

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

HUHTAMAKI FLEXIBLE PACKAGING GERMANY GMBH & CO. KG,
Petitioner,

v.

DANAPAK FLEXIBLES A/S,
Patent Owner.

PGR2023-00008
Patent 11,260,624

PATENT OWNER'S RESPONSE

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EXHIBIT LIST

Exhibit No.	Description
2001	US Patent 11,504,954 assigned to Huhtamaki Flexible
2002	U.S. Patent Appl. No. 16425,067 Application File History (in-part)
2003	US Patent App. Pub. No. 20150225151A1 to Osborn et al.
2004	Redline Comparison Between Riis and Osborn
2005	US Patent 11,504,954 NFOA Response dated 11 March 2021
2006	US Patent 11,504,954 FOA Response dated 3 August 2022
2007	Huhtamaki Parent Website - Business Segments
2008	Huhtamaki Parent Website - Contact Us
2009	Huhtamaki Parent Website - Executive Team
2010	Huhtamaki Parent Annual Report 2021
2011	Corrected PHV Affidavit (Timothy P. Getzoff)
2012	EP Application No. 15202962.5 – '624 Priority Application
2013	Curriculum Vitae – Dr. Stephen McCarthy
2014	Declaration of Dr. Stephen McCarthy
2015	Deposition Transcript – Dr. Richard Spontak

PATENT OWNER'S RESPONSE

I. INTRODUCTION

On December 1, 2022, Huhtamaki Flexible Packaging Germany GmbH & Co. KG ("Petitioner") filed Paper 1 ("Petition") of this proceeding requesting institution of post-grant review for U.S. Patent No. 11,260,624 ("624 Patent"). On June 20, 2023, in Paper 14 ("Decision in Institution") of this proceeding, the Board granted institution of post-grant review.

In an instituted post-grant review, the petitioner must prove a proposition of unpatentability by a preponderance of the evidence. 35 U.S.C. 326(e).

Petitioner has not shown by a preponderance of the evidence that any of the challenged claims are unpatentable. Specifically, Petitioner has failed to show, by a preponderance of the evidence, that (A) one skilled in the art would not understand, with reasonably certainty, the scope of what is claimed by the '624 Patent under 35 U.S.C. 112(b), and (B) the claims of the '624 Patent are rendered obvious under 35 U.S.C. 103 over the asserted references.

A. One skilled in the art would understand what is claimed by the '624 Patent under 35 U.S.C. 112(b).

With respect to the 35 U.S.C. 112(b) allegations (Ground I), Petitioner fails to show that one skilled in the art would not understand what is claimed by the '624 Patent when the claims are read in light of the '624 Patent's specification.

1. One skilled in the art would understand, with reasonable certainty, the meaning of the term "aggressive chemical-resistant film."

Petitioner alleges that the claim term "aggressive chemical-resistant film" is indefinite under 35 U.S.C. 112(b). Independent claim 1 of the '624 Patent recites "a method for providing an aggressive chemical-resistant film, wherein the film is resistant to a chemical selected from nicotine, fentanyl, rivastigmine, or lidocaine."

As noted in § IV.A, *infra*, when reading the claims in light of the specification, one skilled in the art would understand, with reasonable certainty, that the term "aggressive chemical-resistant film" refers to films that:

- 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).

The mere fact that two definitions are provided for a claim term does not render the claim term indefinite. Instead, the '624 Patent provides two, non-

exclusive definitions of an aggressive chemical-resistant film that are internally consistent and that work in tandem to provide objective boundaries for those of skill in the art to understand, with reasonable certainty, what is still open to them. *See* EX2014 ¶ 140.

Indeed, the Board, in the Decision in Institution, found "the term 'aggressive-chemical resistant film' to be sufficiently definite." Decision in Institution, p. 21.

2. One skilled in the art would understand, with reasonable certainty, the meaning of the term "loading."

Petitioner alleges that the claim term "loading" is indefinite under 35 U.S.C. 112(b). Independent claim 1 of the '624 Patent recites that "the tie layer comprises one or more layers, [] 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."

As noted in § IV.B, *infra*, when reading the claims in light of the specification, one skilled in the art would understand, with reasonable certainty, that the term "loading" refers to an amount of polymer in a layer of a film that is measured after manufacture of the film is completed. *See* EX2014 ¶¶ 142–145. In fact, Petitioner admitted as much in its Petition when it calculated the loading of the Riis reference's layers without issue. Petition, p. 41.

Further, in light of the units of measurement recited in the claims, one skilled in the art would understand, with reasonable certainty, that the amount of

the polymer in the layer is expressed as a mass (in grams) of the polymer in the layer within a unit area (a square meter) — i.e., as a mass per unit area, or grammage — and would understand how to determine a "loading" of a layer. *See* EX2014 ¶ 145.

Indeed, the Board, in the Decision in Institution, found the "loading" term to be definite. Decision in Institution, p. 22.

***3. Petitioner fails to put forth a cognizable assertion of indefiniteness with respect to the term "melting point."*¹**

Petitioner states that "[t]o the extent Patent Owner, in an effort to avoid Tatarka's disclosure, argues that Tatarka's 'melting point' means something different than the 'melting point' recited in the claims, claims 2 and 3 are indefinite because one skilled in the art would not have understood which of the many other temperature properties of polymers is equivalent to 'melting point'." Petition, p. 30.

As such, Petitioner acknowledges that this term is not indefinite but instead speculates that the term would be indefinite if Patent Owner asserts that this term means something different than "melting point." Patent Owner makes no such argument.

¹ Claims 2 and 3 are unconditionally canceled without prejudice or disclaimer in the Motion to Amend. Given the cancellation of claims 2 and 3, Petitioner's speculative arguments regarding the definiteness of the "melting point" term are rendered moot.

Thus, Petitioner has failed to allege that this term is indefinite, and this allegation should not be deemed an asserted ground of invalidity.

Indeed, the Board agrees that Petitioner fails to put forth a "cognizable assertion of indefiniteness" with respect to this term. Decision in Institution, p. 23.

