores que dan señales sobre la humedad del

67 65
papel.

A partir de estas enseñanzas un técnico de nivel medio habría derivado de manera evidente el uso de indicadores para establecer si la bacteria lacto bacilo, de que trata la solicitud en estudio, seguiría activa aún o no. Si ya en el arte previo se había sugerido la posibilidad de emplear indicadores de pH para informar sobre la presencia de ciertas sustancias en la prenda, era obvio esperar usar indicadores para informar sobre los cambios de pH, indicios de actividad de la bacteria. Luego, los documentos citados en el presente concepto, solos o combinados, afectan la altura inventiva del objeto reivindicado.

Por lo tanto, la solicitud en estudio no cumple con el requisito de nivel inventivo establecido por el artículo 18 de la Decisión 486.

C. Resumen

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

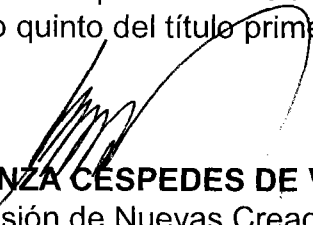
No.	Documento	Reivindicaciones afectadas	Requisito afectado
D1	US 5,217,444	1 a 7	Nivel inventivo
D2	EP 0347657	1 a 7	Nivel inventivo
D3	EP 0021492	1 a 7	Nivel inventivo
D4	US 5,902,669	1 a 7	Nivel inventivo
D5	US 5,468,236	1 a 7	Nivel inventivo

Se anexa copia de las anterioridades mencionadas.

7. Notificación

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

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


ALIX CARMENZA CÉSPEDES DE VERGEL
Jefe de la División de Nuevas Creaciones

El anterior requerimiento fue notificado por fijación en lista, de fecha 30 JUN 2005.

CONCEPTO TÉCNICO Número: 918	EXAMINADOR TÉCNICO Código: 202043
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30-6-5



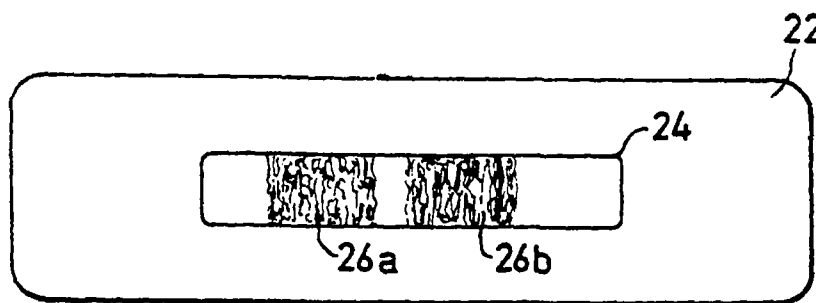
US005217444A

United States Patent [19]**Schoenfeld**[11] **Patent Number:** **5,217,444**[45] **Date of Patent:** **Jun. 8, 1993**[54] **ABSORBENT TAMPON**[76] **Inventor:** **Alex Schoenfeld**, 50 Ibn Gvirol St.,
Tel Aviv, Israel[21] **Appl. No.:** **369,805**[22] **Filed:** **Jun. 22, 1989**[30] **Foreign Application Priority Data**

Nov. 11, 1987 [IL] Israel 84443

[51] **Int. Cl.⁵** **A61F 13/15**[52] **U.S. Cl.** **604/361; 604/358;**
604/385.1[58] **Field of Search** 604/358, 360, 361, 318,
604/385.1[56] **References Cited****U.S. PATENT DOCUMENTS**4,022,211 6/1977 Timmons et al. 604/361
4,231,370 11/1980 Mroz et al. 604/361**FOREIGN PATENT DOCUMENTS**2031104 6/1970 Fed. Rep. of Germany 604/361
1355018 2/1964 France 604/361
3320218 12/1984 France 604/358**OTHER PUBLICATIONS**W. J. Watson, MD, CCFP, Gregory DeMarchi, MD,
CCFP, pp. 1847-1852 Vaginal Discharge: An Ap-
proach to Diagnosis and Management, Aug., 1987.*Primary Examiner*—Randall L. Green*Assistant Examiner*—Gina M. Gualtieri*Attorney, Agent, or Firm*—Benjamin J. Barish[57] **ABSTRACT**

An absorbent pad, for use in absorbing secretions from a person's body, includes a pH indicator material indicating by a colour change the acidity or alkalinity of a liquid coming into contact with it. The pH indicator material is wetted by the secretions absorbed by the pad, and thereby provides an indication of the health condition of the person's body.

4 Claims, 1 Drawing Sheet

ABSORBENT TAMPON

BACKGROUND OF THE INVENTION

The present invention relates to an absorbent pad, and particularly to one for use in absorbing secretions from a person's body. The invention is particularly useful in tampons, namely plugs of absorbent material insertable into body cavities to absorb secretions, particularly vaginal discharge, and is therefore described below with respect to this application.

