

**Huhtamaki Flexible Packaging Germany
GMBH & Co. KG**

v.

**adapa Flexibles Denmark Slagelse A/S
f/k/a Danapak Flexibles A/S**

Patent Owner's Demonstratives

PGR 2023-0008

U.S. Patent No. 11,260,624 B2

Patent Owner's Demonstratives

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

Presentation Roadmap

- Overview of the '624 Patent
- Overview of the Prior Art References
- Person of Ordinary Skill in the Art
- Petitioner's Grounds 1-3 Each Fail
- Ground 1 - Petitioner Has Not Established Indefiniteness of "aggressive chemical resistant film" or "loading"
- Ground 2 – Petitioner Has Not Established Obviousness in View of Riis
- Ground 3 – Petitioner Has Not Established Obviousness in View of Riis, Wypych and Tatarka
- Patent Owner's Revised Motion to Amend
- Petitioner Has Failed to Establish Obviousness of the Revised Substitute Claims

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

Overview of the '624 Patent



US011260624B2

(12) **United States Patent**
Christensen et al.

(10) Patent No.: **US 11,260,624 B2**
(45) Date of Patent: ***Mar. 1, 2022**

(54) **METHOD FOR PROVIDING AN EXTREME CHEMICAL RESISTANT FILM, A FILM AND LAMINATE OBTAINABLE THEREFROM**

(71) Applicant: **Danapak Flexibles A/S, Slagelse (DK)**

(72) Inventors: **Lars Christensen, Slagelse (DK); Peter Johansen, Odense C (DK); Torben Fogtman, Nyborg (DK)**

(73) Assignee: **Danapak Flexibles A/S, Slagelse (DK)**

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.
This patent is subject to a terminal disclaimer.

(21) Appl. No.: **16/835,018**
(22) Filed: **Mar. 30, 2020**

(65) **Prior Publication Data**
US 2020/0223185 A1 Jul. 16, 2020

Related U.S. Application Data
(63) Continuation of application No. 15/780,999, filed as application No. PCT/EP2016/082876 on Dec. 29, 2016.

(30) **Foreign Application Priority Data**
Dec. 29, 2016 (EP) 15202962

(51) **Int. Cl.**
B12B 15/002 (2006.01)
B12B 27/30 (2006.01)
(Continued)

(52) **U.S. Cl.**
B12B 15/002 (2013.01); **B05D 1/265** (2013.01); **B12B 7/12** (2013.01); **B12B 15/20** (2013.01);
(Continued)

(58) **Field of Classification Search**
CPC B05D 1/265; B12B 15/002; B12B 15/20; B12B 1/00; B12B 2250/05;
(Continued)

(56) **References Cited**
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U.S. Appl. No. 15/780,999, filed Jan. 1, 2018, Pending.
Primary Examiner — Frances Tischler
(74) *Attorney, Agent, or Firm* — Holland & Hart LLP

(57) **ABSTRACT**
The present disclosure relates to a method for providing a film. The method may include providing a base layer, wherein the base layer is resistant to one or more of water or oxygen; coextruding a tie layer and a contact layer to provide a coextrusion layer; coating the coextrusion layer to the base layer; allowing the coextrusion layer coated to the base layer to adhere to form the film, wherein the film comprises the tie layer and the contact layer formed as a coextrusion layer coated to the base layer; wherein the tie layer comprises one or more layers, and wherein the tie layer, or the one or more layers of the tie layer, has a loading in the range of 7 to 20 g/m², wherein the contact layer comprises a cycloolefin copolymer (COC).

13 Claims, 3 Drawing Sheets

Transfer to packaging material
API: Rivastigmine

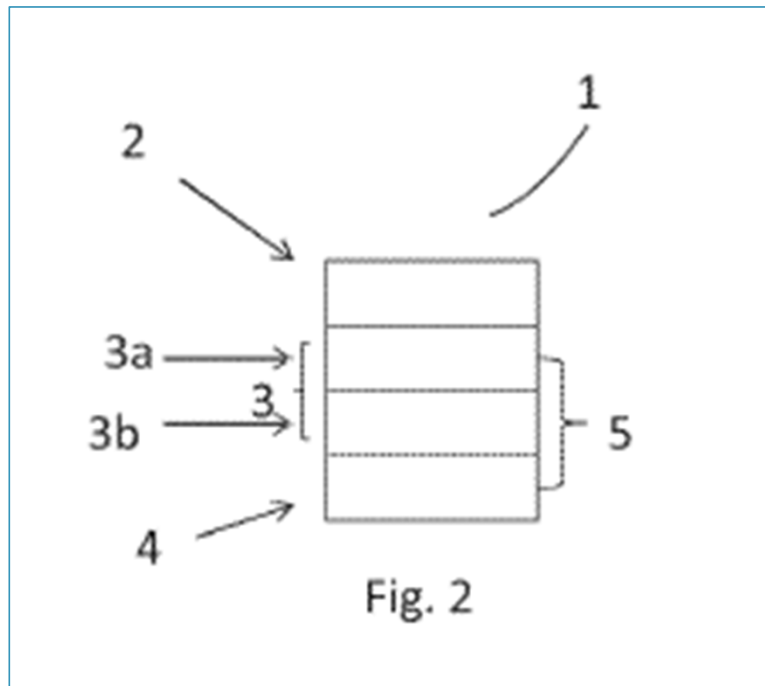
Huhtamaki EX1001
U.S. Patent No. 11,260,624

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DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

EX1001

Overview of the '624 Patent



DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

EX1001 at Fig. 2, 13:34-41

Overview of the '624 Patent

What is claimed is:

1. A method for providing an aggressive chemical-resistant film, wherein the film is resistant to a chemical selected from nicotine, fentanyl, rivastigmine, or lidocaine, said method comprising:

providing a base layer, wherein the base layer comprises aluminum and is resistant to one or more of water or oxygen;

coextruding a tie layer and a contact layer to provide a coextrusion layer, wherein the contact layer consists of a cycloolefin copolymer (COC);

coating the coextrusion layer consisting of the tie layer and the COC of the contact layer directly to the base layer comprising the aluminum; and

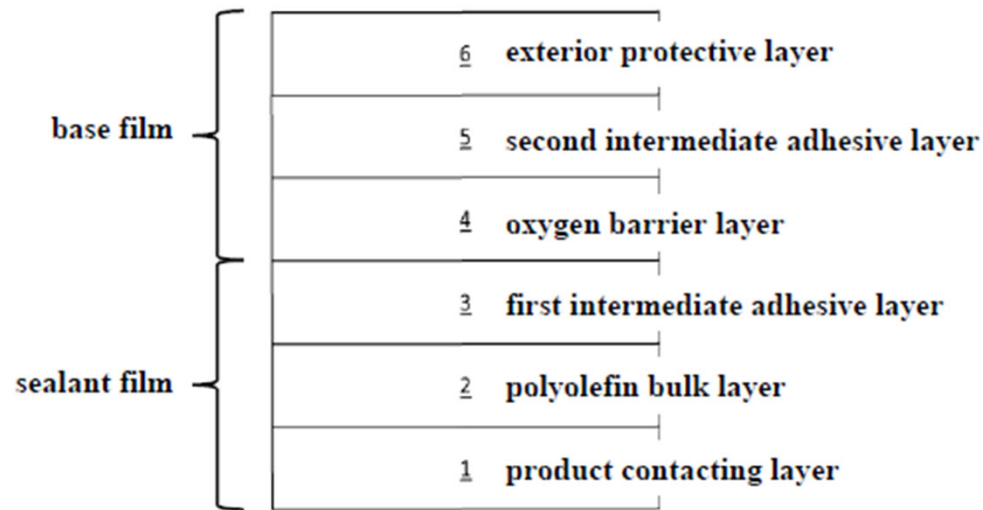
allowing the coextrusion layer coated to the base layer to adhere to form the aggressive chemical-resistant film, wherein the aggressive chemical-resistant film consists of: the base layer comprising the aluminum, and the coextrusion layer consisting of the tie layer, and the contact layer consisting of COC,

wherein the tie layer comprises one or more layers, and wherein the tie layer, or the one or more layers of the tie layer, has a loading in the range of 7 to 20 g/m².

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

EX1001 at Claim 1

Overview of Riis



EX1004, FIG. 1 (annotated using the description in [0135])

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

EX1004 at Fig. 1; Patent Owner's
Response at 36

Overview of Riis

base film	.92 mil OPET – Exterior Protective Layer
	(Not Given) mil PEI – Primer Layer
	.42 mil LDPE – Bulk Layer
	.1 mil EAA – 2nd Intermediate Adhesive Layer
	.35 mil Foil – Barrier Layer
sealant film	.17 mil EAA – First Intermediate Adhesive Layer
	.65 mil LDPE – Bulk Layer
	.43 mil COC – Contact Layer

Response, Figure 1.