B. The claims of the '624 Patent are not obvious under 35 U.S.C. 103.

With respect to the two 35 U.S.C. 103 allegations (Grounds II and III), Petitioner fails to show that the asserted references render the challenged claims obvious. Instead, Petitioner's arguments ignore key disclosures of the prior art references and engage in a quintessential hindsight analysis in an attempt to support its claims.

Each of the 35 U.S.C. 103 allegations submitted by Petitioner rely heavily on WO Patent Publication No. 2015/123211 A1 to Riis et al. (EX1004; "Riis"); *see generally* Petition — a reference that was disclosed to the Office in an information disclosure statement and is listed on the face of the '624 Patent. However, each of Petitioner's obviousness arguments ignore the express disclosures in Riis that actually teach away from Petitioner's interpretation thereof.

In the first 35 U.S.C. 103 allegation, Petitioner alleges that the eight-layer film disclosed in *example 5* of Riis² "discloses the entirety of the claimed

² The eight-layer film disclosed in example 5 of Riis may be interchangeably referred to herein as "the eight-layer film."

invention *except for specific material properties such as loading ranges and the relative melting points* of the component tie layer and contact layer." Petition, pp. 30, 31, Ins. 17–4 (emphasis added). After conceding that Riis does not disclose the loading ranges and relative melting points of the component tie layer and contact layer, Petitioner alleges that one skilled in the art would have "found it obvious to *construct example 5* of Riis using the components identified by Riis, which would have had the claimed material properties." *Id.* (emphasis added). Petitioner further alleges that "a skilled artisan would have been motivated to . . . *recreate the [eight-layer] film of Example 5* and would have had a reasonable expectation of doing so to arrive at the claimed invention." *Id.*, pp. 43 (emphasis added); *see also id.*, pp. 44, 53. It is this replication of the eight-layer film (without modification) that Petitioner alleges renders the claims of the '624 Patent obvious.³ *See id.*, pp. 30–53 (which reference the eight-layer film of example 5 at least 48 times); *see also* EX2015, pp. 128, 129, 131, 134. Simply put, Petitioner, on the one hand admits

³ It is noted that the first 35 U.S.C. 103 allegation (Ground II) of the Petition asserts only that Riis renders obvious the invention claimed in the '624 Patent, while in the second 35 U.S.C. 103 allegation (Ground III) of the Petitioner asserts that the combination of Riis, Wypych, and Tatarka renders obvious the claimed invention. However, in the first 35 U.S.C. 103 allegation, Petitioner asserts both Wypych (Petition, pp. 35, 41, 42, 46, 48) and Tatarka (*Id.*, p. 46) to reference relevant material properties. Thus, by referencing the other asserted 35 U.S.C. 103 references, Wypych and Tatarka, in Ground II, Petitioner implicitly concedes that, using Riis as a starting point, the knowledge of one skilled in the art, alone, is insufficient to render the claimed invention obvious and, thus, that Ground II fails.

that Riis does not disclose all limitations of the '624 Patent's challenged claims, and on the other, argues that Riis (without modification) somehow renders these same claims obvious. Petitioner cannot have it both ways.

In the second 35 U.S.C. 103 allegation, Petitioner alleges that the disclosure of Riis combined with the disclosures of the "Handbook of Polymers" by Wypych ("Wypych") and U.S. Patent No. 9,452,593 to Tatarka et al. ("Tatarka") renders claims 1 through 13 obvious. However, as Petitioner admits, its obviousness arguments make reference to Wypych and Tatarka *only to allege material properties* for the eight-layer film disclosed in Riis, and Petitioner acknowledges that these references do not otherwise alter the arguments made in the first 35 U.S.C. 103 allegation. *See* Petition, p. 80, lns. 7–11 (stating, "the rationale to combine the disclosure of Riis with the material properties provided by Wypych and Tatarka *is simply to provide relevant and applicable material properties one of ordinary skill in the art would look to.*" (Emphasis added)). That is, Petitioner asserts both Wypych and Tatarka to support the replication of the eight-layer film (without modification) that Petitioner alleges renders the claims of the '624 Patent obvious. Thus, Petitioner has failed to put forth any arguments regarding a motivation to combine/modify Riis, Wypych and Tatarka under Ground III in a way that would render the claims of the '624 Patent obvious.

Riis, Wypych, and Tatarka fail to render obvious the claims of the '624 Patent because Riis — alone, or in combination with Wypych and/or Tatarka — fails to teach or suggest features of the issued claims, including (but not limited to) a "coextrusion layer consisting of [a] tie layer [that] . . . has a loading in the range of 7 to 20 g/m²," and a "coextrusion layer **consisting of** [a] tie layer[] and . . . [a] contact layer" (emphasis added).

1. Summary of Riis.

Riis discloses a six-layer film that includes an exterior protective layer 6, a second intermediate adhesive layer 5, an oxygen barrier layer 4, a first intermediate adhesive layer 3, a polyolefin bulk layer 2, and a product contacting layer 1. EX1004 ¶ [0135]. "In some embodiments [of Riis], a polyolefin bulk layer **can** serve as an adhesive or tie layer." *Id.* (emphasis added). Riis also discloses, in a fifth example, a 3.04 mil eight-layer film that includes a base film and a sealant film. EX1004 ¶ [0174]. The base film includes a .92 mil OPET layer, a PEI layer, a .42 mil LDPE layer, a .1 mil EAA layer, a .35 mil Al foil layer, a .17 mil EAA layer, a .65 mil LDPE layer, and a .43 mil COC layer. *Id.* The sealant film includes a .17 mil ethylene and acrylic acid (EAA) layer, a .65 mil LDPE layer, and a .43 mil cyclic olefin copolymer (COC) layer. *Id.* The sealant film is formed by way of a three-layer coextrusion to the base film. *Id.*

It is noted that, when referencing a layer functionally, and though the layer may serve other secondary functions, one skilled in the art would understand and refer to a layer by its primary purpose for the target application — e.g., one skilled in the art would understand and refer to the .17 mil EAA layer as a .17 mil EAA "adhesive" layer or a .17 mil EAA "tie" layer.⁴ EX2014 ¶ 83. It is further noted that one skilled in the art would and refer to a layer by its primary purpose, though a layer may serve other secondary functions. For example, though each layer in a multi-layer coextrusion layer may be bonded together as a result of the coextrusion, one skilled in the art would not immediately understand each intermediary layer of the multi-layer film to be a tie layer but would instead understand and refer to each layer in accordance with its primary purpose.