Vaginal discharge caused by secretions from the cervix and vagina may occur throughout the menstrual cycle. Such discharge may result from both non-infectious causes and infectious causes. The non-infectious causes include physiological causes, such as puberty, menstrual cycle, sexual activity, pregnancy and menopause, as well as non-physiological causes such as the presence of a foreign body, chemical, drug, and gynecologic abnormalities. The infectious causes producing vaginal secretions include *Candida albicans*, *Trichomonas vaginalis*, and *Bacterial vaginosis*; and those producing cervical secretions include *Neisseria gonorrhea*, *Chlamydia trachomatis* and *Herpes simplex virus*. Effective treatment requires identification of the cause of the secretion, particularly if the cause is an infectious one.

At the present time, diagnosis of the cause of a vaginal or cervical secretion is usually made at the physician's office or in a laboratory by examining smears of the discharge. One of such examinations made is to measure the pH, i.e., the acidity or alkalinity, of the secretion since it has been determined that at least some of the infectious causes are characterized by a change in the pH of the secretion. For further information, reference is made to the publication "Vaginal Discharge: An Approach to Diagnosis and Management", by William J. Watson and Gregory DeMarchi, *Can. Fam. Physician*, Vol. 33 August 1987, Pages 1847-1855.

OBJECTS AND SUMMARY OF THE INVENTION

An object of the present invention is to provide a method and means which can be conveniently examined by the user to provide an early indication of the health condition of the user's body, particularly whether there may be an infectious cause for a vaginal discharge.

According to the present invention, there is provided a tampon for use in absorbing secretions from a person's body, particularly vaginal discharge, characterized in that the tampon includes a pH indicator material indicating by a colour change the acidity or alkalinity of the secretion coming into contact with the material, the pH indicator material being included in the tampon so as to be wetted by the secretions absorbed by the tampon, thereby providing an indication of the health condition of the person's body.

The invention also provides a method for indicating the health condition of a woman, comprising: including in a tampon to be used for absorbing vaginal discharge a pH indicator material indicating by a colour change the acidity or alkalinity of the vaginal discharge; and inspecting the colour of the pH indicator material after being used for absorbing vaginal discharge.

Preferably, the tampon includes a plurality of pH indicator materials each producing a colour change at a different pH value, to provide a more precise indication

of the specific pH value, to provide a more precise indication of the specific pH value of the secretion absorbed by the tampon, and thereby a better indication of the health condition of the user.

The pH indicator material may be impregnated in a fibrous strip bonded to the tampon such as to be wetted by the secretions of the person's body absorbed by the tampon; alternatively, the pH indicator material may be impregnated in at least a portion of the tampon such as to be wetted by the secretions of the person's body absorbed by the tampon.

The users of such tampons would be instructed to visually inspect the colour of the tampon, or the portion thereof carrying the pH indicator material, and if a certain colour change occurred, to immediately seek an examination by the user's physician in order to make the further tests required in order to diagnose the cause of the secretion, and particularly whether it is an infectious cause. For example, a normal vaginal discharge has a pH of less than 4.5, whereas a pH of greater than 5.0 indicates the possibility of the presence of *Trichomonas vaginalis* or *Bacterial vaginosis*. Therefore, if the pH indicator material applied to the tampon produced a colour change between pH 4.5 and 5.0, this indicates the possibility of one of these infections. The user could visually inspect the colour of the tampon after its use and if such a colour change occurred, indicating the possibility of one of these infectious causes for the vaginal discharge, she would be immediately alerted to see her physician to enable further tests to be performed so as to determine the precise reason for the discharge.

BRIEF DESCRIPTION OF THE DRAWINGS

The invention is herein described, somewhat diagrammatically and by way of example only, with reference to the accompanying drawings, wherein:

FIG. 1 illustrates a tampon including a fibrous strip of filter paper bonded to it and impregnated with a pH indicator material;

FIG. 2 illustrates a tampon directly impregnated with the pH indicator material; and

FIG. 3 illustrates a tampon carrying two indicator papers impregnated with a pH indicator material of different pH values.

DESCRIPTION OF PREFERRED EMBODIMENTS

Colour-change pH indicator materials are well-known providing an indication for almost any pH determination that may be needed. The attached table lists commercially-available pH indicator materials covering substantially the complete pH range.

PH INDICATOR MATERIALS

pH Indicators	Colour	pH Transition Intervals		Colour
Cresol red	pink	0.2	1.8	yellow
m-Cresol purple	red	1.2	2.8	yellow
Thymol blue	red	1.2	2.8	yellow
p-Xylenol blue	red	1.2	2.8	yellow
2,2',2'',4,4'-Pentamethoxy-triphenylcarbinol	red	1.2	3.2	colourless
2,4-Dinitrophenol	colourless	2.8	4.7	yellow
4-Dimethylaminoazobenzene	red	2.9	4.0	yellow-orange
Bromochlorophenol blue	yellow	3.0	4.6	purple
Bromophenol blue	yellow	3.0	4.6	purple

(19)



Europäisches Patentamt
European Patent Office
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(11) Publication number:

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(12)

EUROPEAN PATENT APPLICATION

(21) Application number: 89110366.5

(51) Int. Cl.⁴: C09J 3/14 , C08L 23/08 ,
A41B 13/02 , A61L 15/00

(22) Date of filing: 08.06.89

(30) Priority: 20.06.88 US 209404

(43) Date of publication of application:
27.12.89 Bulletin 89/52

(84) Designated Contracting States:
BE CH DE ES FR GB GR IT LI NL SE

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(54) Wetness indicating hot-melt adhesives.

