

SUPERINTENDENCIA DE INDUSTRIA Y C
DIVISION DE NUEVAS CREACIONES
E. S. D.

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04-031541-00011-0000

Re: Expediente No. 04-031.541

Solicitud de patente a nombre de **JOHNSON & JOHNSON INDUSTRIAL LTDA.**

Yo, JIMENA ESCOBAR URIBE, identificada como aparece al pie de mi firma, domiciliada en la Carrera 11 No. 86-53, piso 6, obrando como apoderada de la sociedad **JOHNSON & JOHNSON INDUSTRIAL LTDA.** domiciliada en Sao José dos Campos, SP. Brasil, solicitante de la patente de la referencia, en respuesta al oficio No. 7684 notificado por fijación en lista el 12 de junio de 2008, relacionado con el concepto técnico de fondo No. 1352, para el cual se solicitó prórroga, me permito manifestar:

1. Con fundamento en la facultad que confiere el artículo 34 de la Decisión 486 al solicitante para modificar la solicitud de patente en cualquier momento del trámite, presento junto con este memorial nuevo capítulo reivindicatorio, en el cual se realizaron las siguientes modificaciones:
 - 1.1 Como primera medida se modificó la reivindicación 1 con el fin de eliminar la frase donde se definía el proceso o etapas del proceso de obtención del producto, objetada por ese Despacho.
 - 1.2 Se incluyeron las características descritas en la antigua reivindicación 3 a la nueva cláusula independiente 1, donde se especificaba las capas múltiples de la película y que están compuestas de polietileno.

En cuanto a estas modificaciones me permito decir que las mismas no amplían de ninguna manera la materia objeto de la presente solicitud y se realizaron con el ánimo de superar las objeciones de claridad y novedad, planteadas por el examinador en su concepto técnico.

Para este efecto, me permito acompañar el recibo de pago No. 08 - 77,819 de septiembre 30 de 2008, con el cual queda cubierta la tasa correspondiente a la modificación de una solicitud de patente en cuanto a su capítulo reivindicatorio.

2. Claridad de la solicitud

Respecto a este punto, me permito decir que mediante las modificaciones realizadas en el capítulo reivindicatorio quedan subsanadas todas las objeciones, de modo tal que las nuevas reivindicaciones 1 a 10 proporcionan claridad y concisión a la invención descrita.

3. Falta de novedad

El examinador establece en su concepto técnico No. 1352 que las reivindicaciones 1 a 11 de la presente solicitud carecen de novedad a la luz del documento MXPA 02003201 (D1).

En este sentido, me permito decir que el artículo 16 de la Decisión 486 de la Comisión de la Comunidad Andina establece que la invención se considera como nueva cuando no está comprendida en el estado de la técnica. Si de acuerdo con el espíritu de la norma legal indicada, la invención no se considera como nueva si está "comprendida" en el estado de la técnica, dicha norma se está refiriendo, naturalmente, a la totalidad del invento y no a alguno o a algunos de los componentes. Para que la invención pierda su calidad de novedosa, es claro que ella, TODA ELLA, ha de estar contenida en el "conjunto de conocimientos existentes que son aplicables al proceso industrial" como define el estado de la técnica el Tribunal de justicia del Acuerdo de Cartagena (Proceso No. 6-IP-89, sentencia de 31 de octubre de 1989, publicada en Jurisprudencia del Tribunal de Justicia del Acuerdo de Cartagena, Tomo 11, BID-INTAL, Buenos Aires, 1994, página 60).

Esto se conoce como NOVEDAD ABSOLUTA, de conformidad con lo cual para desvirtuar el requisito de novedad de una invención será necesario que lo reivindicado por la invención bajo estudio corresponda de forma total con lo revelado en un documento o anterioridad señalada, conclusión a la que se llega después de un análisis exhaustivo mediante una comparación entre el capítulo reivindicatorio de la invención en estudio y la divulgación de la referencia D1.

Ahora bien, si un determinado elemento, condición o circunstancia de la nueva creación ya hace parte del estado de la técnica no quiere ello decir, desde luego, que la invención deba ser rechazada por carecer del requisito de novedad. No sin razón ha dicho el mencionado Tribunal: "*hay que advertir que toda creación es en cierta forma, producto del estado de la técnica existente, en el sentido de que el inventor ha de tener en cuenta un conjunto de conocimientos técnicos que le permitan crear nuevos procedimientos aplicables a la industria*" (Ibíd., páginas 53 y 54) (el subrayado es nuestro).

Por lo tanto, como mínimo la novedad debe contemplar los siguientes aspectos:

-Que la invención en estudio esté contenida de forma TOTAL y ABSOLUTA en el documento que se menciona como anterioridad o de forma independiente en los documentos que se mencionan, si son varios.

-Que la invención en estudio puede partir de conocimientos conocidos, caso en el cual habrá que hacer la comparación no de lo conocido sino de lo inédito y novedoso, teniendo que analizarse el valor agregado que aporta la invención con sus nuevas características al campo técnico al cual pertenece la invención en estudio.

Aplicando lo anterior al caso concreto, para que las razones que aduce ese despacho

Clarke, Modet & C^o
COLOMBIA

ESCOBAR - URIBE ASOCIADOS
Intellectual Property

Aplicando lo anterior al caso concreto, para que las razones que aduce ese despacho para desvirtuar la novedad fuesen ciertas, sería forzoso que se demostrara que la invención de mi mandante esté comprendida en el estado de la técnica de forma TOTAL, lo cual no sucede como ahora se demostrará.

En primer lugar, el solicitante manifiesta que con respecto al documento D1, gracias a las modificaciones mencionadas en el punto 1 de este memorial, queda subsanada la objeción relacionada con la falta de novedad de las antiguas reivindicaciones 1 a 11 de la solicitud en estudio.

Adicionalmente, el solicitante establece que el hecho de que el producto absorbente de la solicitud en estudio contenga una película de multicapas con capas LPDE y LMPDE hechas de polietileno lineal de baja densidad catalizado con metaloceno (M-LLDPE) y polietileno de baja densidad (LPDE), diferencia esta invención de lo reportador en D1 y representa una ventaja sobre el estado del arte, toda vez que dichas características proporcionan mayor sensación, suavidad, flexibilidad y confort, que aquellas de los productos que se encontraban en el arte previo, lo que incrementa sus ventas y la penetración al mercado potencial con relación a los productos conocidos, tal y como se menciona a lo largo del capítulo descriptivo.

En este sentido, la característica incluida en la nueva reivindicación independiente 1, representa una diferencia y una ventaja significativa con relación a lo que existía en el estado del arte en el momento de la presentación de la solicitud prioritaria.

En consecuencia, el documento D1 no desvirtúa la novedad absoluta de la presente invención, ya que dicho documento no menciona ni sugiere en su totalidad lo divulgado en las nuevas reivindicaciones 1 a 10 de la solicitud en estudio.

En conclusión, a partir de los argumentos anteriores y teniendo en cuenta las modificaciones realizadas a la solicitud, es acertado afirmar que la presente solicitud cumple cabalmente con el requisito de novedad establecido por el artículo 16 de la Decisión 486.

En resumen, me permito decir que gracias a las modificaciones expuestas en el punto 1 de este memorial, la presente solicitud cumple cabalmente con el requisito de claridad respecto al paquete para productos desechables expuesto en el capítulo reivindicatorio. Por lo tanto, solicito comedidamente a ese despacho se sirva reconocer estos requisitos y conceder el privilegio de patente de invención a la solicitud en estudio.

Señor Superintendente,


JIMENA ESCOBAR URIBE
C.C. 39.779.452 de Usaquen
T.P. 68.228
Cod. 5376
EUA/ra.

SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO

NIT : 800176089-2

RECIBO OFICIAL DE CAJA : 08 - 77,819
FECHA : SEPTIEMBRE 30 DE 2008

NO. 02-0225-03 00011 00000

***** CONSIGNACION *****

DEPOSITANTE	TIPO PAGO	BANCO	CUENTA	No. PAGO	FECHA PGO	Vr. PAGO
CLARKE MODET Y CO. COLOMB	CONSIGNACION	BANCO DE BOGOTA	062754387	92970393	30/09/2008	51,690,000.00

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

CANT.	RENTISTICO	CONCEPTO	TOTAL CONCEPTO
1	50005-01-03	CAMBIO DE MODALIDAD Y MODIFICA	
		12 MARCAS Y LEMAS COMERCIALES	103,000.00
		TOTAL :	\$ 103,000.00

SON: CIENTO TRES MIL PESOS

RESPONSABLE :



RECIBO DE CAJA APLICADO AL EXPEDIENTE No. _____

2663/P
y

REIVINDICACIONES

1.- Un producto absorbente, particularmente para la absorción de exudados del cuerpo humano, que comprende una primera capa (2) y una segunda capa (3), la segunda capa (3) siendo dirigida a la región de descarga de los exudados y la primera capa (2) siendo colocada opuesta a la segunda capa (3), la primera capa (2) estando hecha de por lo menos una película de material polimérico (20) que tiene una sola densidad aparente, el producto absorbente (1) siendo caracterizado porque la película (20) presenta por lo menos una región estirada (5) ubicada adyacente a por lo menos dos regiones no estiradas (6),

en donde la película de capas múltiples (20) comprende dos capas externas (A) hechas de polietileno de densidad baja (LPDE) y un polietileno de densidad media lineal (LMPDE), que están dispuestos en los lados de dos capas intermedias (B) hechas de polietileno de densidad baja lineal catalizado con metaloceno (M-LLDPE) y polietileno de densidad baja (LDPE).