In paragraph [0135], Riis refers to the layers of the six-layer film functionally — e.g., in accordance with their primary purpose. In paragraph [0174], Riis refers to the layers of the eight-layer film based on the material composition and thicknesses of the layers. Thus, the primary purpose of the layers in the eight-layer film are not explicitly stated in Riis and would instead be determined by one skilled in the art after an inspection of these layers aimed at determining the primary purpose of the individual layers.

⁴ The terms "adhesive" and "tie" layer can be, and are, used interchangeably herein. *See* Riis ¶¶ [0020], [0071].

As set forth herein, the express disclosure of Riis, the knowledge of skilled in the art, and Petitioner's own interpretations of Riis confirm that the .92 mil OPET layer primarily serves the purpose of an exterior protection layer, the PEI layer primarily serves the purpose of a tie layer, the .42 mil LDPE layer primarily serves the purpose of a bulk layer, the .1 mil EAA layer primarily serves the purpose of a tie layer, the .35 mil Al foil layer primarily serves the purpose of an oxygen barrier layer, the .17 mil EAA layer primarily serves the purpose of a tie layer, the .65 mil LDPE layer primarily serves the purpose of a bulk layer, and the .43 mil COC layer primarily serves the purpose of a product contacting layer. See EX2014 ¶¶ 98–105.

2. Riis fails to disclose that the .65 mil Low Density Polyethylene (LDPE) layer in the sealant film of the eight-layer film disclosed in example 5 of Riis is a "tie" layer. Instead, Riis discloses that the .65 mil LDPE layer primarily serves the purpose of a bulk layer, and thus, would be understood by one skilled in the art as a "bulk" layer.

Riis further discloses that the .17 mil EAA layer primarily serves as an adhesive layer, the .65 mil LDPE layer primarily serves as a bulk layer, and that the .43 mil COC layer primarily serves as a product contacting layer. EX2014 ¶¶ 103–105.

Petitioner alleges that the .17 mil EAA layer and the .65 mil LDPE layer in the coextrusion layer of the sealant film are both "tie" layers, where (as calculated by Petitioner using Wypych) the .17 mil EAA layer has a loading in the range of

3.97 g/m² to 4.15 g/m², and the .65 mil LDPE layer has a loading in the range of 15.11 g/m² to 15.34 g/m². Petition, pp. 41–43. Petitioner thus combines the loadings of the .17 mil EAA layer and the .65 mil LDPE layer to allege a multi-layer tie layer having a loading in the range of 19.08 g/m² to 19.49 g/m². *Id.* Accordingly, Petitioner alleges that a "coextrusion layer consisting of [a] tie layer [that] . . . has a loading in the range of 7 to 20 g/m²," as claimed in the '624 Patent, is taught by the combined loading (in the range of 19.08 g/m² to 19.49 g/m²) of the .17 mil EAA and .65 mil LDPE layers of the sealant film. *Id.*

However, the express disclosure of Riis, the knowledge of one skilled in the art, and Petitioner's own interpretations of Riis confirm that the .65 mil LDPE layer primarily serves the purpose of a bulk layer and, thus, would be understood by one skilled in the art as a "bulk" layer (not a "tie" layer). *See infra* § V.A.2.

3. 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."

Given that one skilled in the art would understand the .65 mil LDPE layer to be primarily serving as a bulk layer, the sealant film of the eight-layer film discloses a coextrusion layer including a .17 mil EAA "tie" layer (that primarily serves the purpose of a tie layer) with a loading of 3.97 g/m² to 4.15 g/m², a .65 mil LDPE "bulk" layer (that primarily serves the purpose of a bulk layer) with a loading in the range of 15.11 g/m² to 15.34 g/m², and a .43 mil COC "contact" layer (that primarily serves the purpose of a product contacting layer).

But the coextrusion layer including the .17 mil EAA "tie" layer with a loading of 3.97 g/m² to 4.15 g/m² fails to disclose a "coextrusion layer consisting of [a] tie layer [that] . . . has a loading in the range of 7 to 20 g/m²."

4. Riis fails to teach or suggest a "coextrusion layer consisting of [a] tie layer[] and . . . [a] contact layer."

Given that one skilled in the art would understand the .65 mil LDPE layer to be primarily serving as a bulk layer, the coextrusion layer including the .17 mil EAA "tie" layer, the .65 mil LDPE "bulk" layer, and the .43 mil COC "contact" layer fails to disclose "a coextrusion layer ***consisting of*** [a] tie layer[] and . . . [a] contact layer" (emphasis added).

5. Wypych and Tatarka fail to cure the deficiencies of Riis at least with respect to the above claim features.

Neither Wypych nor Tatarka teaches or suggests a "coextrusion layer consisting of [a] tie layer [that] . . . has a loading in the range of 7 to 20 g/m²." Nor do Wypych or Tatarka teach or suggest "a coextrusion layer ***consisting of*** [a] tie layer[] and . . . [a] contact layer." Indeed, Petitioner does not assert that Wypych or Tatarka teach or suggest these features. Petitioner instead uses Wypych and Tatarka solely to allege material properties, such as loading values and melting points, of the eight-layer film of Riis. Petition, pp. 30, 31, 80.

6. 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.

As noted above, Petitioner concedes that Riis does not contemplate processing parameters or material properties of the aggressive chemical-resistant film captured by the claims of the '624 Patent, including relative melting points and loading ranges. Petition, pp. 30, 31. Instead, Petitioner alleges that one skilled in the art would arrive at the claimed invention by recreating (without modification) the eight-layer film based on applying material properties obtained from Wypych or Tatarka to the layers of the eight-layer film. *Id.*, pp. 35, 41–43, 53, 59–68; *see also* EX2015, pp. 128, 129, 131, 134.