(57) A wetness indicating hot-melt adhesive which changes color in response to the presence of moisture is disclosed, which contains 20 to 70 wt. % of polymer, about 28 to 10 wt. % of which is water sensitive polymer; 25 to 60% of organic acid which is selected from a high acid fatty acid, or rosin acid, or a combination thereof; 0 to 40% of water soluble wax; 0 to 60 wt. of glycerlo monostearate; 0 to 55 wt. % of hydrogenated castor oil; 0 to 15 wt. % of polyalkylene wax; 0 to 60 wt. % of compatible plasticizer; and a wetness indicating agent which changes the color of the composition in response to moisture therein. The time of response of the color change can be controlled from about one second to a somewhat larger value as desired.

EP 0 347 657 A2

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that any color change of the Mroz et al composition takes a very long time to take effect, e.g. of the order of 3 minutes, as can be seen, for example, from Fig. 3 and 4 of the Mroz et al patent.

Further, the time required for the color change in the Mroz et al composition is dependent on the thickness of the coating, as well as the pH of the wetting composition; the thicker the coating and the lower the pH, the slower the color change.

It is often desirable to know quickly, by visual inspection whether a substrate has become wet. For example, it is desirable to know when a diaper has become wet, but the wetness of a diaper which is plastic coated, or which is worn under a water proof panty, is not readily determined by visual inspection.

Summary of the Invention

An object of the present invention is the provision of a hot-melt adhesive composition which is capable of indicating the presence of water therein.

Another object of the present invention is the provision of a hot-melt adhesive composition which changes color in response to wetness.

An important object of the present invention is the provision of a hot-melt adhesive composition which changes color in response to wetness with a controlled response time.

Still another object of the present invention is the provision of a hot melt adhesive composition which changes color in response to wetness, and wherein the response time can be controlled by varying the composition.

A further object of the present invention is the provision of a hot-melt adhesive which changes color rapidly when wet.

Another object of the present invention is the provision of a hot melt adhesive coating which changes color rapidly when wet independent of the thickness of the coating and substantially independent of the pH of the wetting composition.

A particular object of the present invention is the provision of a hot-melt adhesive composition which is effective to show quickly that a diaper has become wet.

Another particular object of the present invention is the provision of a hot-melt adhesive composition which changes color in response to wetness on a substrate, and wherein the hot-melt adhesive composition has excellent pattern integrity when wet.

These and other objects are accomplished by the present invention.

A wetness indicating composition has been discovered which adheres substantially to any substrate, and which provides immediate recognition, by visual inspection, that the substrate has become wet.

According to the invention, the wetness indicating composition is composed of a hot-melt adhesive composition and a wetness indicating agent which causes the composition to change color in response to the presence of water in the composition.

The wetness indicating hot-melt adhesive composition of the invention comprises:

(A) 20 to 70 wt.% of total polymer components, said polymer components comprising about 28 to 100 wt.% of water sensitive polymer selected from vinyl pyrrolidone homopolymer, vinyl pyrrolidone/vinyl acetate copolymer or a mixture thereof, any balance comprising at least one polymer selected from the group consisting of ethylene vinyl acetate copolymer, ethylene/acrylic acid copolymer and polyamide;

(B) 25 to 60 wt.% of an acidic composition selected from

(a) at least one free monobasic saturated or unsaturated fatty acid having an acid number above 137 or

(b) at least one rosin acid having an acid number above 130; and

(c) a combination of the free monobasic saturated or unsaturated fatty acid and the rosin acid;

(C) 0 to 40 wt.% of a water soluble wax; and

(D) 0 to 60 wt. % of glycerol monostearate;

(E) 0 to 65 wt. % of hydrogenated castor oil;

(F) 0 to 15% of polyalkylene wax;

(G) 0 to 60 wt. % if compatible plasticizer; and

(H) a wetness indicating agent capable of causing the composition to change color in response to the presence of moisture in the composition, in an amount effective to provide the composition with a readily visible color when wet, which is distinct from the color of the dry composition.