2.- El producto absorbente de conformidad con la reivindicación 1, caracterizado además porque la película de material polimérico (20) corresponde a una película de capas múltiples.

3.- El producto absorbente de conformidad con la reivindicación 2, caracterizado además porque la película (20) comprende también una capa central (C) hecha de polietileno de densidad baja lineal catalizado con metaloceno (M-LLDPE) y polietileno de densidad baja (LDPE).

4.- El producto absorbente de conformidad con las reivindicaciones 1, caracterizado además porque la película de material polimérico (20) corresponde a una película de una sola capa.

5.- El producto absorbente de conformidad con cualquiera de las reivindicaciones anteriores, caracterizado además porque la película (20) comprende por lo menos una región estirada (5) sobre cuyos lados se proveen por lo menos dos regiones no estiradas (6).

6.- El producto absorbente de conformidad con la reivindicación 5, caracterizado además porque la región estirada (5) corresponde a la región donde ocurre el reordenamiento molecular de las fibras del material polimérico.

7.- El producto absorbente de conformidad con las reivindicaciones 5 ó 6, caracterizado además porque la región estirada (5) presenta un peso de base que es menor que los presentados por las regiones no estiradas (6).

8.- El producto absorbente de conformidad con las reivindicaciones 1, 5, 6 ó 7, caracterizado además porque la región estirada (5) corresponde a una porción intermedia configurada entre dos regiones no estiradas (6), que tocan los extremos de las proyecciones (11) de por lo menos dos elementos estirados (10) de un equipo de estiramiento.

9.- El producto absorbente de conformidad con cualquiera de las reivindicaciones anteriores, caracterizado además porque la región estirada (5) y las regiones no estiradas (6) son longitudinales.

10.- El producto absorbente de conformidad con cualquiera de las reivindicaciones anteriores, caracterizado además porque comprende múltiples regiones estiradas en forma de líneas estiradas (5).

United States Patent [19]
Hodgson et al.

(11) **Patent Number:** 5,376,439
(45) **Date of Patent:** Dec. 27, 1994

[54] **SOFT FILMS HAVING ENHANCED PHYSICAL PROPERTIES**

[75] **Inventors:** William J. Hodgson, Baytown;
Richard W. Halle, Houston; Charles
L. Pierce, Baytown, all of Tex.

[73] **Assignee:** Exxon Chemical Patents Inc.,
Linden, N.J.

[21] **Appl. No.:** 219,754

[22] **Filed:** Mar. 29, 1994

Related U.S. Application Data

[63] **Continuation of Ser. No. 945,769, Sep. 16, 1992, abandoned.**

[51] **Int. Cl.** C08L 23/18; C08L 23/04;
C08J 5/18

[52] **U.S. Cl.** 428/220; 525/240;
525/222; 525/227; 525/221; 524/528; 428/516;
604/370

[58] **Field of Search** 525/240, 221, 222, 227;
428/220

[56] **References Cited**

U.S. PATENT DOCUMENTS

3,645,992	2/1972	Elston	526/348.6
4,243,619	1/1981	Fraser et al.	526/128
4,668,752	5/1987	Tominari et al.	526/348.2
5,112,696	5/1992	Roberts	525/240
5,206,075	4/1993	Hodgson	525/240

FOREIGN PATENT DOCUMENTS

0186279	7/1986	European Pat. Off.
0221726	5/1987	European Pat. Off.
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60-067546	4/1985	Japan
61-028538	2/1986	Japan
61-258849	11/1986	Japan
62-010150	1/1987	Japan

62-064846 3/1987 Japan
01108288 4/1989 Japan
90/03414 4/1990 WIPO

OTHER PUBLICATIONS

"Structure/Property Relationships in Exxpol™ Polymers" Speed et al.-Soc. of Plastic Eng.-Feb. 1991.

Primary Examiner—Carman J. Seccuro, Jr.

Attorney, Agent, or Firm—James Sher

[57] **ABSTRACT**

The present invention provides for a polymer composition comprising a blend of from about 25 to about 90% by weight of a very low density ethylene polymer having a density on the range of from about 0.88 to 0.925 g/cm³, a melt index of from about 0.5 to about 7.5 dg/min, a molecular weight distribution not greater than about 3.5 and a compositional distribution breadth index greater than about 70%, and from about 10 to about 75% by weight of a low to medium density ethylene polymer having a density of from about 0.910 to about 0.935, a melt index of from about 0.5 to about 20, a molecular weight distribution greater than about 3.5 and a compositional breadth index less than about 70%.

The invention also provides for films prepared from this blend having single layer construction or having laminar ABA construction wherein the A or skin layers comprise the blend of this invention and the B or core layer comprises a different olefin polymer such as high density polyethylene.

Films of this invention exhibit excellent elongation, tensile and impact properties and also softness, feel and noise properties which render them eminently suitable for use as back sheet components in the fabrication of absorbent articles such as diapers, bed pads and like articles where such properties are desirable.

32 Claims, 3 Drawing Sheets

Where the film is to be embossed, the steel roll is engraved with a pattern of either protrusions (to make embossing roll) or depressions (to make embossing roll). The rubber roll serves as a backing roll into which the steel roll pattern is impressed during the formation of the film. Thus the roll pattern serves both to form the rubber and to emboss the film. The speed of the rubber and steel rolls is maintained to permit continuous embossing of the film and subsequent take up of the film on a wind up roller after it exits the steel/rubber roll gap.

In terms of process efficiency, the film manufacturer is highly motivated to adjust processing conditions such as temperature, roll speeds and take-up speeds to maximize the rate of film production on the one hand while on the other hand producing a quality film having a substantially uniform film thickness, which is generally in the range of about 0.75 to 2 mils.

A particular property of LLDPE which tends to restrict the line speed at which film made from this polymer can be processed is caused by a phenomenon referred to as draw resonance. Draw resonance is described as the inability of the film to follow a constant film thickness drawn from the film web in the machine or take-up direction, which is evidenced by the presence of light and dark bands running across the film. The light areas are a thinner gauge and the darker areas are of a thicker gauge. The degree of draw resonance is a direct function of film speed, becoming worse at higher line speeds. As a result, the maximum line speed at which good quality film can be produced is restricted by the onset of draw resonance.

Attempts have been made to improve the draw resonance of LLDPE by utilizing a blend of this material with up to about 50% by weight of another polyethylene having a higher melt index than LLDPE, such as high pressure low density polyethylene (HDPE) having a melt index of at least about 7.5 dg/min and a density in the range of from about 0.910 to 0.930 g/cm³ or as an alternative EVA's can be blended with LLDPE. However, draw resonance is still found to occur at higher line speeds (60-400 ft/min) with such blends and the presence of a substantial amount of the LLDPE in the blend serves to diminish the good tensile and elongation properties of film material when compared with material containing LLDPE as the sole polymer.

Recently, a new class of low density ethylene polymers have been introduced into the marketplace. These materials are characterized as very low density ethylene polymers having a density in the range of from about 0.88 to about 0.915 g/cm³, a melt index of from about 0.5 to about 7.5 dg/min, a molecular weight distribution (MWD) of 10 or greater than 3.5 and a compositional distribution breadth index (CDBI) greater than about 70 percent. Compositionally, these polymers contain ethylene copolymerized with up to about 15 mole % of one or other alpha-olefins containing from 3 to 20 carbon atoms such as butene-1, butene-2, hexene-1 and the like. These polymers, with narrow MWD and narrow CDBI provide a unique balance of properties including narrow melting point range and improved toughness when fabricated into shaped articles as compared with normal low density polyethylene prepared by the conventional Ziegler catalyst systems.

One of the primary uses of such materials is as a backsheet component as shown in copending U.S. application Ser. No. 916,735 filed Jul. 15, 1990 or layer used in conjunction with the preparation of packaging films.

SOFT FILMS HAVING ENHANCED PHYSICAL PROPERTIES

This is a continuation of application Ser. No. 07/943,769, filed Sep. 16, 1992, now abandoned.

FIELD OF THE INVENTION

The present invention relates to polyethylene copolymers having enhanced physical properties, particularly in the area of improved toughness and impact resistance.

BACKGROUND OF THE INVENTION

The early applications for polyolefin film materials include their use as backsheet materials in the construction of diapers, bed pads and similar articles. Such articles are normally composed of an absorbent liner layer disposed between a non-woven top sheet and a backsheet film. Film based on olefin polymers such as low density polyethylene, linear low density polyethylene, polypropylene and copolymers of ethylene with one or more comonomers such as vinyl acetate, vinyl butyl, acrylic acid and other olefin comonomers containing from 3 to 8 carbon atoms have been particularly preferred for such uses. These materials can be formulated to possess the requisite properties of flexibility and moisture impermeability which render them suitable for such applications.

It is also desirable that film materials used in such applications meet other criteria. For example, because such films come into contact with the user, they should be soft to the touch, similar to cloth materials, and also be quiet when rumpled or crinkled. They should at the same time also possess good physical properties such as tensile strength, puncture strength and impact resistance so that they are not readily torn or punctured under conditions of normal or rugged use.