After recreating the eight-layer film, Petitioner does not contemplate any modification to any aspect of the eight-layer film, let alone to the loading ranges and melting characteristics of the layers. That is, Petitioner fails to contemplate changing loadings of the layers of the recreated eight-layer film, changing the melting points of the layers of the recreated eight-layer film, adding or removing layers of the recreated eight-layer film, or the like. Nor does Petitioner consider how such changes would affect the other layers, or the overall performance, of the eight-layer film. Petitioner additionally fails to articulate any reasons as to why one skilled in the art would be motivated to modify any aspect of the recreated eight-layer film, let alone any one aspect (e.g., layer) of the recreated eight-layer film,

the components and properties (e.g., thicknesses) of which were carefully and intentionally selected to form a completed multi-layer film. EX2014 ¶¶ 172, 173. Indeed, when asked about one of Riis's disclosed films, Petitioner acknowledges that removing the polyolefin bulk layer 2 from the six-layer film described at paragraph [0135] of Riis would negatively affect the performance of the six-layer film. EX2015, p. 68.

7. Petitioner's failure 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 precludes Petitioner from providing any arguments in support of modifying the recreated eight-layer film in its Reply to this Response.

A reply may only respond to arguments raised in the patent owner preliminary response, patent owner response, or decision in institution. 37 CFR 42.23(b). Thus, a Petitioner is prohibited from submitting new evidence or argument in reply that it could have presented earlier, e.g. to make out a prima facie case of unpatentability. Patent Trial and Appeal Board Consolidated Trial Guide, p. 73, § II.I (Nov. 2019); *see also Cisco System, Inc. v. Finjan, Inc.*, Case IPR2018-00391, slip op. at 38 (PTAB May 23, 2019) (Paper 33) *citing SAS Inst., Inc. v. Iancu*, 138 S. Ct. 1348, 1355 (2018).

Petitioner's failure to provide any arguments in support of modifying the recreated eight-layer film (or of any motivation to modify the recreated film of Riis) prevents Petitioner from alleging, in its Reply, that the deficiencies of the

eight-layer film may be overcome by modifying the material properties (e.g., loadings or melting points) of the layers of the recreated eight-layer film to arrive at the aggressive chemical-resistant film claimed in the '624 Patent.

Moreover, neither Patent Owner's Preliminary Response (Paper 6 of this proceeding), Patent Owner's Response (this Response), nor the Decision in Institution (Paper 14 of this proceeding) addresses modifying material properties (e.g., loadings or melting points) of the recreated eight-layer film (nor of any motivation to modify the recreated film) to arrive at the aggressive chemical-resistant film claimed in the '624 Patent.

Thus, for the purposes of this proceeding, Riis is constrained to only those loadings and melting points that are derivable from the materials that are disclosed in the eight-layer film as well as to the layer configurations of the eight-layer film.

Accordingly, Petitioner's arguments stand or fall on whether the *unmodified* recreation of the eight-layer film (by one skilled in the art using material properties for the layers obtained from Wypych and Tatarka) discloses the aggressive chemical-resistant film claimed in the '624 Patent.

8. The unmodified recreation of the eight-layer film disclosed in example 5 of Riis fails to disclose the aggressive chemical-resistant film claimed in the '624 Patent.

As shown herein (*see infra* § V.A.2), Riis discloses that the .65 mil LDPE layer in the eight-layer film primarily serves as a bulk layer and, thus, would be

understood by one skilled in the art to be a "bulk" layer (not a "tie" layer). Thus, the recreated eight-layer film does not disclose the aggressive chemical-resistant film claimed in the '624 Patent at least because (1) the .17 mil EAA "tie" layer in the eight-layer film does not meet the loading ranges claimed for the tie layer in the coextrusion layer claimed in the '624 Patent and (2) the coextrusion layer of the eight-layer film does not *consist of* a tie layer and a contact layer, as it consists of a tie layer, a bulk layer, and a contact layer.

Accordingly, Petitioner's arguments fail at least because the *unmodified* recreation of the eight-layer film (by one skilled in the art using material properties for the layers obtained from Wypych and Tatarka) fails to disclose the aggressive chemical-resistant film claimed in the '624 Patent.

II. OVERVIEW OF THE '624 PATENT

A. The '624 Patent — Summary

The '624 Patent issued from U.S. App. No. 16/835,108, which was filed on March 30, 2020, as a continuation of U.S. App. No. 15/780,999 ("Parent Application"). The Parent Application was filed on June 1, 2018, as a 371 of Int'l Application No. PCT/EP2016/082876 ("Int'l Application"). The Int'l Application was filed on December 29, 2016, and claimed benefit to EP Application No. 15202962.5, which was filed on December 29, 2015.

The '624 Patent is entitled "Method for Providing an Extreme Chemical Resistant Film, a Film and Laminate Obtainable Therefrom" and is related to a

method for producing a multilayer film and laminate (referred to as an "aggressive chemical-resistant film") that exhibits "resistance toward highly aggressive substances . . . [and has] [i]nert properties for ensuring that chemical compounds do not migrate from the exterior environment . . . through the laminate getting into contact with a sealed substance." EX1001, Abstract; 1:48–55. As described in the '624 Patent, a "film" describes "a product comprising [either] a base layer coated with a coextrusion layer comprising a tie layer and a contact layer or a base layer laminated with a tie layer and a contact layer." *Id.*, 11:64–67. And "laminate" describes "the film to which a further layer [(e.g., an outer layer)] is laminated." *Id.*, 12:6–8.

More specifically, the '624 Patent discloses an aggressive chemical-resistant film that includes a water and/or oxygen resistant base layer, a tie layer, and a contact layer, where the tie layer and contact layer are coextrusion coated to the base layer. *Id.*, 2:45–51. The '624 Patent further provides that "the contact layer comprises a polymer selected from the group consisting of a cyclic olefin polymer (COC), a polyamide (PA), or an ethylene vinyl alcohol (EVOH)." *Id.*, 5:14–17.