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

Patent Owner's Response, FIG. 1

Overview of Riis

18. A drug resistant, flexible, multilayer packaging film comprising:

- (a) a drug contact layer having at least 90 wt. % of an ethylene norbornene copolymer having a glass transition temperature of from 65°C to 110°C;
- (b) a polyolefin bulk layer;
- (c) a first intermediate adhesive layer;
- (d) an oxygen barrier layer having an oxygen transmission rate of less than $0.01 \text{ cm}^3/100 \text{ inches}^2/24 \text{ hours}$ at 1 atmosphere and 23°C;
- (e) a second intermediate adhesive layer; and
- (f) an exterior protective layer comprising a polymer selected from the group consisting of paper, oriented polyester, amorphous polyester, polyamide, polyolefin, nylon, polypropylene, or copolymers, or blends thereof,

wherein said multilayer film has the following properties:

a water vapor transmission rate (WTVR) of less than $0.01 \text{ g/100 square inches per 24 hours}$ at 23°C and 1 atmosphere.

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

EX1004 at 56

[0070] Tie Layers

[0071] In addition to the exterior layer, the interior layer, and intermediate layer such as a barrier layer, a multilayer packaging film can further comprise one or more adhesive layers, also known in the art as "tie layers," which can be selected to promote the adherence of adjacent layers to one another in a multilayer film and prevent undesirable delamination. A multifunctional layer is preferably formulated to aid in the adherence of one layer to another layer without the need of using separate adhesives by virtue of the compatibility of the materials in that layer to the first and second layers. In some embodiments, adhesive layers comprise materials found in both the first and second layers. The adhesive layer may suitably be less than 10% and preferably between 2% and 10% of the overall thickness of the multilayer film. Adhesive resins are often more expensive than other polymers so the tie layer thickness is usually kept to a minimum consistent with the desired effect. In one embodiment, a multilayer film comprises a multilayer structure comprising a first adhesive layer positioned between and in direct contact with the exterior layer and a core oxygen barrier layer; and preferably and optionally has a second tie layer between and in direct contact with the same core oxygen barrier layer and the interior layer to produce a five layer film. Adhesive layers may include modified e.g. anhydride modified polymers e.g. polyolefins such as polyethylenes or ethylene copolymers such as EVA and may also be primers or specialty adhesive resins.

Overview of Riis – Tie Layers

EX1004 at [0070]-[0071]

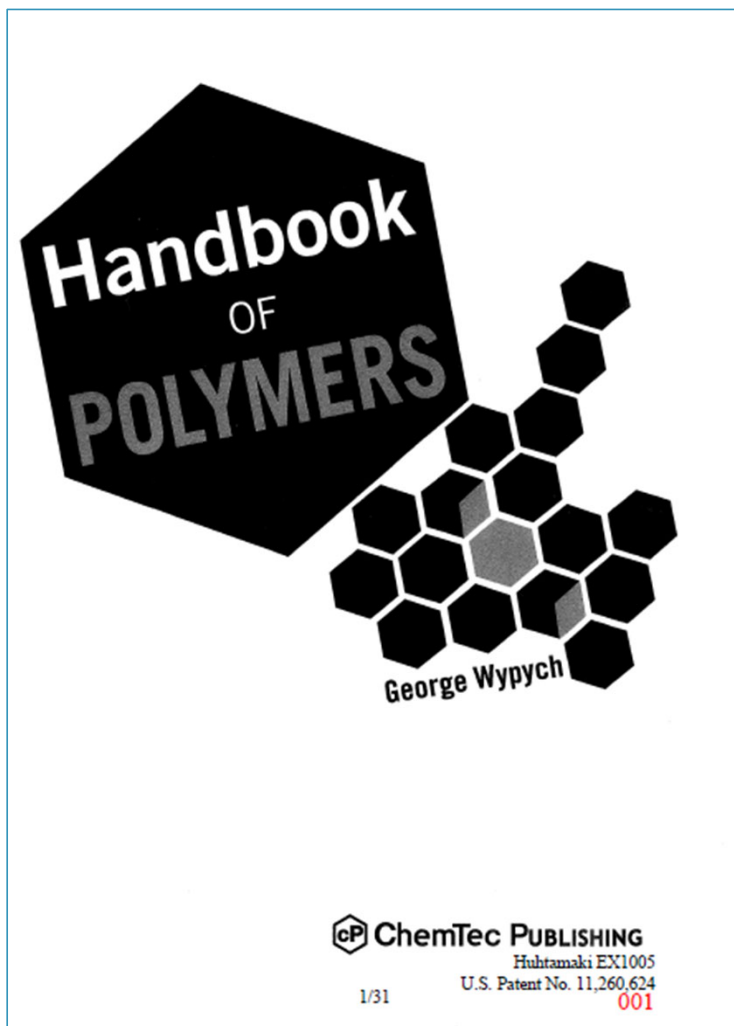
DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

Overview of Riis – Bulk Layers

[0065] A bulk layer may be provided to provide additional functionality such as stiffness or heat sealability or to improve machinability, cost, flexibility, barrier properties, etc. Preferred bulk layers comprise one or more polyolefins such as polyethylene, ethylene-alpha olefin copolymers (EAO), polypropylene, polybutene, ethylene copolymers having a majority amount by weight of ethylene polymerized with a lesser amount of a comonomer such as vinyl acetate, and other polymeric resins falling in the "olefin" family classification. The bulk layer may be of any suitable thickness from 0.1 to 7 mils or may even be omitted for use in certain applications, but is preferably present to improve especially stiffness/flexibility properties and heat sealability.

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

EX1004 at [0065]



DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

Overview of Wypych

EX1005

Overview of Tatarka

(12) **United States Patent**
Tatarka et al.

(10) **Patent No.:** **US 9,452,593 B2**
(45) **Date of Patent:** **Sep. 27, 2016**

(54) **MELT BLENDS OF AMORPHOUS
CYCLOOLEFIN POLYMERS AND
PARTIALLY CRYSTALLINE CYCLOOLEFIN
ELASTOMERS WITH IMPROVED
TOUGHNESS**

(75) **Inventors:** **Paul D. Tatarka**, Union, KY (US);
Timothy M. Kneale, Florence, KY
(US)

(73) **Assignee:** **TOPAS ADVANCED POLYMERS,
INC.**, Florence, KY (US)

(*) **Notice:** Subject to any disclaimer, the term of this
patent is extended or adjusted under 35
U.S.C. 154(b) by 1140 days.

(21) **Appl. No.:** **13/066,118**

(22) **Filed:** **Apr. 7, 2011**

(65) **Prior Publication Data**

US 2011/0256373 A1 Oct. 20, 2011

Related U.S. Application Data

(60) Provisional application No. 61/342,527, filed on Apr.
15, 2010.

(51) **Int. Cl.**
C08L 45/00 (2006.01)
B32B 27/08 (2006.01)
B32B 27/32 (2006.01)
C08L 23/08 (2006.01)

(52) **U.S. CL.**
CPC **B32B 27/08** (2013.01); **B32B 27/32S**
(2013.01); **C08L 23/0823** (2013.01); **B32B**
2250/03 (2013.01); **B32B 2250/242** (2013.01);
B32B 2250/40 (2013.01); **B32B 2307/412**
(2013.01); **B32B 2307/558** (2013.01); **B32B**
2307/714 (2013.01); **B32B 2307/7242**
(2013.01); **Y10T 428/2492** (2015.01); **Y10T**
428/31924 (2015.04)

(58) **Field of Classification Search**
CPC **B32B 27/08**
USPC **525/210, 211**
See application file for complete search history.

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16, pp. 385-499, Wiley 1981; and International Search Report and the
Written Opinion of the International Searching Authority.

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Primary Examiner — Irina Krylova
(74) **Attorney, Agent, or Firm** — Michael W. Ferrell

(57) **ABSTRACT**

A melt-blend resin composition prepared by melt-blending
includes from 60 parts to 99 parts per hundred weight resin
in the blend of an amorphous cycloolefin polymer composi-
tion exhibiting a glass transition temperature in the range
of from 30° C. to 200° C.; and from 40 parts to 1 part per
hundred weight resin in the blend of a partially crystalline,
cycloolefin elastomer of norbornene and ethylene preferably
having a glass transition temperature in the range of from
-10° C. to 15° C. and a crystalline melting temperature in
the range of from 60° C. to 125° C. and a % crystallinity by
weight in the range of from 5% to 40%. The partially
crystalline, cycloolefin elastomer optionally has a second
glass transition temperature at less than -90° C.

20 Claims, 17 Drawing Sheets

Huhtamaki EX1008
U.S. Patent No. 11,260,624

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DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

EX1008 at 1

Person of Ordinary Skill in the Art

- One skilled in the art would have had a relevant technical degree in Chemical Engineering, Polymer Science, Materials Science, or the like, and no less than one (1) year of hands-on experience in manufacturing flexible films using coextrusion processing techniques.