One of the more preferred polymer materials which has been used in the preparation of the aforementioned film, web, sheet, or other form is polyethylene (PE), particularly low density polyethylene (LDPE), mainly because of its film strength and toughness. LDPE may be produced by copolymerizing ethylene with α -C₄ to α -C₂₀ alpha-olefins. Generally the preferred alpha-olefins include those selected from butene-1, pentene-1, hexene-1, 4-octadecene-1, heptadecene-1, and octadecene-1. The comonomers are present in amounts up to 20 weight percent, normally, between 3 and 14 weight percent (wt. %). The polymerization is conducted at low pressure using a chromium catalyst or Ziegler catalyst and may be carried out in the gas phase. The LDPE produced by such methods has a density between 0.900 and 0.935 g/cm³ and a melt index (MI) between 0.1 and about 25.0 g/10 min, 190°C preferred. LDPE from about 0.1 to 5.0 g/10 min, 190°C preferred, is used for the production of LDPE are known such as disclosed in U.S. Pat. Nos. 4,076,498 and 4,204,001.

Despite the good properties of films made using LDPE, the melt processing properties of the polymer tend to restrict the process conditions under which soft films having a uniform thickness can be made. For example, a typical process for preparing a multilayer film for use as diaper backsheet material is the slot-die film extrusion process wherein the polymer is heated to a temperature generally in the profile range of about 250°F. to about 350°F. in an extruder and extruded through a slot die into the die of a steel and rubber roll system.

constructed from polyolefin polymers such as polypropylene as shown in copending U.S. application Ser. No. 660,407 filed Feb. 21, 1991 both of which are herein fully incorporated by reference. The narrow melting point range of these polymers renders them extremely useful in packing fill operations where it is desirable to develop strong seal strength immediately after packing and while the film is still hot from the sealing operation.

SUMMARY OF THE INVENTION

The present invention provides for a polyethylene copolymer having enhanced physical properties, particularly in the area of improved toughness and impact resistance. The copolymer is characterized by a narrow molecular weight distribution (MWD) and a narrow compositional distribution breadth index (CDBI). The copolymer is produced by a process which involves the use of a Ziegler catalyst system and a low pressure process.

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mer levels can be prepared by α -olefin copolymerization. The copolymer is characterized by a narrow molecular weight distribution (MWD) and a narrow compositional distribution breadth index (CDBI). The copolymer is produced by a process which involves the use of a Ziegler catalyst system and a low pressure process.

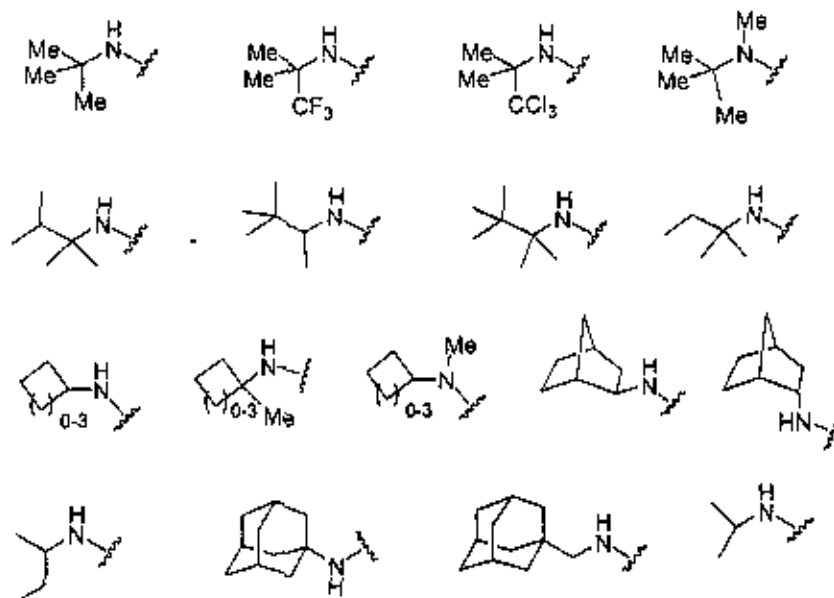
The melt index (MI) of the ethylene/alpha-olefin copolymers of the present invention is in the range of about 0.5 dg/min to about 7.5 dg/min. Preferably the MI is in the range of about 0.5 dg/min to about 5.0 dg/min, and the most preferred MI is in the range of 1.0 to 2.5 dg/min. MI as measured herein is determined according to ASTM D-1238 (190/21.6) is determined according to ASTM D-1238 (190/21.6). These copolymers also have a narrow molecular weight distribution. The ratio of Mw/Mn is generally in the range of about 1.5 to about 3.5, preferably in the range of about 2.0 to about 3.0.

The ethylene/alpha-olefin copolymers should also have an essentially single melting point characteristic with a peak melting point (Tm) as determined by Differential Scanning Calorimetry (DSC) in the range of about 27°C to about 117°C. Preferably the DSC peak Tm is in the range of about 80°C to about 100°C. Essentially single melting point as used herein means that at least about 80% by weight of the sample corresponds to a single Tm peak existing in the range of about 80-115°C, and there is essentially absent from the polymer any substantial fraction of material which corresponds to a Tm peak found at a temperature higher than about 115°C, i.e., "essentially" the bulk material content of the polymer corresponds to a "single" melting point peak in the 80-115°C range, and "essentially" no substantial fraction of the material has a peak melting point in excess of about 115°C, as determined by DSC analysis.

DSC measurements are made on a Perkin Elmer System 7 Thermal Analyst System. Melting information reported are second melting data i.e. the sample is heated at a programmed rate of 10°C/min to a temperature above its melting range. The sample is then cooled at a programmed rate of 10°C/min to a temperature below its crystallization range. The sample is then reheated (2nd melting) at a programmed rate of 10°C/min.

The composition distribution breadth index (CDBI) of each VLDPPE copolymer will generally be in the range of about 70 percent or higher. The CDBI is defined as the weight percent of the copolymer molecules having a comonomer content within 50 percent (i.e. $\pm 50\%$) of the median total molar comonomer content. The CDBI of linear polyethylenes, which does not contain a comonomer, is defined to be 100%.

The Composition Distribution Breadth Index (CDBI) is determined via the technique of Temperature Rising Elution Fractionation (TREF). CDBI determination

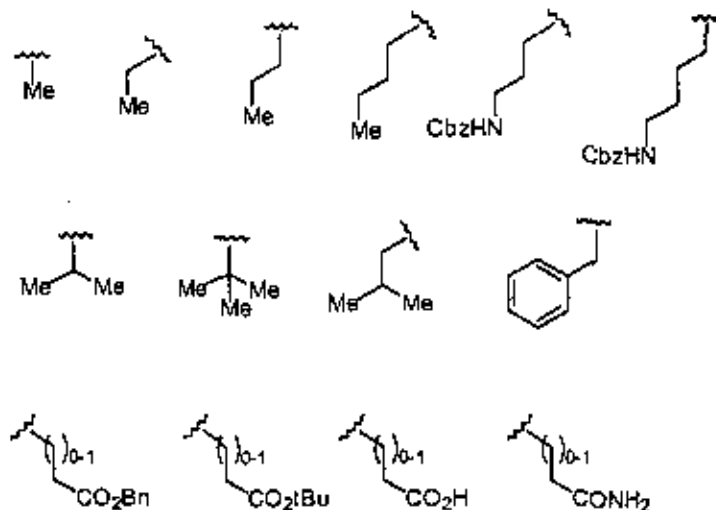


wherein:

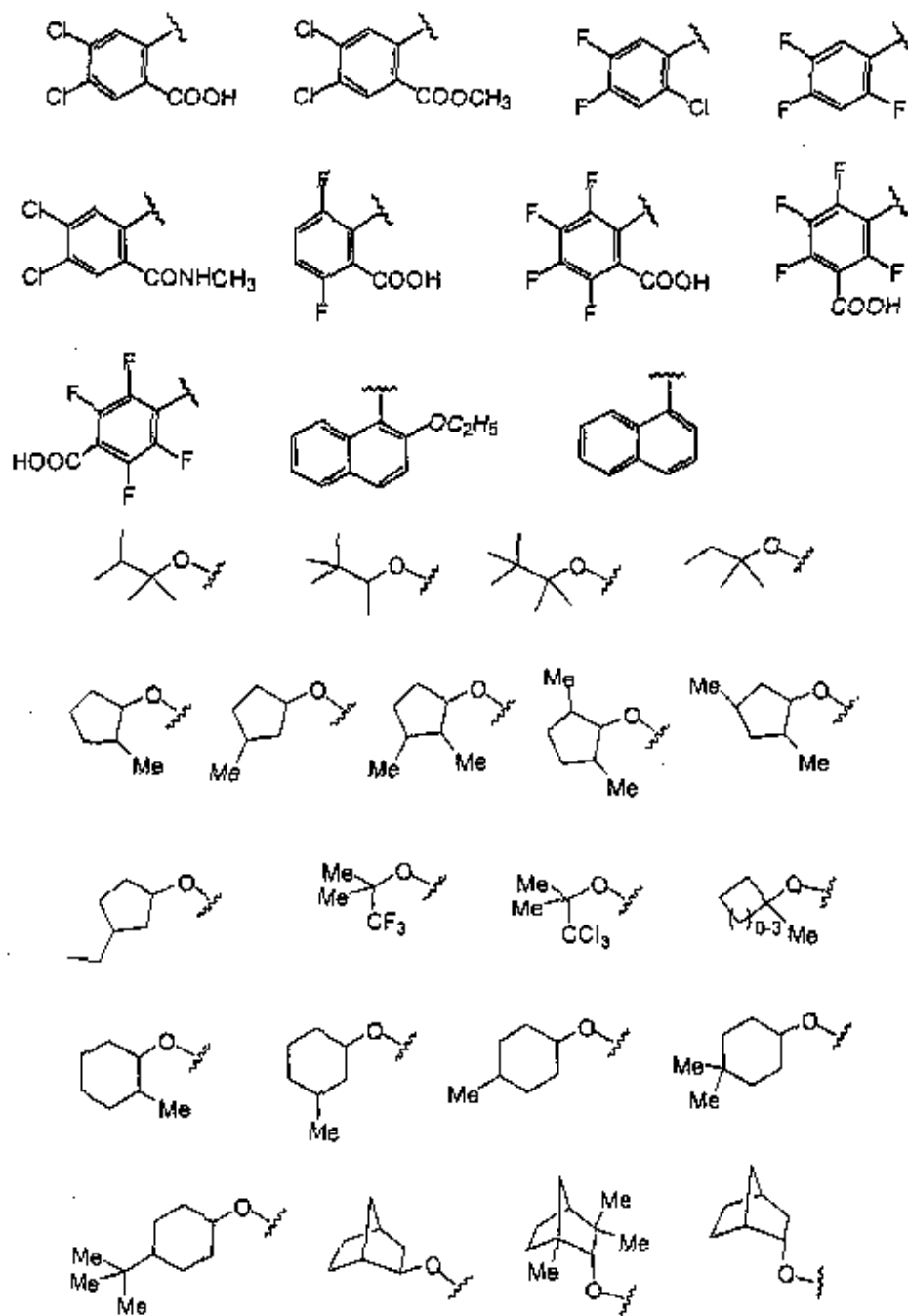
Y¹¹ is selected from H, COOH, COOEt, OMe, Ph, OPh,
 NHMe, NHAc, NHPH, CH(Me)₂, 1-triazolyl, 1-imidazolyl,
 and NHCH₂COOH;

Y¹² is selected from H, COOH, COOMe, OMe, F, Cl, or Br;

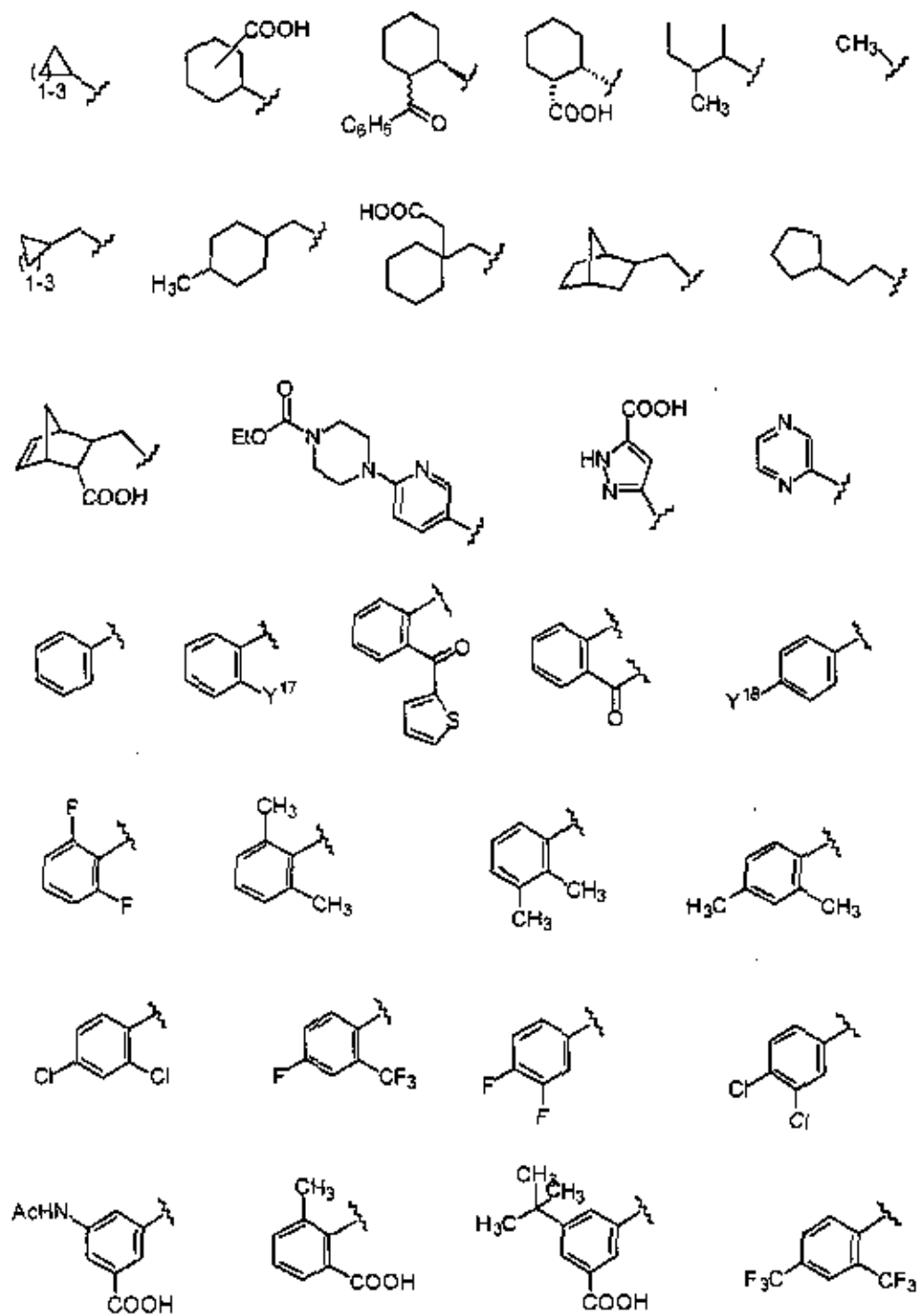
Y¹³ is selected from the following moieties:



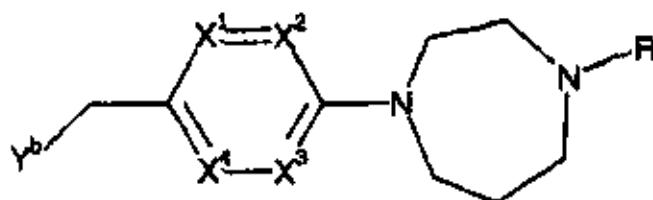
Y¹⁴ is selected from the following moieties:



18

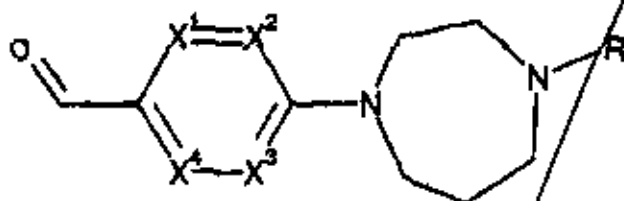


alquilar una amina de fórmula Q-H directamente, usando un compuesto de fórmula VII,



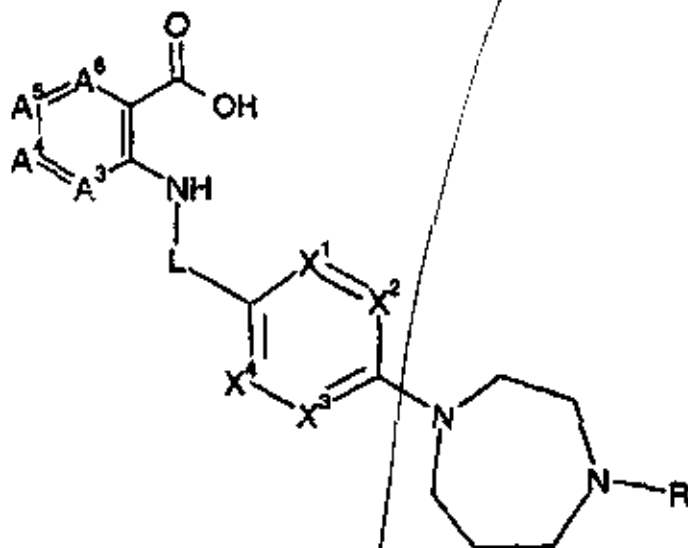
VII

en la que Y^b es un grupo saliente para la sustitución nucleófila, o indirectamente mediante alquilación reductora usando un aldehído de fórmula VIII:



VIII

(E) para un compuesto de fórmula I en la que Q es Q¹, acilar una amina de fórmula H₂N-R¹, o un derivado desprotonado de la misma, usando un ácido de fórmula IX o un derivado activado del mismo,



IX

tras lo cual, para cualquiera de los procedimientos anteriores, cuando un grupo funcional de un material de partida se protege usando un grupo protector, eliminar el grupo protector;

tras lo cual, para cualquiera de los procedimientos anteriores, cuando se requiere una sal farmacéuticamente aceptable de un compuesto de fórmula I, se obtiene haciendo reaccionar la forma básica de un compuesto básico de fórmula I con un ácido que produce un contraión fisiológicamente aceptable o la forma ácida de un compuesto ácido de fórmula I con una base que produce un contraión fisiológicamente aceptable o mediante cualquier otro procedimiento convencional;

y en el que, a menos que se especifique lo contrario, Q, L, X¹-X⁴, y R tienen cualquiera de los valores definidos en cualquiera de las reivindicaciones 1-10.