In the context of a COC contact layer, the '624 Patent provides that "COC has not previously been recognized as being suitable for extrusion coating and for the production of heat sealable laminates . . . [including] from a visual point of view . . . [and] it is very surprising that the inventors . . . have succeeded in

providing a coextrusion layer comprising COC as a contact layer for sealing aggressive substances." *Id.*, 6:1–13; *see also* EX2014 ¶¶ 57–65. The '624 Patent also discloses that "[i]t has surprisingly been found that when coextruding the tie layer and the contact layer . . . the respective layers can be thinner while maintaining the overall mechanical and chemical robustness of the final film and laminates . . . made with the film." *Id.*, 2:63–67; *see also* EX2014 ¶¶ 57–65. "In one embodiment [of the '624 Patent,] the tie layer or plurality of layers constituting the tie layer[] has a loading in the range of 7 to 20 g/m² and/or the contact layer has a loading in the range of 4 to 20 g/m²[,] and the loading of the laminate is not more than 40 g/m²." *Id.*, 6:32–37. As described in the '624 Patent, "loading" describes "the amount of polymer left[] in the layer when the film has dried." *Id.*, 6:38, 39.

As further noted in the '624 Patent, the inventors of the '624 Patent discovered "that an improved processing of COC is obtained when COC is coextruded with a tie layer having a glass transition temperature higher than or equal to that of a COC polymer such as a terpolymer of ethylene, acrylic ester and maleic anhydride." *Id.*, 6:3–17. "In an embodiment of the disclosure, the tie layer has a melting point that differs from COC with 30 °C, or less." *Id.*, 6:19, 20. Thus, the inventors of the '624 Patent surprisingly discovered that "[t]o obtain a satisfactory coextrusion layer it is important that the polymer constituting a contact layer and a copolymer constituting a tie layer are compatible with respect to the

melting characteristic of the polymers and the copolymer." *Id.*, 6:24–28; *see also* EX1003 ¶ 46; EX2014 ¶¶ 68–70.

That is, based on discovering that coextruding a COC contact layer and tie layer with compatible melting characteristics yields preferred results, the inventors of the '624 Patent surprisingly discovered that when coextruding the tie layer and a COC contact layer in accordance with the disclosure of the '624 Patent, the respective layers can be made thinner while maintaining the overall mechanical and chemical robustness of the final film. *Id.*, 2:63–67; *see also* EX2014 ¶¶ 68–70.

Matching the melting characteristics of the tie layer and COC contact layer (by using a tie layer having a melting point that is in a vicinity of a glass transition temperature of the contact layer) causes the melt viscosities of these layers to be matched during coextrusion, which is an important and surprising criteria for success when forming such a thin tie layer (having a loading within the range of 7 to 20 g/m²) and thin COC contact layer (having a loading within the range of 4 to 20 g/m²) while maintaining preferred aggressive chemical resistance and aesthetic properties. EX2014 ¶¶ 68–70. That is, the inventors of the '624 Patent discovered that matching the melt viscosities yields a synergistic behavior at the interphase of the tie layer and COC contact layer during coextrusion that surprisingly enables the formation of a coextrusion layer with a thin tie layer along with a uniform, thin, and aesthetically-pleasing COC contact layer that contains less residual stress

while maintaining the desired mechanical and structural qualities as well as the chemical effectiveness of the resultant film. EX2014 ¶ 68–70.

Petitioner asserts that coextrusion should involve using sufficient viscosity contrast (i.e., different melt viscosity) to avoid interlayer mixing. EX1003 ¶ 46. Thus, according to Petitioner, the knowledge of one skilled in the art teaches away from matching the melt viscosities of the tie layer and the contact layer to obtain a preferred coextrusion result. But the '624 Patent discloses that matching the melt viscosity of the COC contact layer with that of a tie layer during coextrusion yields an improved coextrusion result. Thus, Petitioner admits that matching the melt viscosity of the COC contact layer with that of a tie layer during coextrusion surprisingly yields an improved coextrusion result.

Based on this important discovery related to matching the melting characteristics of the tie and contact layer, the inventors of the '624 Patent further contemplated blending polymers to form a blended contact layer with melting characteristics that are compatible with the melting characteristics of the tie layer. EX1001, 6:40–48. For example, by mixing two of the COC polymers disclosed in the application (e.g., COC 6013M-07 and COCO 8007F-600), a wide range of glass transition temperatures may be obtained for a contact layer. EX2014 ¶ 70.

With reference to the process for obtaining the aggressive chemical-resistant film, the '624 Patent describes coating a coextrusion layer that includes a tie layer

and a contact layer to one side of a base layer. EX1001, 12:67–13:3. More specifically, "the coextrusion layer may be coated to [an] aluminum [base] layer by a coextrusion system. *Id.*, 13:11–15. "To further improve the mechanical wear resistance of the film[,] a first outer layer may be laminated to the base layer side of the film or simply wrapped around the film to provide a laminate." *Id.*, 13:51–54. "The first outer layer . . . and the base layer side . . . may be laminated together . . . after the coextrusion layer . . . is applied/coated to the base layer." *Id.*, 13:57–61.

III. LEVEL OF ORDINARY SKILL IN THE ART

Petitioner alleges that a person of ordinary skill in the art of the '624 Patent at the time of the alleged invention would have had a relevant technical degree in Chemical Engineering, Polymer Science, Materials Science, or the like, and 2 to 3 years of experience in manufacturing flexible films, though less experience may be necessary with additional education and vice versa. Petition, p. 17. However, Petitioner's definition of a person of ordinary skill in the art is overly broad.

A. One skilled in the art would have had a relevant technical degree in Chemical Engineering, Polymer Science, Materials Science, or the like, and two (2) to three (3) years of experience in manufacturing flexible films using coextrusion processing techniques.