A further embodiment of the invention has the following composition:

(A) 20 to 70 wt.% of total polymer components, said polymer components comprising 35 to 100 wt.% of water sensitive polymer selected from vinyl pyrrolidone homopolymer, vinyl pyrrolidone/vinyl acetate

(12) **EUROPEAN PATENT APPLICATION**

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(51) Int. Cl.³: **A 41 B 13/02**
//G01N21/00

(22) Date of filing: 09.06.80

(30) Priority: 18.06.79 US 50013

(43) Date of publication of application:
 07.01.81 Bulletin 81/1

(84) Designated Contracting States:
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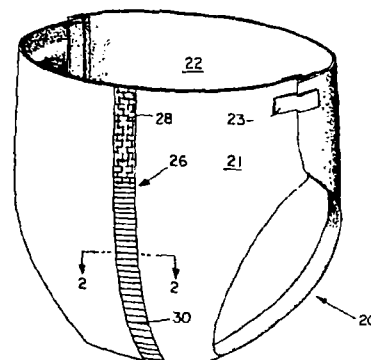
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(54) Improved disposable diaper type garment having wetness indicator.

(57) An improved absorbent product, such as a disposable diaper type garment (20) having a wetness indicator disposed between a translucent cover member (21) and an absorbent member. The improvement relates to providing a flexible pH-change/color-change wetness indicator coating (26) on a surface portion of the product which is visible through the cover member, and which retains sharp edge definition of the coated surface portion when wetted; for instance, by urine. The coating is preferably applied in the form of a stripe to a portion of the inwardly facing surface of a backsheet of a disposable diaper. Such a coating comprises a solid-solid mixture (eg., solution) of a pH-change/color-change type material dispersed in a matrix of adhesive material which coating is sufficiently flexible to not substantially impair the flexibility of the product, and which coating is sufficiently adhesive and flexible to remain on the coated surface portion through a normal period of use of the product.

Fig. 1



the need for a discrete substrate with its attendant application complexities of cutting, registration, and securement; and which comprises means for substantially obviating migration of colorant when wetted. Thus, the
5 resulting color indicating pattern of a coating embodiment of the present invention will have a sharp edge definition when wetted rather than a quasi blurred edge definition such as would result from high dye strength materials which are relatively highly water-soluble.
10 Also, the present invention substantially obviates migration of colorants through an adjacent absorbent member and thereby reduces the likelihood of skin irritations which might otherwise be precipitated.

Disclosure of the Invention

15 In accordance with the present invention, a disposable diaper type garment is provided having a wetness indicator disposed intermediate a flexible translucent cover member and a flexible absorbent member, the wetness indicator being disposed on an area of one
20 of said members so as to be both visible through the cover member and in liquid communicable relation with the absorbent member, the wetness indicator comprising a coating formed of a solid-solid mixture of a pH-change/color-change type material dispersed in a highly flexible
25 matrix of adhesive material. Preferably, the coated surface is a patterned portion of the inwardly facing surface of a translucent cover member of the article; for instance, a water-impervious thermoplastic backsheet of a disposable diaper.

30 Brief Description of the Drawings

An illustrative embodiment of the invention is hereinafter described with reference to the accompanying drawings in which:

Figure 1 is a perspective view of a disposable
35 diaper embodying the present wetness indicator invention, and in which view a stripe of pH-change/color-change

United States Patent [19]

Steinhardt et al.

[11] Patent Number: 5,902,669
[45] Date of Patent: May 11, 1999

[54] **DISPOSABLE PAPER PRODUCTS WITH INDICATOR MEANS**

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[21] Appl. No.: **08/959,085**

[22] Filed: **Oct. 28, 1997**

Related U.S. Application Data

[62] Division of application No. 08/749,708, Nov. 15, 1996, Pat. No. 5,834,099, which is a continuation of application No. 08/427,367, Apr. 24, 1995, abandoned.

[51] Int. Cl.⁶ **B32B 9/00**

[52] U.S. Cl. **428/198**; 428/153; 428/154;
428/172; 428/204; 428/321.1; 428/411.1;
428/537.5; 604/2; 604/265; 604/318; 604/344;
604/347; 604/358; 427/265

[58] **Field of Search** 428/198, 154,
428/172, 204, 411.1, 537.5, 153, 321.1;
604/2, 318, 344, 361, 347, 358, 374, 362,
404, 375; 427/265

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Primary Examiner—William Krynski