Petitioner's Grounds 1-3 Each Fail

Ground	Statutory Basis	Prior Art References	Challenged Claims
1	35 U.S.C. § 112(b)		1-13
2	35 U.S.C. § 103	Riis ²	1-13
3	35 U.S.C. § 103	Riis, Wypych, ³ and Tatarka ⁴	1-13

Petition at p. 5

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

Ground 1 - Petitioner Has Not Established Indefiniteness of “aggressive chemical resistant film” or “loading”

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

Ground 1 - Petitioner Has Not Established Indefiniteness of “aggressive chemical resistant film” or “loading”

- A decision on whether a claim is indefinite under 35 U.S.C. 112(b) "requires a determination of whether those skilled in the art would understand what is claimed when the claim is read in light of the specification." MPEP § 2173.02 (emphasis added) (citing *Power-One, Inc. v. Artesyn Techs., Inc.*, 599 F.3d 1343, 1350, 94 USPQ2d 1241, 1245 (Fed. Cir. 2010)); *Orthokinetics, Inc. v. Safety Travel Chairs, Inc.*, 806 F.2d 1565, 1 USPQ2d 1081 (Fed. Cir. 1986)).
- A patent is definite if it is "precise enough to afford clear notice of what is claimed . . . [and appraises] 'the public of what is still open to them'." *Nautilus, Inc. v. Biosig Instruments, Inc.*, 134 S. Ct. at 2129 (2014) (quoting *Markman v. Westview Instruments, Inc.*, 116 S. Ct. 1384 (1996)).
- Thus, patents including claims that, "when read in light of the specification and the prosecution history, [] provide objective boundaries for those of skill in the art" are definite. *Interval Licensing LLC v. AOL, Inc.*, 766 F.3d at 1371 (Fed. Cir. 2014).

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

Response at p. 23-24

Ground 1 - Petitioner Has Not Established Indefiniteness of “aggressive chemical resistant film” or “loading”

- "Claim language employing terms of degree [have] long been found definite where it provided enough certainty to one of skill in the art when read in the context of the invention." Interval Licensing at 1370. Also, "[a] patent's written description . . . can set forth more than one definition of a claim term." Checkpoint Sys. v. Hangzhou Century Co., 2014 U.S. Dist. LEXIS 140466, 23 (N.D. Ohio 2014) (citing Pitney Bowes, Inc. v. Hewlett-Packard Co., 182 F.3d at 1310 (Fed. Cir. 1999)).
- Indeed "just because a term has multiple definitions does not, by itself, mean that the term is indefinite." Nanoco Techs., Ltd. v. Samsung Elecs. Co., 2021 U.S. Dist. LEXIS 89223 at 25 (E.D. Tex. 2021). "Indefiniteness does not require absolute certainty, but only reasonable certainty around the boundaries of the term." Id.

Ground 1 – A
POSITA would
understand the
term
“aggressive
chemical
resistant film”

1) allow less than 10% of the active pharmaceutical ingredient (API) in a packaged nicotine, fentanyl, rivastigmine, or lidocaine product to be absorbed into the film after 24 weeks (see EX1001, 5:1–14; see also EX2014 ¶¶ 129, 136, 137); and

2) when used to package a nicotine, fentanyl, rivastigmine, or lidocaine patch product, yield packaging that maintains an amount of the API in a respective patch product that is 90% to 110% of a corresponding amount of the API that remains when the patch product is packaged in packaging manufactured with a Barex® film (see EX1001, 7:5–9, 17:50–67; see also EX2014 ¶¶ 129, 137–139).

Response at p. 25-26

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

Ground 1 – A
POSITA would
understand the
term
“aggressive
chemical
resistant film”

1) allow less than 10% of the active pharmaceutical ingredient (API) in a packaged nicotine, fentanyl, rivastigmine, or lidocaine product to be absorbed into the film after 24 weeks (see EX1001, 5:1–14; see also EX2014 ¶¶ 129, 136, 137); and

2) when used to package a nicotine, fentanyl, rivastigmine, or lidocaine patch product, yield packaging that maintains an amount of the API in a respective patch product that is 90% to 110% of a corresponding amount of the API that remains when the patch product is packaged in packaging manufactured with a Barex® film (see EX1001, 7:5–9, 17:50–67; see also EX2014 ¶¶ 129, 137–139).

Response at p. 25-26

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

Ground 1 – A
POSITA would
understand the
term
“aggressive
chemical
resistant film”

- The percentages used to describe an "aggressive chemical-resistant film" are internally consistent. Decision in Institution, p. 21.
- Petitioner fails to show that the latter Barex® definition is inconsistent with Definitions 1 and 2 (the Decision in Institution noting that "the location of Definition 3 within the 'Detailed Description' section of the '624 Patent indicates that it is directed to a more specific example than the more general Definitions 1 and 2" and stating that Petitioner fails to show that the "latter 'Barex' definition would take the absorption above the 10% upper limit specified in Definitions 1 and 2."). Id.

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

Ground 1 – A
POSITA would
understand the
term
“aggressive
chemical
resistant film”

- The '624 Patent's first definition : films that allow less than 10% of the active pharmaceutical ingredient (API) in a packaged nicotine, fentanyl, rivastigmine, or lidocaine product to be absorbed into the film after 24 weeks. EX1001, 5:1–14; see also EX2014 ¶¶ 129, 136, 137.
- The '624 Patent's second definition: films that, when used to package a nicotine, fentanyl, rivastigmine, or lidocaine patch product, with respect to API absorption, yield packaging that performs within 10% of equivalent packaging manufactured with a Barex® film. Id., 7:5–9, 17:50–67; see also EX2014 ¶¶ 129, 137–139.

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

Ground 1 – A POSITA would understand the term “loading”

- The '624 Patent provides that "loading means the amount of polymer left[] in the layer when the film has dried." EX1001, 6:38, 39. The '624 Patent further provides that "in one embodiment[,] the tie layer or plurality of layers constituting the tie layer has a loading in the range of 7 to 20 g/m²." *Id.*, 6:33–35.
- The '624 Patent provides that the loading of a layer is determined based on an areal density of a polymer in the layer, where the mass of the polymer is measured in grams and the unit area is a square meter (i.e., grammage). EX2014 ¶ 145.
- One skilled in the art would understand that "loading" refers to an areal density of a layer. And one skilled in the art would understand how to determine the areal density of a polymer in a layer — e.g., based on a density of the polymer resin used to create the layer, based on measuring a mass of the polymer in the layer within a square meter, etc. EX2014 ¶ 144.

Response at p. 25-26

Ground 2 – Petitioner Has Not Established Obviousness in View of Riis

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

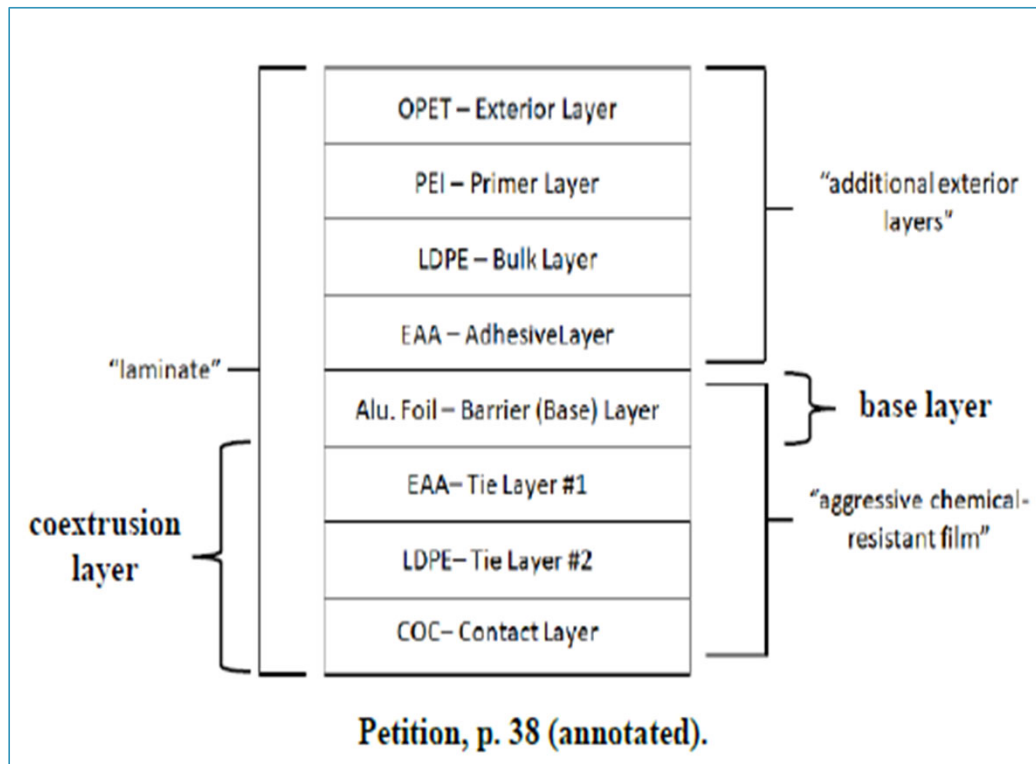
base film	{	.92 mil OPET – Exterior Protective Layer
		(Not Given) mil PEI – Primer Layer
		.42 mil LDPE – Bulk Layer
		.1 mil EAA – 2nd Intermediate Adhesive Layer
		.35 mil Foil – Barrier Layer
sealant film	{	.17 mil EAA – First Intermediate Adhesive Layer
		.65 mil LDPE – Bulk Layer
		.43 mil COC – Contact Layer

Response, Figure 1.