PCT

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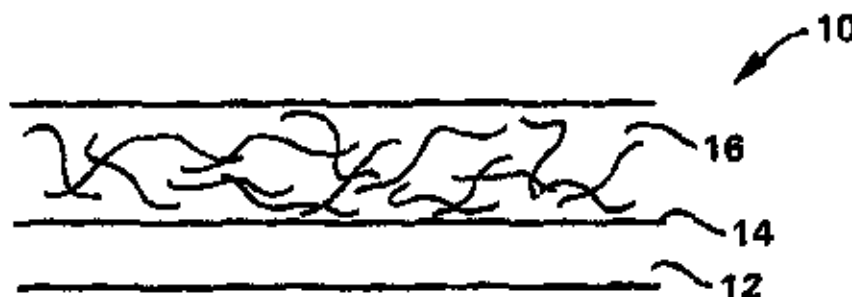
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(54) Title: STABLE BREATHABLE ELASTIC ARTICLES

(57) Abstract

A thermally stable microporous breathable film is provided comprising at least 35 % filler, by weight of the filled-film, and a thermoplastic polymer blend of a first polyethylene polymer and a second polyethylene polymer. The first polyethylene polymer comprises 30 % - 70 % by weight of the polymer blend and can have a density between about 0.86 g/cm³ and 0.89 g/cm³ and the second polyethylene polymer can have a density between about 0.90 g/cm³ and 0.92 g/cm³. The filled-film can be uniaxially or biaxially oriented to form a microporous film and/or film laminate having good body conformance and which retains a high WVTR at 37 °C and above.



As used herein, the term "garment" means any type of non-medically oriented apparel which may be worn. This includes industrial work wear and coveralls, undergarments, pants, shirts, jackets, gloves, socks, and the like.

As used herein, the term "infection control product" means medically oriented items such as surgical gowns, face masks, head coverings like bouffant caps, surgical caps and hoods, bandages, dressings, footwear like shoe coverings, boot covers and slippers, wound dressings, bandages, sterilization wraps, wipers, garments like lab coats, coveralls, aprons and jackets, patient bedding, stretcher and bassinot sheets, and the like.

As used herein, the term "personal care product" means diapers, training pants, absorbent underpants, adult incontinence products, and feminine hygiene products.

As used herein, the term "bodily article" means any article which may be worn by a person and include, but are not limited to, personal care products, garments, infection control products and the like.

As used herein and in the claims, the term "comprising" is inclusive or open-ended and does not exclude additional unrecited elements, compositional components, or method steps.

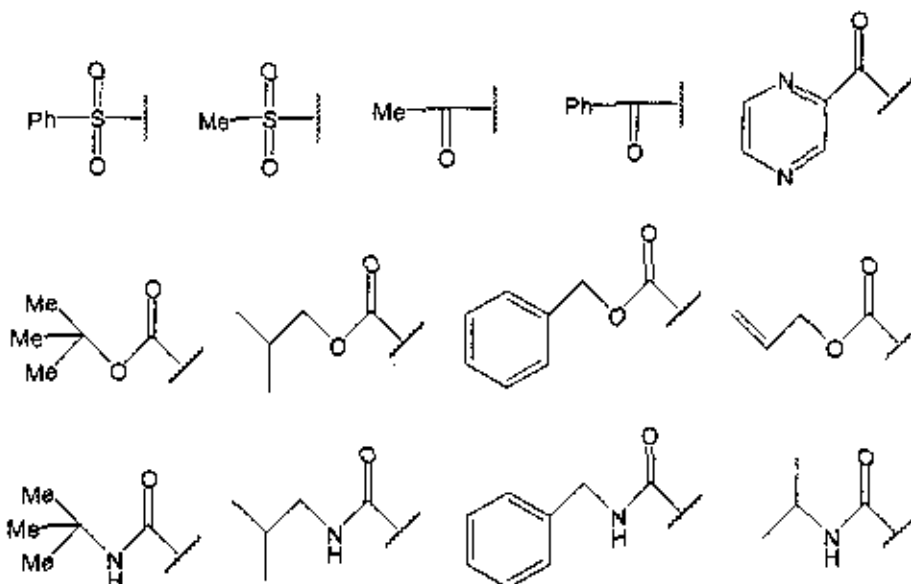
Detailed Description of the Invention

In reference to FIG. 1, a breathable filled-film 12 of the present invention is particularly well suited for use in a film laminate 10. The breathable filled-film 12 has a first side 14 which can be bonded to a fibrous layer and/or support fabric 16, desirably an extensible cloth-like fabric. The laminate can comprise a bodily article or a component of such an article. In a further aspect and in reference to FIG. 2, the breathable filled-film 22 can be bonded on its first side 24 to a first fibrous layer 26 and on its second side 26 to a second fibrous fabric 30. The first and second fibrous layer and/or support fabrics can be selected to provide the desired support, elasticity or other properties as desired and need not comprise identical fabrics.

The breathable filled-film comprises ~~substantially two components including a polymer~~ ~~blend and a filler.~~ The breathable film desirably comprises a filled barrier film having a WVTR of at least 300 g/m²/24 hours, desirably in excess of 500 g/m²/24 hours, 800 g/m²/24 hours, 1500 g/m²/24 hours or even 2500 g/m²/24 hours. In addition, the breathable filled-film desirably has a basis weight less than about 80 g/m² and even more desirably between about 10 and 35 g/m² and still more desirably between about 15 g/m² and 25 g/m². The

breathable filled-film 12 can be formed by any one of various methods known in the art. Desirably first breathable film comprises a microporous film such as a stretched filled-film comprising a stable thermoplastic polymer blend and filler. These (and other) components can be mixed together, heated and then extruded into a film. The filled film may be made by any one of a variety of film forming processes known in the art such as, for example, by using either cast or blown film equipment. The breathable filled-film can comprise mono-layer or ~~multilayer films~~. As an example, the breathable film can comprise a breathable base film and a thin breathable outer layer which are simultaneously made such as, for example, formed by co-extrusion. As an example, methods of forming multilayer films are disclosed in U.S. Patents 4,522,203; U.S. Patent 4,494,629; U.S. Patent 4,734,324 and WO 98/19346 filed June 27, 1996 to McCormack et al.; and U.S. Application (Express Mail No. RB879662575US) Serial No. 08/582,712 and filed September 15, 1997 to Haffner et al., the entire contents of which are incorporated herein by reference. Processes for producing thermally bondable breathable stretched filled-films are also disclosed in U.S. Patent No. 5,695,868 and WO 95/16562 filed June 22, 1995 to McCormack, the entire contents of which are incorporated herein by reference.

In a preferred embodiment the breathable filled-film, or base layer of ~~a multilayer film~~ is a film made from a thermoplastic polymer blend which was stretched in at least one direction, thereby reducing the film gauge or thickness and forming a micropore network. ~~The stable thermoplastic polymer blend comprises a low density ethylene polymer and a higher density more crystalline ethylene polymer component. The low density ethylene polymer desirably comprises a polyethylene polymer having a density of less than 0.88 g/cm³, desirably having a density between about 0.86 g/cm³ and 0.89 g/cm³ and even more desirably having a density between about 0.86 g/cm³ and about 0.88 g/cm³. The low density ethylene polymer component is desirably blended with a more crystalline ethylene polymer having a density between about 0.90 g/cm³ and about 0.92 g/cm³ and more desirably having a density between about 0.90 g/cm³ and about 0.917 g/cm³. In a particularly preferred embodiment, the ethylene polymer has a density of about 0.87 g/cm³ and the higher density ethylene polymer has a density of about 0.91 g/cm³. ~~Specifically, weight % of the polymer component of blend density relationship ethylene to the more crystalline or higher density ethylene polymer is from 75/25 to 25/75 and desirably from 70/30 to 30/70. Still more desirably the low density elastomeric ethylene to the higher density ethylene blended in a ratio of from about 60/40 to about 40/60 and even more desirably about 50/50.~~~~

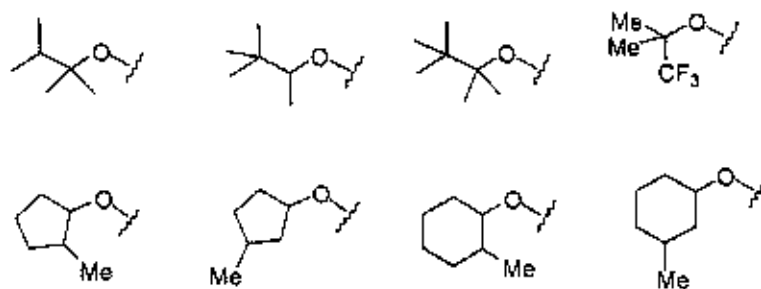


Y^{15} and Y^{16} are independently selected from alkyl, aryl, heteroalkyl, and heteroaryl;

Y^{17} is CF_3 , NO_2 , $CONH_2$, OH , $COOCH_3$, OCH_3 , OC_6H_5 , C_6H_5 , COC_6H_5 , NH_2 , or $COOH$; and

- 5 Y^{18} is $COOCH_3$, NO_2 , $N(CH_3)_2$, F , OCH_3 , CH_2COOH , $COOH$, SO_2NH_2 , or $NHCOCH_3$.