Multiple techniques (e.g., rotogravure printing, flexographic printing, adhesive lamination, extrusion lamination/coating, extrusion lamination/coating, finishing/slitting, etc.) may be used in the manufacture of flexible films, and

experience with one technique does not necessarily imply experience with another technique. EX2014 ¶ 48. For example, experience with adhesive lamination does not necessarily imply experience with extrusion lamination, or more specifically with coextrusion lamination. Moreover, an understanding of coextrusion processing techniques, such as coextrusion lamination and coextrusion coating, requires hands-on experience in order to appreciate the intricacies involved therewith. EX2014 ¶ 48. Thus, given the important role coextrusion plays in the formation of the film claimed in '624 Patent, hands-on experience with coextrusion processing technique would be required to appreciate the '624 Patent. EX2014 ¶ 48.

Thus, contrary to Petitioner's definition, a person of ordinary skill in the art of the '624 Patent at the time of the alleged invention would instead have had a relevant technical degree in Chemical Engineering, Polymer Science, Materials Science, or the like, and two (2) to three (3) years of experience in manufacturing flexible films *using coextrusion processing techniques*. Less experience may be necessary with additional education and vice versa. However, in no event would one skilled in the art have less than one (1) year of experience in manufacturing flexible films using coextrusion coating/lamination techniques. EX2014 ¶ 49.

As admitted during his deposition, Dr. Spontak has not performed coextrusion personally and does not have any hands-on experience with

manufacturing a laminate or film using a coextrusion process — Dr. Spontak instead having topical experience acceptable only for instruction. EX2015, pp. 22–24. Thus, Dr. Spontak does not possess the necessary experience or knowledge to qualify as one skilled in the art of the '624 Patent.

IV. 35 U.S.C. 112

In the first alleged ground of unpatentability, Petitioner alleges that the claims are indefinite under 35 U.S.C. 112(b).

35 U.S.C. 112(b) requires a patent application specification to "conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the inventor or a joint inventor regards as the invention." 35 U.S.C. 112(b). 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 apprises] '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).

"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.*

Thus, a claim is not indefinite under 35 U.S.C. 112(b) if the claim provides objective boundaries for those of skill in the art to understand, with reasonable certainty, what is still open to them.

The '624 Patent provides one skilled in the art objective boundaries for understanding the scope of all of the claimed terms.

A. One skilled in the art would understand, with reasonable certainty, the meaning of the term "aggressive chemical-resistant film."

Petitioner alleges that claims 1 through 13 of the '624 Patent are indefinite for allegedly failing to inform one skilled in the art as to the scope of "aggressive chemical-resistant film" with reasonable certainty. Petition, p. 24 (citing to the non-precedential case, *Saso Golf, Inc. v. Nike, Inc.*, 843 Fed. Appx. at 296 (Fed. Cir. 2021), which cites to another non-precedential case, *Ball Metal Beverage Container Corp. v. Crown Packaging Tech., Inc.*, No. 2020-1212, 838 Fed. Appx. at 542 (Fed. Cir. 2020)).⁵

Independent claim 1 of the '624 Patent recites "a method for providing an aggressive chemical-resistant film, wherein the film is resistant to a chemical selected from nicotine, fentanyl, rivastigmine, or lidocaine." Independent claim 13 of the '624 Patent recites similar language.

Contrary to Petitioner's assertions, when reading the claims in light of the specification, one skilled in the art would understand, with reasonable certainty, that the term "aggressive chemical-resistant film" refers to films that:

- 1) allow less than 10% of the active pharmaceutical ingredient (API) in a packaged nicotine, fentanyl, rivastigmine, or lidocaine product to be absorbed

⁵ As a threshold matter, it is telling that Petitioner cites to two non-precedential cases to support this allegation rather than to the precedential Federal Circuit cases to which these non-precedential cases cite.

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).

Petitioner alleges that there are three different definitions of the term "aggressive chemical-resistant film" in the '624 Patent that each recite a different amount of permissible migration of the aggressive chemical into the packaging. Petition, p. 25.

With respect to the first definition, Petitioner argues that the '624 Patent provides that an aggressive chemical-resistant film means a film that allows no more than 1% of the original amount of packaged API (or sometimes no more than 10%) of the original amount of packaged API to migrate into the packaging material after 24 weeks. *Id.*, p. 25 (citing EX1001, 5:8–13). However, Petitioner leaves out the immediately preceding text of the '624 Patent, which provides that the acceptable "degree of absorption for a given substance is typically dictated by the manufacturer but often the accepted values lie in the range of 0 to 1% (w/w)."

EX1001, 5:1–3. Though the '624 Patent acknowledges that "[f]or some products up to 10% (w/w) is acceptable." *Id.*, 5:3–5. When read in its full context, which Petitioner fails to do, it is clear that the '624 Patent provides that an aggressive chemical-resistant film is a film that allows less than 10% absorption into a package after 24 weeks (while noting that the acceptable absorption of the aggressive chemical-resistant film may be lower depending on the product and manufacturer).

With respect to the second definition, Petitioner alleges that the cited portion of the '624 Patent provides that an aggressive chemical-resistant film means a film that does not allow more than 10%, such as 5% w/w/ or 1.5% w/w, of the aggressive chemical to migrate into the packaging material. Petition, p. 25 (citing EX1001, 7:21–25).

And with respect to the third definition, Petitioner alleges that the cited portion of the '624 Patent provides that an aggressive chemical-resistant film means a film that does not allow more than 1.5% w/w of the content to migrate to the packaging material. *Id.*, p. 25 (citing EX1001, 12:16–22). Petitioner also notes that the third definition provides an alternative test methodology using Barex® as a comparator. *Id.*, p. 26.

As acknowledged by the Board, in the Decision in Institution, the percentages used to describe an "aggressive chemical-resistant film" are internally

consistent. Decision in Institution, p. 21. As further noted in the Decision in Institution, 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.*

Patent Owner agrees with the Board that the percentages used to describe an "aggressive chemical-resistant film" are consistent and that Petitioner has failed to show that the latter Barex® definition is inconsistent with the percentages. Moreover, as noted in the Preliminary Response, the mere fact that two definitions are provided for a claim term does not render the claim term indefinite. Instead, and as noted in pages 3 and 4 of Patent Owner's Preliminary Response, the '624 Patent provides two, non-exclusive definitions of an aggressive chemical-resistant film that are internally consistent and that work in tandem to provide objective boundaries for those of skill in the art to understand, with reasonable certainty, what is still open to them.