**Ground 2 –
Petitioner Has
Not
Established
Obviousness
in View of Riis**

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

Ground 2 – Petitioner's Interpretation of Riis is Incorrect



DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

Ground 2 – Petitioner's Interpretation of the POM of Bulk Layer is Incorrect

Riis's Definition of Bulk Layer

- Riis expressly defines a "bulk" layer as a layer that provides additional functionality such as stiffness or heat sealability to improve machinability, cost, flexibility, and barrier properties. EX1004 ¶ [0064].

Patent Owner's Definition of Bulk Layer

- A layer that (1) serves the primary purpose of improving a structural integrity, heat sealability, machinability of a film, or extending the thickness of an adjacent layer at a lower cost (see EX2014 ¶ 159; EX2015, 69:9,10; EX1036, 196); (2) that has properties (e.g., thickness and material properties) known by a POSITA as being consistent with serving that purpose; and (3) for which a primary reason for including the layer in the film was to serve that purpose.

Petitioner's Definition of Bulk Layer

- Dr. Spontak opines that the term "bulk" does not actually describe a purpose of the polyolefin "bulk" layer but is really there just to explain that the polyolefin bulk layer exhibits the same properties (e.g., melting points, etc.) that the material would exhibit at a large scale. EX2015, pp. 82, 100–105.
- Dr. Spontak further opines that his definition of the term "bulk" applies to all of the layers in the films disclosed in Riis, and that this definition is necessary for calculating the material properties of and understanding the behavior (i.e., the material properties) of each of the layers. EX2015, p. 104.

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

Ground 2 – Petitioner's Interpretation of the POM of Tie Layer is Incorrect

Riis's Definition of Tie Layer

- Layer to promote the adherence of adjacent layers to one another in a multilayer film and prevent undesirable delamination.
- A multifunctional layer is preferably formulated to aid in the adherence of one layer to another layer without the need of using separate adhesives by virtue of the compatibility of the materials in that layer to the first and second layers.
- The adhesive layer may suitably be less than 10% and preferably between 2% and 10% of the overall thickness of the multilayer film. Adhesive resins are often more expensive than other polymers so the tie layer thickness is usually kept to a minimum consistent with the desired effect.

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

Ground 2 – Petitioner's Interpretation of the POM of Tie Layer is Incorrect

Patent Owner's Definition of Tie Layer

- A "tie layer" is a layer (1) that serves the primary purpose of providing sufficient adhesion between adjacent layers; (2) that has properties known by a POSITA as being consistent with serving that purpose; and (3) for which a primary reason for including the layer in the film was to serve that purpose. Sur-Reply at 2.

Petitioner's Definition of Tie Layer

- A tie layer provides sufficient adhesion between adjacent layers of a film. Reply at 4.
- A tie layer is simply a layer that provides adhesion between layers or surfaces. Reply at 4.

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

Ground 2 – Patent Owner's Interpretation of the POM of Tie Layer is Correct

- Dr. Spontak:
 - "[t]he **tie layer serves only one primary purpose**, and that is basically to behave as an adhesive", EX2015, 79:24–81:7
 - "("[t]he **adhesive layer serves the purpose** of ensuring that the contact layer doesn't come apart from the base layer . . . **[t]hat is its primary function**." EX2015, 79:24-81-7.

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

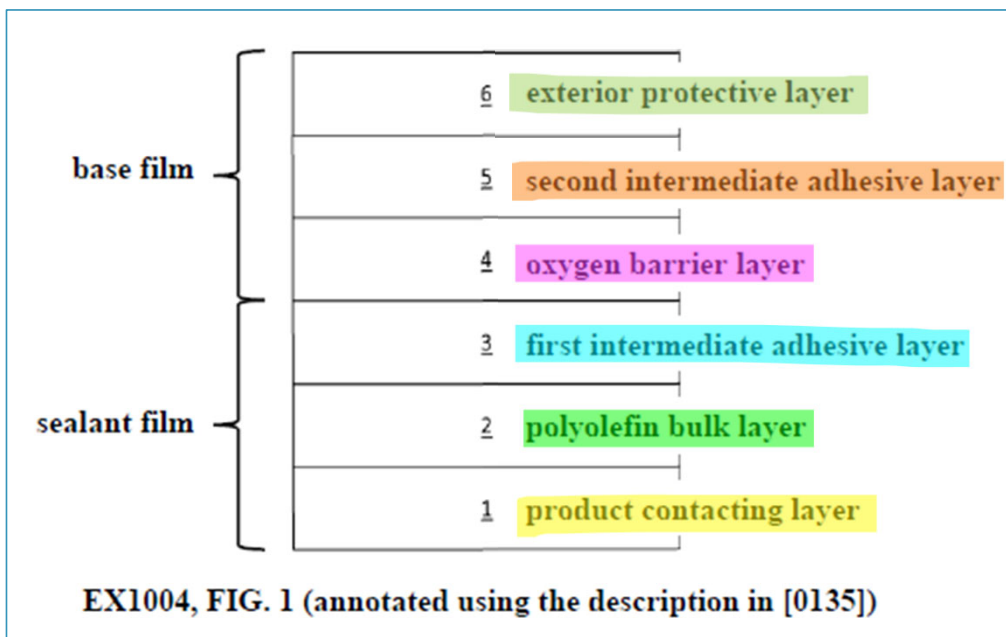
Ground 2 – Riis's .65 mil LDPE layer is a Bulk Layer (Patent Owner's Evidence)

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

**Riis discloses that Riis's .65 mil
LDPE layer is a Bulk Layer and
not a Tie Layer**

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

Ground 2 – Riis
discloses that Riis's
0.65 mil LDPE Layer
is a Polyolefin Bulk
Layer



DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

EX1004 at Fig. 1; Patent Owner's
Response at 36

EX1004, Claim 18

18. A drug resistant, flexible, multilayer packaging film comprising:
- (a) a drug contact layer having at least 90 wt. % of an ethylene norbornene copolymer having a glass transition temperature of from 65°C to 110°C;
 - (b) a polyolefin bulk layer;
 - (c) a first intermediate adhesive layer;
 - (d) an oxygen barrier layer having an oxygen transmission rate of less than 0.01 cm³/100 inches²/24 hours at 1 atmosphere and 23°C;
 - (e) a second intermediate adhesive layer; and
 - (f) an exterior protective layer comprising a polymer selected from the group consisting of paper, oriented polyester, amorphous polyester, polyamide, polyolefin, nylon, polypropylene, or copolymers, or blends thereof,
- wherein said multilayer film has the following properties:
- a water vapor transmission rate (WTVR) of less than 0.01 g/ 100 square inches per 24 hours at 23°C and 1 atmosphere.

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

**Ground 2 – Riis
discloses that Riis's
0.65 mil LDPE Layer
is a Polyolefin Bulk
Layer**

EX1004 at Fig. 1; Patent Owner's
Response at 36

EX1004 ¶¶ [0173], [0174]

[00173] Example 5 (Of the Invention)

[00174] The film structure in Example 5 is exemplary of a film according to the present invention. The base film for example 5 was produced in the same manner as for comparative example 2. In this example, the sealant film was a three-layer coextrusion of EAA, LDPE and Ethylene-norbornene copolymer (COC) which was extrusion coated onto the aluminum foil surface of the multilayer base film to produce an eight layer film having the structure: 0.92 mil OPET/primer/0.42 mil LDPE/0.1 mil EAA/0.35 mil foil/0.17 mil EAA/0.65 mil LD/PE/0.43 mil COC and a total thickness of 3.0 mils (76 microns). The inventive film is well suited to package articles for collecting or administering a physiologically active substance such as transdermal drug delivery patches, or oral dissolvable thin strips and has advantageous moisture barrier, oxygen barrier, and low scalping properties as discussed below. The resultant multilayer film was tested for various properties which are reported below.