Y may be more preferably represented by:



weight distribution (M_w/M_n) of about 2, homogeneous branching and controlled long chain branching. Suitable alpha-olefins include, but are not limited to, 1-octene, 1-butene, propene and 1-pentene. Examples of polymers made by these catalysts are metallocenes, single-site or "constrained geometry" catalyzed polymers such as those described in U.S. Patent No. 5,472,775 to Obiolski et al. and assigned to the Dow Chemical company, the entire contents of which are incorporated herein by reference.

The metallocene process generally uses a metallocene catalyst which is activated, i.e. ionized, by a co-catalyst. Examples of metallocene catalysts include bis(*n*-butylcyclopentadienyl)titanium dichloride, bis(*n*-butylcyclopentadienyl)zirconium dichloride, bis(cyclopentadienyl)scandium chloride, bis(indenyl)zirconium dichloride, bis(methylcyclopentadienyl)titanium dichloride, bis(methylcyclopentadienyl)zirconium dichloride, cobaltocene, cyclopentadienyltitanium trichloride, ferrocene, hafnocene dichloride, isopropyl(cyclopentadienyl-1-fluorenyl)zirconium dichloride, molybdocene dichloride, nickelocene, niobocene dichloride, ruthenocene, titanocene dichloride, zirconocene chloride hydride, zirconocene dichloride, among others. A more exhaustive list of such compounds is included in U.S. Patent 5,374,696 to Rosen et al. and assigned to the Dow Chemical Company. Such compounds are also discussed in U.S. Patent 5,064,802 to Stevens et al. and also assigned to Dow. However, numerous other metallocene, single-site and/or similar catalyst systems are known in the art; see for example, U.S. Patent No. 5,539,124 to Etherton et al.; U.S. Patent No. 5,554,775 to Krishnamurti et al.; U.S. Patent No. 5,451,450 to Erdery et al. and *The Encyclopedia of Chemical Technology*, Kirk-Othmer, Fourth Edition, vol. 17, Olefinic Polymers, pp. 765-767 (John Wiley & Sons 1996); the entire content of the aforesaid patents are incorporated herein by reference.

Regarding metallocene based plastomers or elastomeric polymers, U.S. Patent 5,204,429 to Kaminsky et al. describes a process for producing elastic copolymers from cycloolefins and linear olefins using a catalyst which is a stenoicid chiral metallocene transition metal compound and an aluminoxane. The reaction may also occur in the gas phase using the monomers to be polymerized as the solvent. U.S. Patents 5,278,272 and 5,272,236, both to Lai et al., assigned to Dow Chemical and entitled "Elastic Substantially Linear Olefin Polymers" describe polymers having particular elastic properties, the artim:

contents of which are incorporated herein by reference. The elastomer is a thermoplastic elastomer from Dow Chemical Company of Houston, TX under the trade name AFFINITY™, including AFFINITY™ EG8200 (5 MI), XU 59200.02 (30 MI), XU 58380.00 (10 MI) and from Exxon Chemical Co. of Houston, TX under the trade name EXACT™, including EXACT 4049 (4.5 MI, 0.873 g/cm³); 4011 (2.2 MI, 0.888 g/cm³); 4041 (3 MI, 0.878 g/cm³); 4006 (10 MI, 0.89 g/cm³).

Higher density, more crystalline ethylene polymer can also be produced by catalysts similar to those described above, e.g. metallocene single site or constrained geometry catalysts. Additionally, higher density ethylene polymers can be made by more traditional catalyst systems such as Ziegler-Natta catalysts. Density of these polymers have a range from about 0.900 g/cm³ and about 0.920 g/cm³. Such polymers are known as "low density polyethylene" (LDPE) and "high density polyethylene" (HDPE). A variety of these ethylene polymers are commercially available including as examples, those under the trade designation AFFINITY™, ELITE™ or ASPUN™ available from Dow Chemical Company and EXCEED™ available from Exxon Chemical Co.

Additional film-forming polymers which may be suitable for use with the present invention, in combination with the ethylene polymer blend, include ethylene-propylene copolymers, ethylene vinyl acetate (EVA), ethylene ethyl acrylate (EEA), ethylene acrylic acid (EAA), ethylene methyl acrylate (EMA), ethylene normal butyl acrylate (ENBA), polyurethane (PU), polyether esters, polyether amides, EPDM rubbers and the like.

In addition to the thermoplastic polymer blend, the breathable filled-film also includes a filler to impart breathability to the film. As used herein a "filler" is meant to include particulates and/or other forms of materials which can be added to the film polymer extrusion blend which will not chemically interfere with or adversely affect the extruded film and further which are capable of being uniformly dispersed throughout the film. Generally the fillers will be in particulate form with average particle sizes in the range of about 0.1 to about 10 microns, desirably from about 0.1 to about 4 microns. As used herein the term "particle size" describes the largest dimension or length of the filler. Both organic and inorganic fillers are contemplated for use with the present invention provided they do not interfere with the film forming process and/or subsequent laminating processes. Examples of fillers include calcium carbonate (CaCO_3), various clays, silica (SiO_2), alumina, barium sulfate, sodium carbonate, talc, magnesium sulfate, titanium dioxide, zeolites, aluminum sulfate, cellulose-type powders, diatomaceous earth, gypsum, magnesium sulfate,

materials to produce a predominantly atactic hydrocarbon chain. In a preferred embodiment, from about 1 g/m² to about 10 g/m² of adhesive is applied to a fibrous support fabric prior to superposing the support layer and filled-film. Additional bonding aids or tackifiers, such as described in WO 95/16562 can also be used.

In reference to FIG. 5, a schematic diagram of a process line for fabricating breathable barrier laminates of the present invention. Referring to FIG. 5, ~~a filled-film is fed from an extrusion film apparatus 100 such as a cast or blown film unit. Typically, the apparatus 100 includes one or more polymer extruders 102. The unstretched filled film 50 is extruded into a pair of nip or chill rollers 104 one of which may be patterned and is to impart an embossed pattern to the newly formed filled film 50.~~ This may be desired in some applications in order to reduce the gloss of the film and give it a matte finish. ~~Although the basis weight of the unstretched filled-film will vary with respect to the stretch ratio, the desired final film basis weight and other parameters, desirably the basis weight of the unstretched filled-film will vary from about 60 g/m² to about 120 g/m².~~

From the extrusion film apparatus 100 the unstretched film 50 is directed to a film stretching unit 106 such as a machine direction orienter which is a commercially available device from vendors such as the Marshall and Williams Company of Providence, Rhode Island. Such an orienter 106 has a plurality of pre-heat and stretching rolls which stretch the unstretched film 50 in the machine direction (MD) of the film which is the

direction in which the film 50 is fed through the process. ~~The film is heated in either single or multiple stretching operations, 50 inch by the heated rolls and is stretched 40-6000% to about 3 times its original length.~~ With regard to FIG. 5, heated rollers 108a and 108b may act as pre-heat rolls. Slow roll 110 travels at a circumferential speed slower than that of fast roll 112. The different speeds of the adjacent rollers act to stretch the filled-film 50. One or both of the slow roll 110 and fast roll 112 can be heated. After stretching, the film may be allowed to slightly retract and/or be further heated or annealed by one or more heated rollers, such as by heated anneal roll 114. After exiting the film stretching unit 106 the stretched film 52 desirably has a basis weight less than about 60 g/m², and even more desirably having a basis weight between about 15 and about 35 g/m².

The stretched filled-film 52 can be attached to an extensible fibrous layer 56, such as a necked spunbonded web, to form a film/nonwoven laminate 60. Referring again to Figure 5, a neckable material 54 is unwound from a supply roll 130. The neckable material 54 then travels in the direction indicated by the arrows associated therewith. The neckable material 54 then passes through nip 132 of S-roll arrangement 134, formed by stack of rollers 136

and 138, in a reverse S-wrap path as indicated by the arrows associated with stack rollers 136 and 138. Because the peripheral or circumferential speed of the rollers of the S-roll arrangement 134 is controlled to be slower than the peripheral linear speed of the calendar roll assembly 116, the neckable material 54 is tensioned so that it necks a desired amount.

The necked material could alternately be necked off-line and unrolled in the tensioned, necked condition. The necked material 56 is maintained in the tensioned, necked condition as it passes under spray equipment 140 which sprays an adhesive 58 through die head 142 onto the necked material 56. Once the stretched filled-film 52 has been sufficiently thinned, the necked material 56 formed and adhesive 58 applied thereto, the layers can be brought together and the adhesive treated (if necessary, e.g. with heat) thereby forming a stable breathable laminate 60 with excellent body conformance. Optionally, the laminate may be further bonded or embossed using calendaring rolls 116. One and/or both of the calendar rolls may be heated. The bonding rolls 116 are desirably heated and at least one of the rolls may be patterned to create a desired bond pattern with a prescribed bond surface area for the resultant laminate. Once the laminate 60 exits the heated rolls 116, it may be wound up into a winder roll 120. Alternatively, the laminate 60 may continue in-line for further processing and/or conversion.