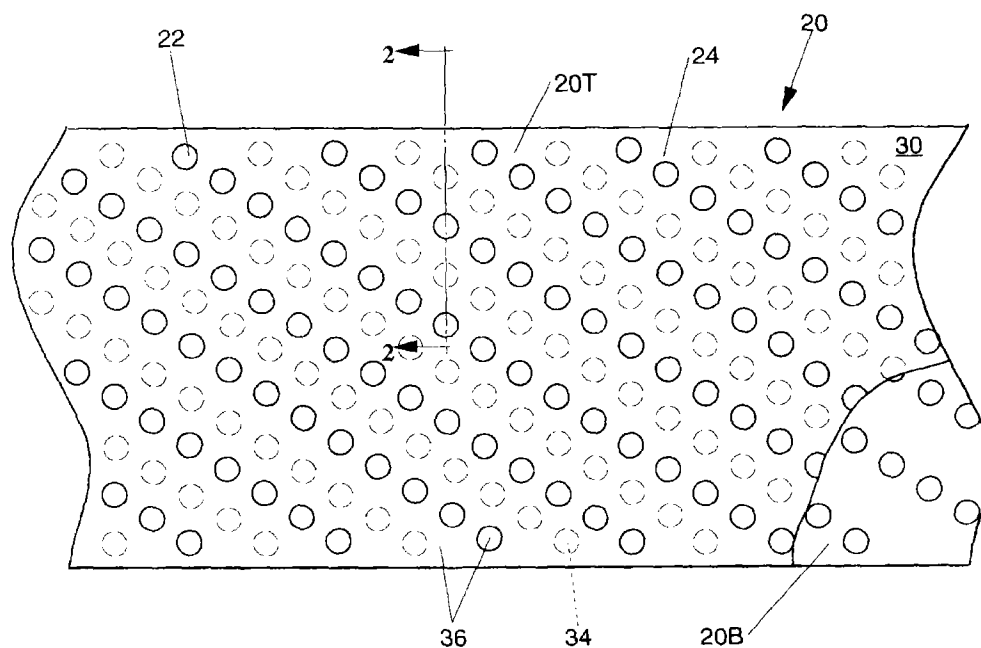
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[57] ABSTRACT

Disposable paper products, such as paper toweling, are provided with an indicator means which is disposed on said disposable paper product in a discontinuous or combination discontinuous/continuous pattern. The indicator means gives a visually recognizable signal to a user that desirable properties of the disposable paper product are maintained, even after the disposable paper product has become wetted with a substantially transparent aqueous liquid. The wet gray scale difference for the disposable paper product of the present invention is at least about 64 gray scale units when the disposable paper product is wetted with a substantially transparent aqueous liquid.

8 Claims, 5 Drawing Sheets



DISPOSABLE PAPER PRODUCTS WITH INDICATOR MEANS

This is a division of application Ser. No. 08/749,708, filed on Nov. 15, 1996, which is now U.S. Pat. No. 5,834,099, which is a continuation of application Ser. No. 08/427,367 filed Apr. 24, 1995, abandoned.

FIELD OF THE INVENTION

The present invention relates to disposable paper products. In particular, the invention relates to providing such disposable paper products with means indicating that desirable properties of the paper product are maintained when the paper product becomes wetted with a substantially transparent aqueous liquid.

BACKGROUND OF THE INVENTION

Disposable products such as facial tissue, bath tissue, paper towels, and the like are typically made from one or more webs of paper. If the products are to perform their intended tasks, the paper webs from which they are formed must exhibit certain physical characteristics. Among the more important of these characteristics are strength, softness, and absorbency. Strength is the ability of a paper web to retain its physical integrity during use. Softness is the pleasing tactile sensation the user perceives as the user crumples the paper in his or her hand and contacts various portions of his or her anatomy with the paper web. Softness generally increases as stiffness decreases. Absorbency is the characteristic of the paper web which allows it to take up and retain fluids. Typically, the softness and/or absorbency of a paper web is increased at the expense of the strength of the paper web. Accordingly, papermaking methods have been developed in an attempt to provide soft and absorbent disposable paper products having desirable strength characteristics.

U.S. Pat. No. 3,301,746 issued to Sanford et al. discloses a paper web which is thermally pre-dried with a through air-drying system. Portions of the web are then imprinted with a fabric knuckle pattern at the dryer drum to yield paper having two distinct regions of differing fiber density. Through air drying typically improves both the softness and the absorbency of a paper web. Disposable paper products made using such paper as a substrate have enjoyed wide commercial success.

U.S. Pat. No. 4,637,859 issued to Trokhan also describes a paper having two distinct regions. The first, the network region, forms an essentially continuous pattern. The other region comprises a plurality of discrete domes. The network region completely encircles the domes and isolates one dome from another. The network region has a relatively high density while the domes have a relatively low density. Paper made according to U.S. Pat. No. 4,637,859 exhibits good absorbency, softness, tensile strength, burst strength and bulk. Depending on the pattern chosen for the network region the paper also has the ability to stretch in the machine direction, the cross direction, and in intermediate directions even in the absence of creping. Paper of this type has enjoyed wide commercial success as a substrate for paper toweling and as bath tissue.

An alternative approach to improving the properties of disposable paper products has been to incorporate non-cellulosic materials into the structure of the disposable paper product. For example, the use of scrim to add strength to disposable paper products is well known in the art. Also, non-cellulosic fibers have been added to the furnish for the

papermaking machine used to produce the substrate for the disposable paper product. However, approaches of this type also carry a cost such as loss of softness or loss of absorbency. Typically, the art has only used such approaches to meet very specific needs, where the benefit gained outweighs the cost paid.

Frequently, disposable paper products, particularly paper towels, comprise a laminate of two or more laminae. Disposable products comprising more than one lamina have the desirable properties of increased bulk, increased absorbency and increased strength per unit area of product compared to products comprising a single lamina.