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

**Ground 2 – Riis
discloses that Riis's
0.65 mil LDPE Layer
is a Polyolefin Bulk
Layer**

EX1004 at Fig. 1; Patent Owner's
Response at 36

Ground 2 – Riis discloses that Riis's 0.65 mil LDPE Layer is a Polyolefin Bulk Layer

- Riis explicitly discloses that, in the generalized six-layer film, the polyolefin bulk layer 2 is positioned between the product contacting layer 1 and the first intermediate adhesive layer 3, and that the first intermediate adhesive layer 3 is adjacent to the oxygen barrier layer.
- The .65 mil LDPE layer itself is 21.38% of the overall thickness of the eight-layer film. Riis discloses that an adhesive (tie) layer thickness is usually kept to a minimum consistent with the desired effect (e.g., for cost reasons), and that the thickness of the adhesive layer should be less than 10% (and ideally between 2% and 10%) of the overall thickness of the multi-layer film. EX1004 ¶ [0071]
- The thickness of the adhesive layer of the eight-layer film is 5.59% of the overall thickness of the eight-layer film. Therefore, one skilled in the art would find the thickness of the .17 mil EAA layer to be consistent with Riis's disclosure in paragraph [0071] of a layer that primarily serves as a tie layer.
- If the .17 mil EAA layer and the .65 mil LDPE layer are improperly considered to compose a multi-layer adhesive layer, then the thickness of the multi-layer adhesive layer is 26.97% of the overall thickness of the eight-layer film.
- Riis discourages using multiple adjacent tie layers: A multifunctional layer is preferably formulated to aid in the adherence of one layer to another layer **without the need of using separate adhesives**. EX1004 ¶ [0071].

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

Ground 2 – Riis discloses that Riis's 0.65 mil LDPE Layer is a Polyolefin Bulk Layer

- Riis explicitly identifies the similar .42 mil LDPE layer in the base film as a bulk layer. EX1004 ¶¶ [0162], [0163]

[00162] The **base film** was comprised of five layers having an ordered structure of:

/Layer 11 Layer 2/ **Layer 3**/Layer 4/Layer 5/ corresponding to:

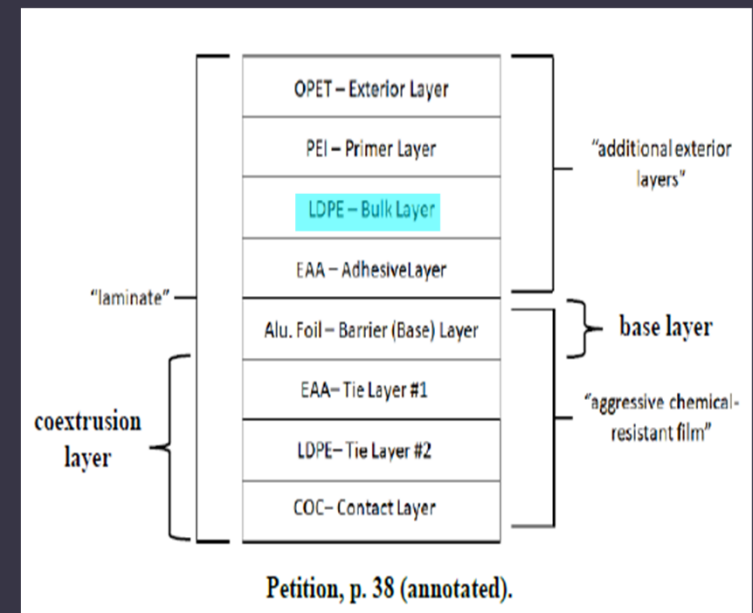
/exterior layer 11 primer layer 2/**bulk layer 3**/adhesive layer 4/ 0 2layer 5/; or more particularly,

/OPET/PEI/**LDPE**/EVA/Al Foil/.

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

Ground 2 – Riis discloses that Riis's 0.65 mil LDPE Layer is a Polyolefin Bulk Layer

- Petitioner acknowledges that the similar .42 mil LDPE layer in the base film primarily serves as a bulk layer. Petition, p. 38; EX1003 ¶ 144; EX2015, p. 145.



DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

Ground 2 – A POSITA would understand that Riis's .65 mil LDPE layer is a Bulk Layer And Not a Tie Layer

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

Ground 2 – A POSITA would understand that Riis's .65 mil LDPE layer is a Bulk Layer and not a Tie Layer

- One skilled in the art would understand the .65 mil LDPE layer to be serving as a bulk layer — e.g., given its thickness, its material properties, and the thicknesses and material properties of the adjacent .17 mil EAA layer and the adjacent .43 mil COC layer. See also EX2014 ¶¶ 153–163.
- One skilled in the art would understand that the .65 mil LDPE layer provides a low-cost means for extending the thickness of the .43 mil COC layer — e.g., to improve the structural integrity and barrier properties of the eight-layer film. EX2014 ¶¶ 95, 162, EX1036, 196.
- One skilled in the art would understand that a layer adjacent to an acknowledged tie layer would be thicker (relative to the tie layer) if primarily serving the purpose of a bulk layer and thinner (e.g., closer to the thickness of the tie layer) if primarily being used in concert with another adhesive layer to serve the purpose of a tie layer. EX2014 ¶ 94; EX2015, p. 83.
- A thinner tie layer (relative to the other layers and overall thickness of a multi-layer film) results in improved adhesion between two layers. EX2014 ¶ 160; EX2015, pp. 75, 76, 79, 80. That is, one skilled in the art would understand that a thicker tie layer (relative to the overall thickness of the multi-layer film) is more prone to delamination and is less mechanically stable. EX2014 ¶ 160; EX2015, pp. 79, 80.

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

Ground 2 – A POSITA would understand that Riis's .65 mil LDPE layer is a Bulk Layer and not a Tie Layer

- Dr. Spontak:

- "the adhesive layer in any laminated . . . structure, for the purpose of adhesion, should be relatively thin compared to the other layers comprising the structure of interest . . . should be relatively thin compared to the entire structure." EX2015, 75:10-20.
- "the analog is if you were trying to assemble a plastic model, **you would use a very, very thin layer of glue to hold the parts together** . . . you want to . . . ensure that you're getting the . . . most use of the polymer with as little polymer as possible . . . you want to ensure that it is a relatively thin contribution to the overall assembly." EX2015, 79:24-81-7.
- "[I]f you wanted to contribute to machinability, mechanical properties, et cetera, then you might want [a bulk layer] to be slightly thicker [but] [i]f you want it to be used [as an adhesive] in concert with another adhesive like EAA, then you probably want it to be on the thinner side). EX2015, 82:24-83:22
- "[I]f you start to make that . . . adhesive layer thicker and thicker, you might find that now the **mechanical properties can be compromised** . . . [since] you're looking at mobile chains on the surface . . . **adhesives tend to have relatively poor mechanical properties** by themselves . . . so **we don't want that adhesive layer to be too thick . . . from a performance standpoint**." EX2015, 79:24-81:7.

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

Ground 2 – A POSITA would understand that Riis's .65 mil LDPE layer is a Bulk Layer and not a Tie Layer

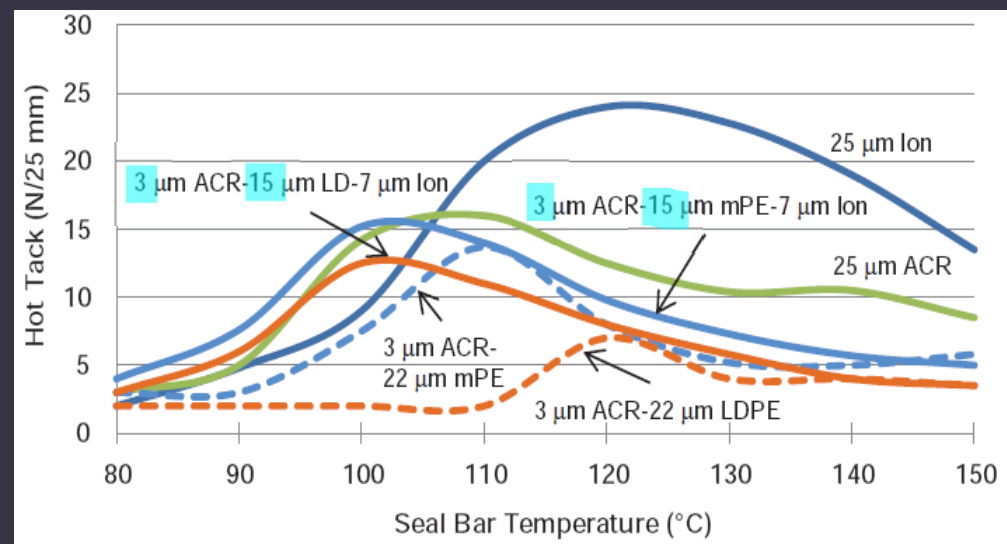
- An LDPE layer cannot, on its own, be used to bond a polar Al layer directly to a non-polar layer, such as a COC layer. EX2014 ¶ 161. Thus, (while other types of polyolefins, such as ethylene-vinyl acetate (EVA), can be used as multi-functional tie layers and bond a polar Al layer to a non-polar layer; EX2014 ¶ 161) the .65 mil LDPE layer on its own cannot be used to adhere the .35 mil Al foil layer to the .43 mil COC layer.
- Tie resins are . . . used to bond layers together in coextrusion. LDPE is the workhorse resin used to bond to aluminum foil, paper, and other substrates in **extrusion lamination**. **When extruded at temperatures above 300°C**, oxidation occurs, producing polar groups such as aldehydes, acids, and ketones. EX1036 at 89.
- Discussing adhesion, Morris states that LDPE can be "run at elevated temperatures (~320°C) in extrusion coating to promote the **formation of acids, aldehydes, and ketones that help bond to aluminum foil**." Id., 70.