The barrier laminates of the present invention may be used to either make or comprise a component of protective fabrics, infection control products, personal care products, garments and other articles that desirably have barrier properties and breathability. As specific examples thereof, the barrier laminates may be used as follows: as a back sheet or an outer cover in a diaper or adult incontinence garments such as described in U.S. Patent No. 5,415,644 to Enloe and U.S. Patent Application Serial No. 08/994,530 to Strack et al.; or as a barrier layer in surgical gowns and protective apparel such as described in U.S. Patent No. 4,823,404 to Morrell et al.; U.S. Patent No. 5,508,142 to Conneff et al.; U.S. Patent No. 5,487,189 to Bell and U.S. Patent No. 5,492,753 to Levy et al.; the entire content of the aforesaid patents and applications are incorporated herein by reference.

Tests

Hydrohead: A measure of the liquid barrier properties of a fabric is the hydrohead test. The hydrohead test determines the height of water or amount of water pressure (in millibars) that the fabric will support before liquid passes therethrough. A fabric with a higher

The stretched film was allowed to retract over the anneal rolls, resulting in a breathable microporous film having final stretch ratio of 3.3 times its original length and a basis weight of about 38 g/m². The stretched filled-film was adhesively laminated to about a 27 g/m² necked polypropylene spunbond fiber web with about 3 g/m² amorphous polyalphaolefin available from the Huntsman Corp. under the designation REXTAC 2730. The resulting laminate had a basis weight of about 64 g/m².

The stretched filled-film had a shrinkage of 8% (at 37°C after 4 minutes). The laminate had a shrinkage of 0% (at 37°C after 4 minutes), a hydrohead of 171 mbar and a WVTR of 1327 g/m²/day. The laminate had a first cycle extension tension of 461 g, a second cycle retraction tension of 111g and a hysteresis of 76%. The peel strength of the laminate after the 50% cycle was 664 g.

Example 2

A 100 g/m² film was made by a standard blown film process and comprised 55% by weight calcium carbonate filler coated with stearic acid and about 45% by weight polymer. The polymer comprised a blend of 25% by weight of a low density polyethylene elastomer, AFFINITY EG8200 (0.87 g/cm³, 5 MI) available from Dow Chemical Co., and 75% by weight of a linear low density polyethylene AFFINITY PL 1845 (0.91 g/cm³, 3.5 MI) available from Dow Chemical Co. The film was then stretched in the machine direction 5.2 times its original length using a machine direction orienter available from Marshall and Williams Co. The slow roll was at ambient temperature and had a speed of 43 fpm, the fast roll at 180 °F and 215 fpm. The first anneal roll was at 180 °F with a speed of 205 fpm and the second anneal roll at ambient temperature with a speed of 135 fpm. The stretched film was allowed to retract over the anneal rolls, resulting in a breathable microporous film having final stretch ratio of 3.3 times its original length and a basis weight of about 36 g/m². The stretched filled-film was adhesively laminated to about a 27 g/m² necked polypropylene spunbond fiber web with about 3 g/m² amorphous polyalphaolefin available from the Huntsman Corp. under the designation REXTAC 2730. The resulting laminate had a basis weight of about 65 g/m².

The stretched filled-film had a shrinkage of 0% (at 37°C after 4 minutes). The laminate had a shrinkage of 0% (at 37°C after 4 minutes), a hydrohead of 182 mbar and a WVTR of 3115 g/m²/day. The laminate had a first cycle extension tension of 818 g, a second cycle retraction tension of 98 g and a hysteresis of 88%. The peel strength of the laminate after the 50% cycle was 729 g.

Example 3

A 100 g/m² film was made by a standard blown film process and comprised 55% by weight calcium carbonate filler coated with stearic acid and about 45% by weight polymer. The polymer comprised a blend of 50% by weight of a low density polyethylene elastomer, AFFINITY EG8200 (0.87 g/cm³, 5 MI) available from Dow Chemical Co., and 50% by weight of a linear low density polyethylene AFFINITY PL 1845 (0.91 g/cm³, 3.5 MI) available from Dow Chemical Co. The film was then stretched in the machine direction 5.2 times its original length using a machine direction orienter available from Marshall and Williams Co. The slow roll was at ambient temperature and had a speed of 43 fpm, the fast roll was at 180 °F and had a speed of 214 fpm. The first anneal roll was at 180 °F with a speed of 220 fpm and the second anneal roll was at ambient temperature with a speed of 135 fpm. The stretched film was allowed to retract over the anneal rolls, resulting in a breathable microporous film

having final stretch ratio of 3.3 times its original length. The stretched filled-film was adhesively laminated to about a 27 g/m² necked polypropylene spunbond fiber web with about 3 g/m² amorphous polyalphaolefin available from the Huntsman Corp. under the designation REXTAC 2730. The resulting laminate had a basis weight of about 67 g/m².

The stretched filled-film had a shrinkage of 1% (at 37°C after 4 minutes). The laminate had a shrinkage of 0% (at 37°C after 4 minutes), a hydrohead of 183 mbar and a WVTR of 2257 g/m²/day. The laminate had a first cycle extension tension of 810 g, a second cycle retraction tension of 137g and a hysteresis of 78%. The peel strength of the laminate after the 50% cycle was 991 g.

Example 4

A 100 g/m² film was made by a standard blown film process and comprised 55% by weight calcium carbonate filler coated with stearic acid and about 45% by weight polymer.

- 5 The polymer comprised a blend of 75% by weight of a low density polyethylene elastomer, AFFINITY EG8200 (0.87 g/cm³, 5 MI) available from Dow Chemical Co., and 25% by weight of a linear low density polyethylene AFFINITY PL 1845 (0.91 g/cm³, 3.5 MI) available from Dow Chemical Co. The film was then stretched in the machine direction 6.5 times its original length using a machine direction orienter available from Marshall and Williams Co. The slow
- 10 roll was at ambient temperature with a speed of 35 fpm and the fast roll was at 160 °F with a speed of 214 fpm. The first anneal roll was at 160 °F with a speed of 203 fpm and the second anneal roll was at ambient temperature with a speed of 111 fpm. The stretched film was allowed to retract over the anneal rolls, resulting in a breathable microporous film having final stretch ratio of 3.7 times its original length and a basis weight of about 35 g/m².
- 15 The stretched filled film was adhesively laminated to about a 27 g/m² nooked polypropylene spunbond fiber web with about 3 g/m² amorphous polyalphenolefin available from the Huntman Corp. under the designation REXTAC 2730. The resulting laminate had a basis weight of about 66 g/m².

- The stretched filled film had a shrinkage of 0% (at 37°C after 4 minutes). The
- 20 laminate had a shrinkage of 0% (at 37°C after 4 minutes), a hydrohead of 172 mbar and a WVTR of 2482 g/m²/day. The laminate had a first cycle extension tension of 556 g and a second cycle retraction tension of 120 g and a hysteresis of 79%. The peel strength of the laminate after the 50% cycle was 937 g.

- While various patents and other references have been incorporated herein by
- 25 reference, to the extent incorporated material is inconsistent with that of the written specification the written specification shall control. In addition, while the invention has been described in detail with respect to specific embodiments thereof, it will be apparent to those skilled in the art that various alterations, modifications and other changes may be made to the invention without departing from the spirit and scope of the present invention.
- 30 It is therefore intended that the claims cover all such modifications, alterations and other changes encompassed by the appended claims.

20. The thermally stable film laminate of claim 19 wherein said fibrous layer comprises a necked nonwoven web.

21. An absorbent bodily article, comprising:

a liquid pervious liner;

an absorbent core; and

a thermally stable film laminate comprising a breathable film and a fibrous layer

5 wherein said absorbent core is positioned between said liquid pervious liner and said thermally stable film laminate;

said breathable film comprising an effective amount of filler and a thermoplastic polymer blend, said thermoplastic polymer blend comprising 30% to 70%, by weight, of a first ethylene polymer having a density below 0.89 g/cm³ and 30% to 70%, by weight, of a
 10 second ethylene polymer having a density above about 0.90 g/cm³ and wherein said film has voids adjacent said filler and further wherein said film has a WVTR of at least 300 g/m²/24 hours at 37°C and said laminate has a heat shrinkage of less than less than 5 % at 54°C.

22. The absorbent bodily article of claim 21 wherein said fibrous layer is an extensible nonwoven web.

23. The absorbent bodily article of claim 22 wherein said extensible nonwoven fabric comprises a necked nonwoven web.

24. The absorbent article of claim 23 wherein said extensible nonwoven fabric comprises a necked nonwoven web of polypropylene spunbond fibers.

25. The absorbent article of claim 22 wherein said extensible nonwoven web is an elastic nonwoven web.

26. The absorbent article of claim 21 wherein said thermoplastic polymer blend comprises about 60 % to about 40 %, by weight, of said first ethylene polymer.

27. The absorbent article of claim 26 wherein said second thermoplastic polymer comprises about 50 %, by weight, of the second ethylene polymer.