U.S. Pat. No. 3,414,459 issued to Wells describes a laminated paper product formed by embossing identical raised patterns of protuberances on two paper sheets and adhesively joining the mated distal surfaces of the protuberances to form the laminate. Laminates of this type have enjoyed considerable commercial success, particularly as disposable paper toweling.

U.S. Pat. No. 4,978,565 issued to Pigneul, et al. describes laminated paper products that are adhesively joined, at least partially, by means of protruding elements. The elements are said to be positioned according to lines or combinations of lines which reproduce spaced motifs. Laminates of this type are said to provide a satisfactory bulky texture without a reduction in mechanical strength which is said to come from embossing to a high density of protuberances.

U.S. Pat. No. 5,294,475 issued to McNeil describes embossed paper laminates of two paper lamina wherein each embossed site of one lamina is adhesively joined to the nonembossed region of the other lamina. Laminates of this type have a high quality quilted cloth-like appearance, a relatively thick caliper and in aesthetically pleasing pattern without sacrificing other desirable qualities such as softness, absorbency and bond strength between the laminae.

While the art has continually worked to improve the properties of disposable paper products without loss of other properties, users of such articles frequently find it difficult to recognize such improvements. For example, when an embossed disposable paper product of the present art is saturated with water all patterned appearance coming from such embossments essentially disappears. This means, even if the embossing pattern were chosen to preserve the physical properties of the unembossed paper to the greatest degree possible, a user of such a product would have no readily discernible signal that the product provided such benefits.

Thus, it is an object of the present invention to provide disposable products, such as paper toweling, with a readily recognizable signal that the article has desirable physical properties, both when the article is dry and, particularly, when the article is wetted with a substantially transparent aqueous liquid. It is a further object of the present invention to provide laminated disposable products such that the difference in visual appearance of the paper webs that comprise the laminae and the visual appearance of an indicator means is sufficiently great, when the laminated disposable paper product is wet, to provide such a readily discernible signal.

SUMMARY OF THE INVENTION

The present invention is a disposable paper product comprising at least one lamina of relatively low basis weight paper. The disposable paper product is further provided with an indicator means that is disposed on the lamina in a pattern. The indicator means provides users of the paper product with a visual signal that desirable properties of the

towel are maintained, even when the product is wetted with a substantially transparent aqueous liquid. The visual signal becomes substantially noticeable only when the disposable paper product of the present invention is wetted with a substantially transparent aqueous liquid. The indicator means can be further characterized by wet gray scale difference, as measured using image analysis techniques, between those portions of the outwardly facing surfaces of the paper product that are provided with the indicator means and those portions of the outwardly facing surfaces that are not provided with such indicator means. This difference only becomes substantial when the laminated paper towel of the present invention is wetted with a substantially transparent aqueous liquid.

A preferred embodiment of the present invention is a laminated paper towel comprising two laminae. In the preferred embodiment, the indicator means comprises an opacifying agent that is added to the laminating adhesive and is disposed on the lamina in a pattern comprising either discrete elements or a pattern combining discrete elements and continuous elements.

Alternative embodiments of the present invention include disposable tissue products comprising a single lamina or laminates comprising more than two laminae that are provided with an indicator means as described herein. The indicator means can comprise any material that provides the requisite visual signal when the disposable tissue product becomes wetted with a substantially transparent aqueous liquid. Nonlimiting alternative examples of an indicator means include printed indicator means, fibers having a refractive index when wet that is different than the refractive index of wet cellulosic fibers, and means for preventing wetting of portions of the disposable paper product.

BRIEF DESCRIPTION OF THE DRAWINGS

While the Specification concludes with claims particularly pointing out and distinctly claiming the present invention, it is believed that the same will be better understood by the following Specification taken in conjunction with the associated drawings in which like components are given the same reference numeral, and:

FIG. 1 is a fragmentary top plan view of a preferred embodiment of the present invention, a disposable paper product, shown partially in cutaway to reveal underlying structure.

FIG. 2 is an enlarged sectional view of the disposable paper product of the present invention taken along lines 2—2.

FIG. 3 is a photographic image in plan view of the disposable paper product of the present invention shown in its dry state.

FIG. 4 is a photographic image in plan view of the disposable paper product of FIG. 3 in its wet state.

FIG. 5 is a photographic image of a disposable paper product similar to the disposable paper product of the present invention, except that it does not comprise an indicator means, in its wet state.

FIG. 6 is a schematic perspective view showing the arrangement of an image analysis apparatus used to evaluate the disposable paper product of the present invention.