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

Ground 2 – A POSITA would understand that Riis's .65 mil LDPE layer is a Bulk Layer and not a Tie Layer

○ Morris, 196, 197

heat seal performance. The goal is to understand the effect of **downgauging the sealant layer by adding a less expensive bulking layer (layer B).** The ACR (acid copolymer resin) is chosen to ensure good adhesion to the aluminum foil. **Three different resins for the B layer are studied:** the ACR, an LDPE, and a metallocene plastomer (mPE). For controls, all ACR



DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

Ground 2 – Riis Fails to Render Claims 1 and 13 Obvious

- Petitioner concedes that Riis fails to teach specific material properties of the claimed film, such as loading ranges and relative melting points for the tie and contact layers. Petition, pp. 30, 31, Ins. 17–4.

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

Ground 2 – Riis Fails to Render Claims 1 and 13 Obvious

- Riis fails to teach or suggest a "coextrusion layer consisting of [a] tie layer [that] . . . has a loading in the range of 7 to 20 g/m²," as recited in independent claims 1 and 13.
- Riis discloses an eight-layer film that includes a coextrusion layer having a .17 mil EAA "tie" layer, a .65 mil LDPE "bulk" layer, and a .43 mil COC "contact" layer.

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

Ground 2 – Riis Fails to Render Claim 1 and 13 Obvious

- Riis fails to teach or suggest a "coextrusion layer consisting of [a] tie layer [that] . . . has a loading in the range of 7 to 20 g/m²," as recited in independent claims 1 and 13.
- Petitioner provides that EAA has a density within the range of .92 to .96 g/cm³ and that LDPE has a density within the range of .915 to .929 g/cm³. Petition, pp. 41, 42. Thus, by Petitioner's calculations, Riis discloses that the .17 mil EAA "tie" layer has a loading of 3.97 to 4.15 g/m² and the .65 mil LDPE "bulk" layer as a loading of 15.11 g/m² to 15.34 g/m². *Id.*, p. 42.

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

Ground 2 – Riis Fails to Render Claim 1 and 13 Obvious

- Riis fails to teach or suggest a "coextrusion layer **consisting of** [a] tie layer[] and . . . [a] contact layer," as recited in independent claims 1 and 13.
- Riis's coextrusion layer includes a "tie" layer, a "bulk" layer, and a "contact" layer, and thus, fails to teach or suggest "a coextrusion layer **consisting of** [a] tie layer[] and . . . [a] contact layer," as recited in independent claim 1 (emphasis added).

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

Ground 2 – Riis Fails to Render Claims 1 and 13 Obvious

- Petitioner fails to set forth any arguments in support of modifying (and of a motivation to modify) the recreation of the eight-layer film disclosed in example 5 of Riis.

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

Ground 2 – Riis Fails to Render Claim 4 Obvious

- Riis fails to teach or suggest a coextrusion layer consisting of a "tie layer [that] . . . has a loading in the range of 7 to 20 g/m²" and a "contact layer ha[ving] a loading in the range of 4 to 20 g/m²," as recited in dependent claim 4 (by way of incorporation of independent claim 1).
- The coextrusion layer including the .17 mil EAA layer having a loading of 3.97 to 4.15 g/m², as described in Riis, fails to teach or suggest a "coextrusion layer consisting of [a] tie layer [that] . . . has a loading in the range of 7 to 20 g/m²," as recited in dependent claim 4 (by way of incorporation of independent claim 1).

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

Ground 2 – Riis Fails to Render Claims 5-12 Obvious

- Dependent claims 5 through 12 at least depend on independent claim 1, and Riis fails to render these dependent claims obvious at least for their dependence on independent claim 1.

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

Ground 3 – Petitioner Has Not Established Obviousness in View of Riis, Wypych and Tatarka

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

Ground 3 – Petitioner Has Not Established Obviousness in View of Riis, Wypych and Tatarka

- For at least the reasons stated with respect to Ground 2, Riis fails to teach or suggest the features recited in claims 1 through 13 of the '624 Patent.
- Wypych and Tatarka are simply used to provide material properties for the eight-layer film disclosed in Riis. Petition, p. 80.
- Petitioner does not provide any arguments supporting the modification of the eight-layer film to arrive at the aggressive chemical-resistant film claimed in independent claims 1 and 13.

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

Patent Owner's Revised Motion to Amend

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

Petitioner Does Not Challenge the Statutory Requirements for Patent Owner's RMTA

- The RMTA submits a reasonable number of substitute claims and clearly shows the changes sought for each conditionally canceled claim.
- The RMTA sets forth support for each substitute claim in the original disclosure of the patent and an earlier-filed disclosure for which benefit of the filing date is sought.
- None of the contingent substitute claims introduce new subject matter.
- None of the contingent substitute claims enlarge the scope of the claims.
- Each contingent amendment is responsive to a ground of unpatentability involved in this proceeding.

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

Petitioner Has Failed to Establish Obviousness of the Revised Substitute Claims

Ground	Statutory Basis	Prior Art References	Challenged Substitute Claims
1	35 U.S.C. § 103	Riis and Wypych	14, 15, and 20–24
2	35 U.S.C. § 103	Riis, Wypych, and Holzmuller	16–18
3	35 U.S.C. § 103	Riis, Wypych, and Rivers	19

RMTA Resp. at 1

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

RMTA Ground 1 – Riis and Wypych do not Render Revised Substitute Claims 14, 15, and 20-24 Obvious

14. A method for providing an aggressive chemical-resistant film, wherein the aggressive chemical-resistant film is resistant to a chemical selected from nicotine, fentanyl, rivastigmine, or lidocaine, said method comprising:

providing a base layer, wherein the base layer ~~comprises~~ consists of aluminum and is resistant to one or more of water or oxygen;

coextruding a tie layer and a contact layer to provide a coextrusion layer, wherein the contact layer consists of a cycloolefin copolymer (COC);

coating the coextrusion layer consisting of the tie layer and the COC of the contact layer directly to the base layer ~~comprising~~ consisting of the aluminum; and

allowing the coextrusion layer coated to the base layer to adhere to form the aggressive chemical-resistant film, wherein the aggressive chemical-resistant film consists of:

the base layer ~~comprising~~ consisting of the aluminum, and

the coextrusion layer consisting of the tie layer~~[[.]]~~ and the contact layer consisting of the COC, wherein:

the tie layer comprises ~~one or more layers~~ a first layer and a second layer, and wherein the tie layer, or each of the ~~one or more layers~~ first layer of the tie layer and the second layer of the tie layer, has a loading in the range of 7 to 20 g/m².

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

24. A method for providing a laminate, wherein the laminate comprises an aggressive chemical-resistant film, said method comprising:

- providing a base layer, wherein the base layer ~~comprises~~ consists of aluminum and is resistant to one or more of water or oxygen;
- coextruding a tie layer and a contact layer to provide a coextrusion layer, wherein the contact layer consists of a cycloolefin copolymer (COC);
- coating the coextrusion layer consisting of the tie layer and the COC of the contact layer directly to the base layer ~~comprising~~ consisting of the aluminum; and
- allowing the coextrusion layer coated to the base layer to adhere to form the aggressive chemical-resistant film, wherein the aggressive chemical-resistant film consists of:
 - the base layer ~~comprising~~ consisting of the aluminum, and
 - the coextrusion layer consisting of the tie layer~~[[.]]~~ and the contact layer consisting of the COC, wherein:
 - the aggressive chemical-resistant film is resistant to a chemical selected from nicotine, fentanyl, rivastigmine, or lidocaine, and
 - [wherein] the tie layer comprises ~~one or more layers a~~ first layer and a second layer, and wherein the tie layer, or each of the ~~one or more layers~~ first layer of the tie layer and the second layer of the tie layer, has a loading in the range of 7 to 20 g/m².

**RMTA Ground 1 –
Riis and Wypych
do not Render
Revised Substitute
Claims 14, 15,
and 20-24
Obvious**

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

RMATA Ground 1 – Riis's .17 mil EAA and 0.65 mil LDPE Layers do not form a multi-layer tie layer (Patent Owner's Evidence)

- In other proceedings before the Office, Petitioner has represented that with respect to Riis, a regular LDPE layer is a structural layer used to serve bulking purposes and to enable creation of a film despite providing poor adhesion to a neighboring COC layer, confirming that Riis's .65 mil LDPE layer primarily serves as a bulk layer. EX2020 ¶ [0121]; see also EX2022 ¶ 72.