28. The absorbent article of claim 26 wherein said breathable film has a WVTR in excess of 1500 g/m²/day at 37°C.

29. The absorbent article of claim 21 wherein the breathable film has a heat shrinkage of less than about 5% of 54°C.

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Patente de Invención	☒	Patente de Modelo de Utilidad	☐
Vía Nacional	☒		
Vía PCT (fase nacional)	☐	Cap. I	☐ Cap. II ☐

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

Descripción:	Folios: 7 a 36	como se radico inicialmente
Reivindicaciones:	Folios 176 a 177	modificadas
Figuras:	Folios: 40 a 43	como se radico inicialmente
Prioridad:	Folios: 73 a 109. Abril 3 de 2003, Brasil. PI 0301087-2	

2. Objeto de la invención

Título de la invención.
Producto absorbente.

Problema técnico objetivo es lograr capas externas en los artículos absorbentes convencionales, con propiedades mejoradas referentes a la sensación de suavidad, reducción del ruido cuando se deforman y elementos atractivos.

La solicitud en estudio presenta un artículo absorbente, cuya primera capa externa o lámina de respaldo, corresponde a una película polimérica que exhibe zonas estiradas adyacentes a zonas no estiradas.

Clasificación Internacional de Patentes (IPC.) A61F 13/15.

3. Determinación del Estado de la Técnica

Considerando que la fecha de presentación de la primera solicitud de patente de la cual se reivindica prioridad es: 03 de abril de 2003, se buscaron documentos del estado de la técnica relacionados, con fecha de publicación anterior a esta.

Nº	Documento	Título	Fecha de Publicación
D2	US5376439	SOFT FILMS HAVING ENHANCED PHYSICAL PROPERTIES	1994-12-27
D3	WO9914262	STABLE BREATHABLE ELASTIC ARTICLES	1999-03-25

4. Análisis de patentabilidad (artículo 14 D486)

Nivel Inventivo (artículo 18 D486)

Respecto a la solicitud en estudio

La reivindicación independiente 1 hace referencia a un artículo absorbente, que comprende una primera capa o lámina de respaldo y una segunda capa ó capa interna. Dicha primera capa corresponde a un material polimérico (20) que presenta por lo menos una región estirada ubicada adyacente a por lo menos dos regiones no estiradas, en donde la película de capa múltiple (20) comprende dos capas externas (A) hechas de polietileno de densidad baja (LPDE) y un polietileno de densidad media lineal (LMPDE), que están dispuestos en los lados de dos capas intermedias (B) hechas de densidad baja lineal catalizado con metaloceno (M-LLDPE) y polietileno de densidad baja (LDPE).

Respecto al estado de la técnica:

D2 describe una composición de una mezcla de polímeros de 25 a 90% en peso de un polietileno de densidad muy baja y cerca de 10 a 70% en peso de polietileno de densidad baja a media. Esta invención también provee láminas preparadas de acuerdo a esta mezcla de forma simple ó en bloque ABA donde A son láminas de piel que comprenden la mezcla de la invención y el B o lamina cubierta que comprende diferentes olefinas tal como polietileno de densidad alta. Las láminas de esta invención presenta excelentes propiedades al impacto, elongación, tensión, y propiedades de suavidad, tacto y ruido, las cuales las postulan para ser usadas como lámina posterior de en la fabricación de artículos absorbentes tales como pañales, entre otros, donde estas propiedades son deseadas (Resumen). Las láminas de la presente invención son fabricadas por extrusión por moldeo, así, los componentes poliméricos y los aditivos son mezclados uniformemente y son extruidos en forma plana a un temperatura por debajo de la temperatura de fusión de los polímeros, se forma un red, y se moldea la red de acuerdo a la superficie del rodillo de moldeo, alisándola o formado un patrón (Col 9 líneas 58-68).

D3 describe una lámina microporosa, estable y respirable, que comprende al menos un 35% de un relleno por peso de lámina y una mezcla de polímeros termoplásticos donde el primer y el segundo polímero son de polietileno (Resumen). En una realización preferida, una lámina base o una multilamina, se fabrica a partir de una mezcla de polímeros los cuales son estirados en al menos una dirección, reduciendo el calibre o grosor y formando microporos en la red. La mezcla de polímeros termoplásticos estables comprenden un polietileno de baja densidad y un polímero de etileno cristalino de mayor densidad (Pág. 10 líneas 20-24). El polímero de baja densidad puede ser un plastómero o un elastómero. Las alfa-olefinas disponibles pero no limitantes son 1-octano, 1-butano, 1-hexano y 4-metilpentano. Estos polimeros son obtenidos por catálisis con metaloceno (Pág. 11 líneas 6-7). Los polimeros de etileno de alta densidad, más cristalinos

también pueden producirse por catálisis por metalloceno o por Sistemas catalíticos tales como Ziegler-Natta. Es deseable que los polímeros se encuentren entre una densidad de 0.9 a 0.92 g/cm³. Los polímeros de etileno disponibles son conocidos como polietileno lineal de baja densidad (LLDPE) y polietileno de alta densidad (HDPE) (Pág. 12 líneas 7-12). El proceso de fabricación de la barrera laminada respirable de esta invención se hace en extrusión por moldeo o por soplado. La lámina no estirada es extrudida en un par de rodillos refrigerados los cuales pueden dar un patrón de realce a la nueva lámina. Luego la lámina es estirada en una o en varias operaciones de estiramiento (Pág. 15 líneas 5-29).

Respecto al estado de la técnica:

La reivindicación 1 se refiere a un producto absorbente con por lo menos dos regiones no estiradas, en donde la película de capa múltiple (20) comprende dos capas externas (A) hechas de polietileno de densidad baja (LDPE) y un polietileno de densidad media lineal (LMDPE), que están dispuestos en los lados de dos capas intermedias (B) hechas de densidad baja lineal catalizado con metalloceno (M-LLDPE) y polietileno de densidad baja (LDPE).

De acuerdo con la reivindicación independiente 1 de la solicitud en estudio el principio técnico de esta es un producto absorbente con por lo menos dos regiones no estiradas, en donde la película de capa múltiple (20) comprende dos capas externas (A) hechas de polietileno de densidad baja (LDPE) y un polietileno de densidad media lineal (LMDPE), que están dispuestos en los lados de dos capas intermedias (B) hechas de densidad baja lineal catalizado con metalloceno (M-LLDPE) y polietileno de densidad baja (LDPE). No obstante, D2 divulga un hoja posterior de un pañal obtenida por extrusión por moldeo la cual después es orientada, y esta conformada por una lámina suave a partir de una mezcla de a) 30 a 90% de un copolímero de etileno con un comonomero de alfa olefinas C₄ a C₂₀ obtenidas a partir de un sistema catalítico de metalloceno con una densidad de 0.88 a 0.91 g/cm³ y b) cerca de un 10 a 70% de un contenido polimérico de polietileno de baja a media densidad con una densidad de 0.91 a 0.935 g/cm³ (Rev. 29,28, 1, Col 9 líneas 5-8), donde la película tiene una construcción laminar ABA, donde A es la mezcla polimérica anteriormente descrita y B comprende un polímero diferente de olefinas tal como polietileno de alta densidad (Col 3 líneas 31-36), es así como la anterior película, logra mejorar las propiedades impacto, elongación, tensión, y propiedades de suavidad, tacto y ruido.

D2 no menciona que la película de capas múltiples ABA, tenga una mezcla polimérica LDPE y M-LLDPE, pero da la opción de que un técnico medio en el arte utilice un polímero de olefinas de acuerdo a sus necesidades. Sin embargo, en el estado de la técnica ya era conocida una lámina polimérica para ser usada en productos absorbentes como lámina posterior impermeable, con la mezcla polimérica del LDPE y M-LLDPE (Ejemplos 1-4), como lo reporta D3.

Es así como un técnico medio en la materia que tuviera acceso a los documentos D2 y D3, podría verse motivado a desarrollar una película polimérica de capas múltiples con las mezclas: a) LDPE-M-LLDPE y b) LDPE (VLDPE)-MLDPE tal como lo propone la solicitud en estudio.

Dado lo anterior, las características técnicas del producto absorbente de esta solicitud, no representa un avance tecnológico sobre el estado de la técnica.

En conclusión, esta reivindicación y sus dependientes se encuentran afectadas en

su nivel inventivo ya que se derivan de manera evidente del estado de la técnica y pueden ser obvias para un técnico medio en la materia.

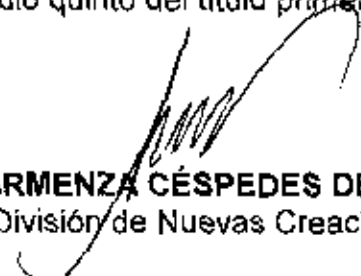
5. Conclusión:

Los requisitos de patentabilidad de la presente solicitud se encuentran afectados así:

N°	Documento N°	Reivindicaciones Afectadas	Requisito que Afecta
D2	US5376439	1-10	Nivel Inventivo
D3	WO9914262	1-10	Nivel Inventivo

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 60 días contados a partir de la fecha de notificación de la presente comunicación. En caso de no dar respuesta al presente requerimiento, o si a pesar de la respuesta subsistieran los impedimentos para la concesión, se denegará la patente.

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


ALIX CARMENZA CÉSPEDES DE VERGEL
 Jefe de División de Nuevas Creaciones

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

06/10/2009

CONCEPTO TÉCNICO No. 2294	EXAMINADOR TÉCNICO Código No. 202090
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