DETAILED DESCRIPTION OF THE INVENTION

In a preferred embodiment, the present invention comprises a disposable paper product that is a laminate of at least

two laminae of paper. Such products have found use as toweling, toilet tissue, and facial tissue. Preferably this paper is the thin, relatively low basis weight paper known commonly as tissue paper. Most preferably the paper comprises two regions, a continuous network and a plurality of domes as described in the aforementioned U.S. Pat. No. 4,637,859 which is incorporated herein by reference. These laminae are joined using methods known in the art. For example, the laminae can be joined by the processes described in either of the aforementioned U.S. Pat. Nos. 3,414,459 or 5,294,475 both of which are incorporated herein by reference. Preferably the laminae are provided with embossed sites and the embossed sites of one lamina are adhesively joined to the nonembossed regions of another lamina using the method commonly known as nested embossing as described, for example, in U.S. Pat. No. 5,294,475. The laminate of the present invention is further provided with an indicator means disposed on at least one of the lamina in a pattern of discrete elements or in a pattern comprising a combination of discrete and continuous elements. This indicator means provides, when the laminate is wetted with a substantially transparent aqueous liquid, a signal that the laminate has maintained desirable properties even after it has become wet.

It should be noted that a laminated structure is not necessary for the indicator means to provide the signal that the disposable paper product has maintained its desirable properties after it has become wetted with a substantially transparent aqueous liquid. Thus, the present invention is contemplated to include paper structures wherein a single lamina of paper is provided with an indicator means as is described hereinbelow.

Referring to FIG. 1, a preferred embodiment of the present invention comprises a laminated paper towel 20. This is not intended to limit the present invention only to paper towel embodiments. Disposable paper products comprising one or more plies of tissue paper such as toilet tissue and facial tissue are also considered to be within the scope of this invention.

The laminated paper towel 20 according to the present invention comprises two laminae 20T and 20B in face to face relation. Each of the laminae 20T and 20B has two distinct zones, a continuous nonembossed region 24, and discrete embossed sites 22 projecting therefrom generally toward the opposed lamina 20B or 20T respectively and preferably orthogonal thereto. A laminating adhesive 27 is applied to the distal ends 23 of at least some of the embossed sites 22 of one of the laminae 20T and/or 20B to adhesively join the facing surfaces of the laminae 20T and 20B.

The laminated paper towel 20 further has two opposed, outwardly facing surfaces 30 and 32. As used herein, the term "outwardly facing surface" means that surface of each lamina 20T or 20B that is opposite the surface of the lamina 20T or 20B that is adhesively joined to the facing lamina 20B or 20T. The outwardly facing surfaces 30 and 32 are those surfaces of the laminated paper towel 20 that are seen by a user.

Each zone 22 and 24 of each lamina 20T or 20B is composed of fibers approximated by linear elements. The cellulosic fibers that are components of the laminated paper towel 20 have one relatively large dimension (along the longitudinal axis of the fiber) compared to the other two relatively very small dimensions (mutually perpendicular, and being both radial and perpendicular to the longitudinal axis of the fiber), so that linearity is approximated. While microscopic examination of the fibers may reveal two other

United States Patent [19]

Everhart et al.

[11] Patent Number: 5,468,236

[45] Date of Patent: Nov. 21, 1995

[54] DISPOSABLE ABSORBENT PRODUCT INCORPORATING CHEMICALLY REACTIVE SUBSTANCE

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[21] Appl. No.: 73,901

[22] Filed: Jun. 9, 1993

[51] Int. Cl.⁶ A61F 13/15

[52] U.S. Cl. 604/361

[58] Field of Search 604/361

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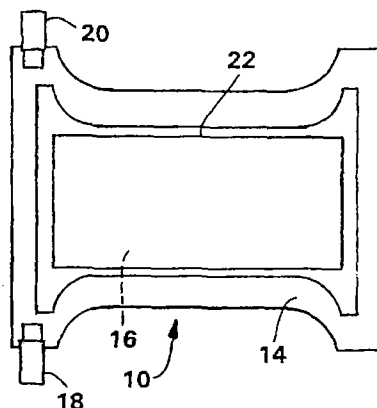
Primary Examiner—Jerome L. Kruter

Attorney, Agent, or Firm—William E. Maycock

[57] ABSTRACT

A disposable absorbent product which includes a chemically reactive means having an end point adapted to provide a visual indication of the presence of a substance in mamma-lian bodily excrement, wherein the chemically reactive means is adapted to: (A) to provide the visual indication as a result of interacting with the mammalian bodily excre-ment; (B) the end point of the chemically reactive means is adapted to be reached within a period of time which begins with the first insult of the chemically reactive means by the substance and ends when the disposable absorbent product is discarded; and (C) the chemically reactive means is adapted to have a stable end-point, such that the visual indication remains valid within a period of time which begins when the end point is reached and ends no sooner than when the disposable absorbent product is discarded. If desired, the chemically reactive means can be adapted to provide a visual indication of the approximate concentration of the substance. The disposable absorbent product is uti-lized in the same manner as a product which lacks the chemically reactive means but which otherwise is function-ally similar to the disposable absorbent product. Typical disposable absorbent products include tissues, wipes, and such wearable disposable absorbent products as diapers, feminine care products, incontinent care products, surgical gowns and drapes, and the like.