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

Osborn 1	Osborn 2	Toft	Invention Claim 38	Invention Claim 42	Invention Claim 50
exterior	exterior	exterior	exterior	exterior	exterior
OPET/ Paper	OPET/ Paper	PE	XXX*	XXX	XXX
PE	Primer / PE	Paper	XXX	XXX	Paper or plastic/ OPET
LDPE	LDPE	LDPE	XXX	XXX	XXX
EVA	EAA	XXX	XXX	XXX	XXX
O2 barrier (Al foil)	O2 barrier (Al foil)	O2 barrier (Al foil)	O2 barrier (Al foil)	O2 barrier (Al foil)	O2 barrier (Al foil)
PE or EVA	EAA	EAA	EAA/EVA	EAA/EVA	EAA/EVA
Polyolefin Bulk: PE, LLDPE, m-LLDPE	LDPE	COC + mLLDPE	PE	PE inc. C ₈ m-LLDPE	PE, LLDPE, m-LLDPE
COC	COC	m-PE/ m-LLDPE	COC	COC	COC
Interior	Interior	interior	interior	Interior	interior

Table 1

to Osborn and/or Toft. The structure layer in Osborn is the "bulk" layer which is a polyolefin such as PE or LLDPE; conversely, the structure layer in Toft is the paper layer.

**RMTA Ground 1 –
Riis's .17 mil EAA
and 0.65 mil LDPE
Layers do not form
a multi-layer tie
layer (Patent
Owner's Evidence)**

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

EX2006, 10, 12

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application No. : 16/516,792 Confirmation No. 2546
Inventor(s) : Manuella Herb et al.
Filed : July 19, 2019
TC/A.U. : 1612
Examiner : Hong Yu

Title : FILM COMPOSITE FOR PACKAGING TRANSDERMAL
PATCHES, AND PACKAGE MADE OF SUCH A FILM
COMPOSITE
Docket No. : TRO-45953
Customer No. : 075626

DECLARATION UNDER 37 CFR 1.132

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

I, Manuella Herb hereby declare and state:

10. It has been found and proven by laboratory testing that using metallocene C8 LLDPE as a layer connecting the COC-layer to the adhesive (EAA) layer surprisingly and tremendously promotes the delamination stability of the multilayer structure. Using regular LDPE allows to create a multilayer structure, but the COC-layer more or less easily delaminates or can be peeled off of the neighboring regular LDPE-layer. According to the results of laboratory tests conducted in March 2020, the bond between a regular LDPE layer and a COC layer connected to the regular LDPE layer within a laminate structure of paper/-adhesive/polyethylene terephthalate/adhesive/aluminum/ethylene acrylic acid copolymer/-LDPE/COC has a strength per length of 0.5 N per 15 mm. The tests were executed

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

**RMTA Ground 1 –
Riis's .17 mil EAA
and 0.65 mil LDPE
Layers do not
form a multi-layer
tie layer (Patent
Owner's
Evidence)**

EX2019 ¶ 10

RMATA Ground 1 – Riis's .17 mil EAA and 0.65 mil LDPE Layers do not form a multi-layer tie layer (Patent Owner's Evidence)

- In other proceedings before the Office, Petitioner has submitted laboratory testing showing that a regular LDPE layer "easily delaminates" from a neighboring COC layer, confirming that Riis's .65 mil LDPE layer does not serve as a tie layer or a layer of a multi-layer tie layer under Petitioner's own tie layer definition.

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

RMATA Ground 1 – Riis's .17 mil EAA and 0.65 mil LDPE Layers do not form a multi-layer tie layer (Patent Owner's Evidence)

- Dr. Spontak: "the definition of [a] tie layer is to enable adhesion and to mitigate delamination." EX2021, 183:23–189:4.
- Dr. Spontak: the .65 mil LDPE layer is a tie layer since it "is needed for good adhesion to the COC layer, the contact layer." Id., 191:15–20.
- Dr. Spontak: "I would be very surprised if [the .65 mil LDPE layer and .43 mil COC layer] didn't have substantial adhesion". Id., 203:14–19.

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

RMATA Ground 1 – Riis and Wypych do not Render Revised Substitute Claims 14, 15, and 20-24 Obvious

- Riis fails to teach or suggest a "coextrusion layer consisting of [a] tie layer [comprising a first layer and a second layer] and [a] contact layer."
- A POSITA would identify the .17 mil EAA layer as primarily serving a tying purpose (i.e., as a tie layer) and the .65 mil LDPE layer as primarily serving a bulking purpose (i.e., as a bulk layer, not a tie layer). See EX2016 ¶ 151.

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

RMATA Ground 1 – Riis and Wypych do not Render Revised Substitute Claims 14, 15, and 20-24 Obvious

- Riis's sealant film, which has a coextrusion layer including (1) a .17 mil EAA single-layer tie layer, (2) a .65 mil LDPE bulk layer, and (3) a .43 mil COC contact layer fails to disclose, teach, or suggest a "coextrusion layer consisting of [(1) a] tie layer [comprising a first layer and a second layer] and [(2) a] contact layer," as recited in Claim 14.

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

RMATA Ground 1 – Riis and Wypych do not Render Revised Substitute Claims 14, 15, and 20-24 Obvious

- Riis's single-layer tie layer (i.e., Riis's .17 mil EAA layer) having a loading of ~ 4.0 g/m² fails to disclose, teach, or suggest "[a] tie layer, or each of [a] first layer of the tie layer and the second layer of the tie layer, ha[ving] a loading in the range of 7 to 20 g/m²," as recited in Claim 14.

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

RMATA Ground 1 – Riis and Wypych do not Render Revised Substitute Claims 14, 15, and 20-24 Obvious

- Riis, in view of Wypych, fails to disclose, teach, or suggest the above-referenced features or the additional distinguishing features of Claims 15 and 20–24.

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

RMATA Ground 2 – Riis, Wypych and Holzmuller do not Render Revised Substitute Claims 16-18 Obvious

- The ~4.0 g/m² loading of Riis's .17 mil EAA layer and the ~15.2 g/m² loading of Riis's .65 mil LDPE layer fails to disclose, teach, or suggest the tie layer loading ranges in Claims 16–18.
 - Riis's .17 mil EAA layer has a loading range of 3.94 g/m² to 4.15 g/m² (EX2022 ¶ 83)
 - Riis's .65 mil LDPE layer has a loading range of 15.11 g/m² to 15.34 g/m² (id.)

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

RMTA Ground 2 – Petitioner has Admitted the Claimed Ranges are not Present in Riis

EX2006, 13.

The Examiner does not, and cannot, actually point out any clear teaching or suggestion of the claimed thickness layer ranges in the Osborn reference, or any other reference, because such teaching is not there. The use of a similar fabrication or lamination method does not axiomatically lead to the precise thicknesses as claimed in the application.

Even assuming *arguendo* that the extrapolation from Osborn leads to the same layer thicknesses as those instantly claimed, there is simply no teaching or suggestion in Osborn – or the other references – singly or in combination, that leads to the claimed relative thicknesses in present claims (58-62), former claims 22-27, 33 and 34.

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

RMATA Ground 2 – Petitioner has Admitted the Claimed Ranges are not present in Riis

- Revised Claims 16-18 Ranges:

- Claim 16: EAA and LDPE loadings from 1 to 14 g/m²
- Claim 17: EAA loading 5 to 19 g/m² and LDPE loading 1 to 14 g/m²
- Claim 18: EAA and LDPE loadings from 7 to 20 g/m²

- Herb Patent Application Ranges:

- EAA and LDPE loadings from ~6.5 g/m² to ~13.8 g/m² (EX2022 ¶ 90).

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE


 US 2008/0286512A1

(19) **United States**
 (12) **Patent Application Publication**
 (43) **Pub. No.: US 2008/0286512 A1**
Holzmüller et al.
 (43) **Pub. Date: Nov. 20, 2008**

(54) **MULTILAYERED LAMINATE FOR TUBES HAVING AN EMBEDDED ALUMINUM LAYER, A PROCESS FOR THE PRODUCTION THEREOF AND A TUBE PRODUCED THEREFROM**

(76) **Inventors:** Arno Holzmüller, Kempten (DE); Detlev Schulz, Dietmannstedt (DE)

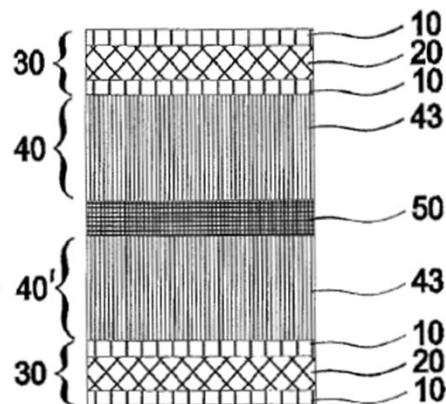
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B29C 61/18 (2006.01)
 (52) **U.S. Cl.** 428/35.9; 428/457; 428/461; 428/458; 428/339; 264/171.27

ABSTRACT
 The invention relates to a multilayered laminate for tubes having an embedded aluminum layer, the aluminum layer being surrounded on each side by an oriented co-extruded protective layer which is in each case joined to the aluminum layer by means of an intermediate layer material. The invention relates also to the production of such a laminate and to a tube produced from such a laminate.