More specifically, the '624 Patent provides, in the summary section, a first definition of an aggressive chemical-resistant film: *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. And, in the detailed description section, a second definition of an aggressive chemical-resistant film: *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.

The first definition provides a film-centric definition for an aggressive chemical-resistant film that is relative to the film itself: *a film that allows less than 10% API absorption.* EX2014 ¶ 137. The second definition provides a packaged product-centric definition for an aggressive chemical-resistant film that is relative to a product packaged in a packaging product made from the film: *a film that is used to manufacture a packaging product (e.g., a pouch), where the packaging product is used to package a patch product and maintains an amount of API in the patch product that is 90% to 110% of an amount of API that remains in a corresponding patch product packaged in an equivalent packaging product manufactured using a Barex® film.* EX2014 ¶ 137.

Putting these definitions together, one skilled in the art would understand that an implemented film is an aggressive chemical-resistant film if the

implemented film allows less than 10% API absorption or if a packaging product manufactured using the implemented film performs comparably with an equivalent packaging product manufactured using a Barex® film when used to package equivalent patch products. EX2014 ¶ 137. Petitioner's arguments erroneously conflate these two definitions in an attempt to manufacture its indefiniteness arguments, and as such, Petitioner's arguments fail.

In addition, the primary reference cited by Petitioner under the 35 U.S.C. 103 grounds (Riis) undercuts the very arguments Petitioner makes with respect to the 35 U.S.C. 112(b) grounds. Specifically, Riis provides further evidence that one skilled in the art would find these two definitions to be consistent with one another and understand the utility of the Barex® standard. That is, Riis itself discloses that a film has anti-scalping properties if an amount of a pharmaceutical active agent allowed to migrate into the film is less than 15% of an amount of the pharmaceutical active agent allowed to migrate into a Barex® film. EX1004 ¶ [0129]. Riis further discloses a method for determining whether a film is anti-scalping is to prepare commonly-dimensioned pouches with each test film and comparing the amount of eluted drug for each of the pouches after a certain amount of time has passed. *Id.* ¶ [0134].

Accordingly, the '624 Patent provides one skilled in the art objective boundaries for understanding the scope of the term "aggressive chemical-resistant film."

B. One skilled in the art would understand, with reasonable certainty, the meaning of the term "loading."

Despite having calculated the very "loading" it claims is indefinite in its Petition, Petitioner alleges that independent claims 1 and 13, as well as dependent claims 5 through 7 of the '624 Patent, are indefinite for allegedly failing to inform one skilled in the art how "loading" is determined. Petition, p. 29.

Independent claim 1 of the '624 Patent recites that "the tie layer comprises one or more layers, [] 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." Independent claim 13 of the '624 Patent recites similar language.

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. Accordingly, 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. That is,

in the '624 Patent, the loading of a layer refers to a mass of a polymer in the layer that is measured in a square meter section of the layer.

Accordingly, 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. Indeed, Petitioner acknowledges the same. Specifically, when addressing the "loading" language for the purposes of the 35 U.S.C. 103 rejection, Petitioner notes that "[b]y knowing the thickness of the layer and the density of the polymer used, g/m^2 can be calculated" such that "'loading' as that term is used in the '624 Patent can be determined by (1) multiplying thickness in cm by density in g/cm^3 and (2) converting g/cm^2 to g/m^2 ." Petition, p. 41. Accordingly, Petitioner describes without issue a method for determining the loading in a layer and for determining whether the loading in the layer satisfies the claimed loading range.

Indeed, the Board, in the Decision in Institution, found that Petitioner has failed to show the "loading" term is indefinite. Decision in Institution, p. 22.

V. 35 U.S.C. 103

In the second and third alleged grounds of unpatentability, Petitioner alleges that the claims are obvious under 35 U.S.C. 103. However, as detailed below,

Petitioner's arguments go against the express disclosures of the cited references which actually teach away from Petitioner's interpretations thereof. As such, the claims of the '624 Patent are not rendered obvious by the asserted references, alone or in any combination.

A. Riis fails to render the claims of the '624 Patent obvious under 35 U.S.C. 103.

In the second alleged ground of unpatentability, Petitioner alleges that Riis renders claims 1 through 13 of the '624 Patent obvious under 35 U.S.C. 103.

Petition, p. 30.⁶

However, Riis fails to teach or suggest the features recited in claims 1 through 13 of the '624 Patent.

1. Summary of Riis.

Riis is a PCT application, which was filed on February 10, 2015, and claims priority to US Patent App. No.: 14/178,005, which was filed on February 11, 2014.

Riis is related to a film for packaging a product that has a pharmaceutical active agent, the film having a product-contacting sealing later including at least 90 wt. % of an ethylene norbornene copolymer (COC). EX1004, Abstract. The pharmaceutical active agent is selected from the group consisting of fentanyl, nicotine, lidocaine, estradiol, clonidine, ethinyl estradiol, oxybutynin,

⁶ See note 3.

buprenorphine, granisetron, methylphenidate, and scopolamine. *Id.* ¶ [0011]. Riis does not contemplate the pharmaceutical active agent of rivastigmine.