25 Claims, 3 Drawing Sheets



DISPOSABLE ABSORBENT PRODUCT INCORPORATING CHEMICALLY REACTIVE SUBSTANCE

BACKGROUND OF THE INVENTION

The present invention relates to a disposable absorbent product. Typical disposable absorbent products include tissues, wipes, and such wearable disposable absorbent products as diapers, feminine care products, incontinent care products, surgical gowns and drapes, and the like.

Tests conducted by medically trained personnel, e.g., physicians, nurses, medical technologists, and the like, have long been done and are well established. Although such tests have become increasingly complex and sophisticated, they also are becoming more costly. Consequently, current socioeconomic trends have given rise to a heightened interest in procedures or measurements which a person conducts on himself or herself for the purpose of acquiring information on a physiologically relevant condition, referred to herein after as user self-tests or USTs. Such tests frequently are carried out without consultation with a health care professional.

USTs are not new. Traditional USTs include measuring one's body weight and temperature. More contemporary procedures include blood glucose measurements, ovulation tests, and tests for the presence of human chorionic gonadotropin in urine, the basis of home pregnancy tests. More recently, the U.S. Food and Drug Administration has approved a UST for blood cholesterol. Interestingly, USTs for urinary glucose date back to the early 1900's and became more popular with the advent of insulin as a treatment for diabetes in 1922.

The use and acceptance of USTs are influenced by a variety of factors, including test simplicity, emotional aversion, medical relevance, consumer use history, and test interpretation. By way of illustration, the utility of measuring body temperature is well known and, in practice, deviations from normal body temperature often are used to determine if a medical professional needs to be consulted. Conversely, the initial use of home pregnancy tests was limited by a lack of testing experience and confidence in results, as well as by a cumbersome test format. Not until after several years of availability did these tests evolve to be user friendly and accurate, characteristics important to their market acceptance. The marketing experience for tests for in-home blood glucose monitoring, now a non-prescription (over-the-counter or OTC) UST, was similar.

The emergence of USTs as a component of clinical chemistry and, in general, health care, is to be applauded. Moreover, the number and quality of USTs are likely to increase in the future. However, USTs in general involve procedures which must be followed precisely, particularly with respect to the times for carrying out multistep procedures and determining or estimating the result. In addition, USTs typically utilize devices which have no purpose or function other than for carrying out the proscribed test.

Disposable absorbent products have been used in clinical chemistry, principally as collection devices. For example, disposable diapers have been used to collect urine samples from infants and tampons have been utilized to collect cervical cells. In addition, tampons have been used diagnostically, e.g., for the detection of increased dehydrogenases or oxidases in vaginal secretions. Such tampons, however, are used solely as clinical chemistry specimen collection devices. Their use must be supervised by a health

care professional and they have many of the same limitations as USTs.

SUMMARY OF THE INVENTION

It therefore is an object of the present invention to provide a disposable absorbent product which includes a chemically reactive means.

This and other objects will be apparent to those having ordinary skill in the art from a consideration of the specification and claims which follow.

Accordingly, the present invention provides a disposable absorbent product having incorporated therein a chemically reactive means having an end point adapted to provide a visual indication of the presence of a substance in mammalian bodily excrement, wherein:

(A) the chemically reactive means is adapted to provide the visual indication as a result of interacting with the substance;

(B) the end point of the chemically reactive means is adapted to be reached within a period of time which begins with the first insult of the chemically reactive means by the substance and ends when the disposable absorbent product is discarded;

(C) the chemically reactive means is adapted to have a stable end-point, such that the visual indication remains valid within a period of time which begins when the end point is reached and ends no sooner than when the disposable absorbent product is discarded.

In certain embodiments, the disposable absorbent product may be a wearable disposable absorbent product. Such products include, by way of example only, diapers; feminine care products such as sanitary napkins, panty liners, and tampons; incontinent care products; and surgical gowns and drapes.

BRIEF DESCRIPTION OF THE DRAWINGS

FIGS. 1-3 are plan view representations which illustrate several different embodiments of a disposable absorbent diaper of the present invention.

FIG. 4 is a perspective view of the inside face of a disposable diaper which illustrates another embodiment of a disposable absorbent diaper of the present invention.

FIG. 5 is a cross-sectional view (partly schematic) taken along line 5-5 of FIG. 4.

FIG. 6 is a perspective view of the inside face of a disposable diaper which illustrates still another embodiment of a disposable absorbent diaper of the present invention.

FIG. 7 is a cross-sectional view (partly schematic) taken along line 7-7 of FIG. 6.

DETAILED DESCRIPTION OF THE INVENTION

The disposable absorbent product of the present invention has incorporated therein a chemically reactive means having an end point adapted to provide a visual indication of the presence of a substance in mammalian bodily excrement. Such product can be, for example, a tissue, wipe, or wearable disposable absorbent product.

Exemplary wearable embodiments include, by way of illustration only, diapers; feminine care products such as sanitary napkins, panty liners, and tampons; incontinent care products; surgical gowns and drapes; and the like. Thus, the term "wearable" is used herein to mean any disposable