Overview of Holzmüller

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

EX1034 at 1

Overview of Holzmuller

- Holzmuller discloses multi-layered laminates that are used to form tubes and have an embedded aluminum layer surrounded on each side by a coextruded intermediate layer material and an exterior oriented coextruded protection layer. EX1034, Abstract; FIGs. 1–7.
- Holzmuller also provides sets of preferred thickness ranges for the layers. Id. ¶ [0019].
- Holzmuller also describes that the oriented coextruded protective layer is produced by stretching (especially biaxially) a coextrusion of a polymer layer with one or more cover layers. Id. ¶ [0025].

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

Overview of Holzmuller

- Holzmuller's films are structurally, functionally, and polymerically different than those of Riis and are formed using fundamentally different processes.
 - Holzmuller discloses a laminate that has an embedded aluminum layer enveloped by coextruded intermediate layer materials (which purportedly can include EAA and PE layers) and separately formed oriented coextruded protective layers that are fixed to the aluminum layer using low temperature means — e.g., using the coextruded bonding layers of the intermediate material layer to laminate the oriented coextruded protective layer to the aluminum layer.
 - Holzmuller does not contemplate COC
 - Holzmuller does not contemplate a three-layer coextrusion that involves the protective layer
 - The thicknesses for the bonding layers in Holzmuller are achieved by the squeezing of the lamination process used to laminate the separately formed protective layer

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

Overview of Holzmuller

Holzmuller's superficial disclosure does not enable a POSITA to make the film alleged by Petitioner, and thus does not support an obviousness rejection.

Holzmuller discloses a single functional example in which a first bonding layer 43 has a thickness of 14 μm and a second bonding layer 45 has a thickness of 34 μm .

Holzmuller further lists **63 bonding layer combinations** (7 x 9 different disclosed materials). See EX2016 ¶ 145.

Holzmuller also lists **1,600 possible thickness combinations** for the bonding layers (40 x 40 thicknesses).

Together, **Holzmuller encompasses at least 100,800 material/thickness combinations.**

Petitioner's combination of Riis and Wypych with Holzmuller fails because it hinges on Riis's .65 mil LDPE layer being a tie layer.

Dr. Spontak: "Holzmuller teaches relative interacting thickness for intermediate bonding layers (i.e., tie layers)" EX1038 at ¶ 103.

Dr. Spontak: "a skilled artisan [would be motivated] to tailor and optimize the thicknesses, and thus the loadings, of the intermediate bonding layers as applied to Riis's LDPE and EAA tie layers." Id. ¶ 99.

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

**RMTA Ground 2
– Holzmuller
fails to cure the
deficiencies of
Riis in view of
Wypych.**

EX1038

RMTA Ground 2 – a POSITA would not be motivated to modify or combine Riis with Holzmuller

- Holzmuller is polymerically, structurally, and functionally different from Riis. RMTA at 12-14; RMTA Reply at 9.
- Petitioner takes a backwards approach to experimenting with Riis to achieve the film in Claims 16–18. See EX2022 ¶ 103; RMTA Reply at 9-10.
 - Petitioner treats Riis's Film as a starting point for a POSITA to experiment with the thicknesses of the layers. However, Riis's Film is an end point of experimentation. Id.
 - A POSITA modifying Riis's Film would not begin experimentation anew with Riis's Film, but would instead make only minor changes that maintain the character (e.g., the structure, relative thicknesses, etc.) of Riis's Film. Id.

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

RMTA Ground 2 – a POSITA would not have a reasonable expectation of success in modifying or combining Riis with Holzmuller

- Petitioner states that "Holzmuller teaches relative interacting thickness for intermediate bonding layers (i.e., tie layers) that result in synergistic effects of the overall film." Opposition, 13.
- Holzmuller does not provide that modifying the thicknesses of bonding layers results in synergistic effects. Instead, Holzmuller alleges "it is possible to combine materials the positive properties of which have an additive effect and . . . offer an intermediate layer material . . . [with] high mechanical . . . [and] chemical stability." EX1034 ¶ [0020].
- Petitioner provides no reasons that layer thicknesses achieved for the intermediate bonding layers in Holzmuller using joint extrusion techniques can simply be applied to the .17 mil EAA and .65 mil LDPE layer in Riis formed using three-layer coextrusion techniques. See EX2022 ¶¶ 35–37, 104–108.

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

RM TA Ground 2 – The Claimed Loading Ranges are Critical

- The claimed loading ranges are critical. See EX1001 at 2:63–67; 6:1–13, 24–28; EX2014 at ¶¶ 57–65, 68–70.
 - “It has surprisingly been found that when coextruding the tie layer and the contact layer according to the disclosure, the respective layers can be thinner while maintaining the overall mechanical and chemical robustness of the final film and laminates and wrappings made with the film.” EX1001 at 2:63–67.
 - Hence, it is very surprising that the inventors of the present disclosure have succeeded in providing a coextrusion layer comprising COC as a contact layer for sealing aggressive substances. EX1001 at 6:10–13.

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

10. It has been found and proven by laboratory testing that using metallocene C8 LLDPE as a layer connecting the COC-layer to the adhesive (EAA) layer surprisingly and tremendously promotes the delamination stability of the multilayer structure. Using regular LDPE allows to create a multilayer structure, but the COC-layer more or less easily delaminates or can be peeled off of the neighboring regular LDPE-layer. According to the results of laboratory tests conducted in March 2020, the bond between a regular LDPE layer and a COC layer connected to the regular LDPE layer within a laminate structure of paper/-adhesive/polyethylene terephthalate/adhesive/aluminum/ethylene acrylic acid copolymer/-LDPE/COC has a strength per length of 0.5 N per 15 mm. The tests were executed

11. In addition, metallocene C8 LLDPE, as is recited in the claims, increases the ties (lamination forces) between the polyethylene layer and the COC-layer to such an extent that, with the same laboratory equipment that allows for a rather easy delamination of the COC-layer from the neighboring regular LDPE-layer, the COC-layer cannot be delaminated from the metallocene C8 LLDPE layer without destroying the multilayer structure as such. This was shown by a comparative delamination test conducted by the same laboratory with the same equipment on a modified laminate. The modified laminate was the same as the laminate described above in 11. with the only exception that the layer of regular LDPE was replaced by a C8 metallocene LLDPE layer of the same weight per unit area as that of the regular LDPE layer. The bond strength per length between the C8 metallocene LLDPE layer and the COC layer was so large that any attempt to delaminate the C8 metallocene LLDPE layer and the COC layer resulted in a destruction of the laminate by tearing without achieving a delamination of the C8 metallocene LLDPE layer and the COC layer. The equipment used in the tests detected delamination forces per length between other layers of the laminate of up to 3.3 N per 15 mm. In other words, the adhesion between metallocene C8 LLDPE-layer and a COC-layer is significantly greater than the cohesion of the respective material within each layer. This effect was neither known, nor could it be expected.

RMTA Ground 2 – The Claimed Loading Ranges are Critical

EX2019, 10, 11.

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

- The laboratory testing submitted by Petitioner in other proceedings before the Office provides further evidence of criticality of the tie layer loading ranges in Claims 16–18.
- Petitioner submitted the Inventor Declaration of Manuella Herb, dated August 12, 2021, to support the assertion that there is a poor bond between a regular LDPE layer and a COC layer, stating that the COC layer “**more or less easily delaminates or can be peeled off the neighboring regular LDPE-layer.**” EX2019 ¶ 10.
- The inventor represented that a laminate structure including “aluminum/ethylene acrylic acid [(EAA)] copolymer/LDPE/COC” has a strength per length of 0.5 N per 15 mm,” and that “adhesion between [the] metallocene C8 LLDPE-layer and [the] COC layer [was] significantly greater than the cohesion of the respective material within each layer[, and that] **this effect was neither known, nor could it be expected.**” EX2019 ¶¶ 10, 11.

RMTA Ground 2 – The Claimed Loading Ranges are Critical

EX2019 ¶¶ 10, 11

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE

RMATA Ground 3 – Riis, Wypych and Rivers do not Render Revised Substitute Claim 19 Obvious

- Rivers does not cure the deficiencies of Riis.

DEMONSTRATIVE EXHIBIT – NOT EVIDENCE