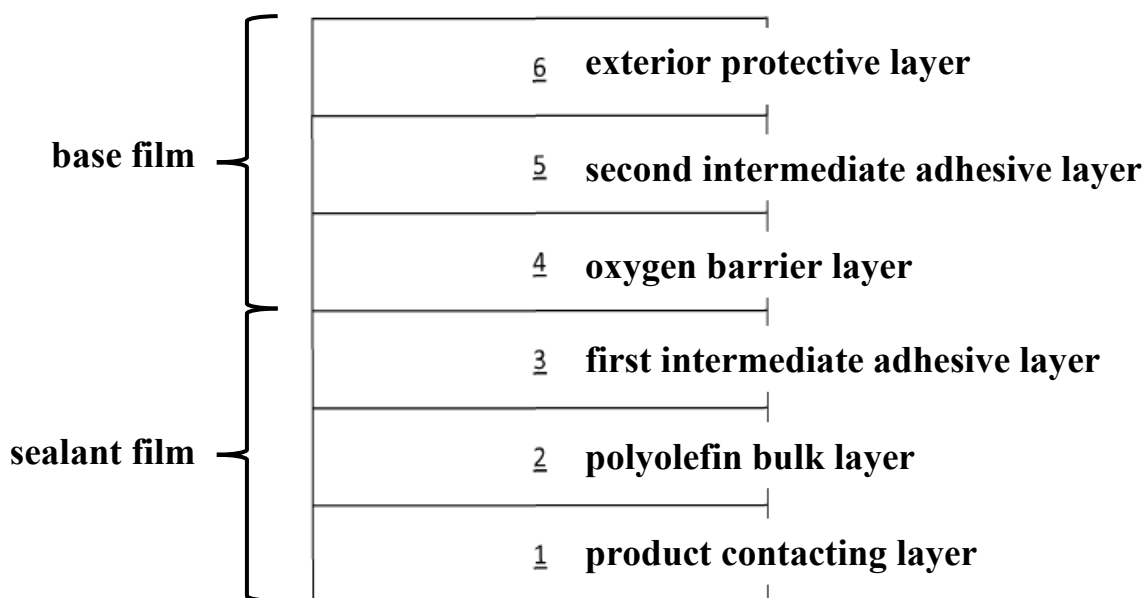
FIG. 1 of Riis depicts a six-layer film 10⁷ that includes a product contacting layer 1, a polyolefin bulk layer 2, a first intermediate adhesive layer 3, an oxygen barrier layer 4, a second intermediate adhesive layer 5, and an exterior protective layer 6. *Id.*, FIG. 1 (reproduced below). In Riis, "the product contacting layer 1 . . . comprises an ethylene norbornene copolymer." *Id.* ¶ [0135].

Riis notes that adhesive layers (also known as tie layers) are "selected to promote the adherence of *adjacent* layers to one another in a multilayer film and to prevent undesirable delamination." *Id.* ¶ [0071] (emphasis added). "A multifunctional [adhesive] 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 [multifunctional adhesive] layer to the first and second layers [— i.e., multifunctional] adhesive layers comprise materials found in both the first and second layers." *Id.* (emphasis added). Riis discloses that "[t]he adhesive layer may suitably *be less than 10% and preferably between 2% and 10%* of the overall thickness of the multilayer film." *Id.* (emphasis added). Riis additionally discloses that "adhesive resins are often more expensive than other polymers so the tie layer thickness is usually *kept to a minimum consistent with*

⁷ The six-layer film 10 is also referred to herein as "the six-layer film."

the desired effect." *Id.* (emphasis added). And, in one embodiment of Riis that omits a bulk layer, a multilayer structure includes "a first adhesive layer positioned between and in direct contact with [an] exterior layer and a core oxygen barrier layer . . . and 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.*" *Id.* (emphasis added). Riis further discloses a "peelable" tie layer that is designed to have either cohesive failure or delamination from one or both adjacent layer upon application of a suitable force. *Id.* ¶ [0020].

Riis also notes that "a bulk layer [is] provided to provide additional functionality such as stiffness or heat sealability or to improve machinability, cost, flexibility, barrier properties, etc." *Id.* ¶ [0065]. "Preferred bulk layers comprise one or more polyolefins such as polyethylene [(PE)], 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 [(EVA)]." *Id.* As noted in Riis, "a film as described herein may have any number of one or more [of the] layers." *Id.* ¶ [0135]. "In some embodiments [of Riis], a polyolefin bulk layer *can* serve as an adhesive or tie layer." *Id.* (emphasis added).



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

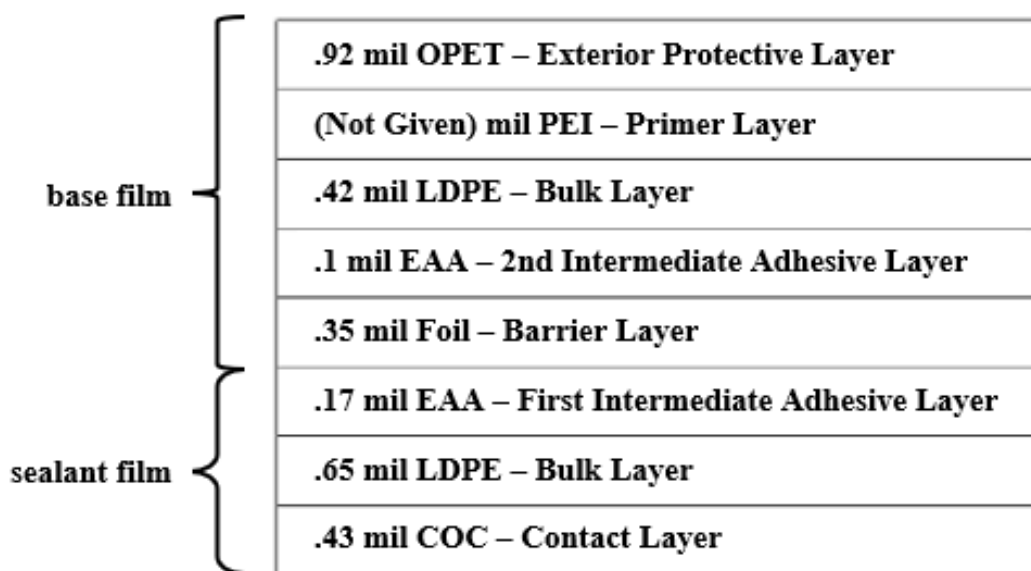
Example 5 of Riis discloses an eight-layer film having a film structure that includes a **base film** made of a .92 mil OPET layer/ a ?? mil PEI layer / a .42 mil LDPE layer/ a .1 mil EAA layer/ and a .35 mil foil layer. *Id.* ¶ [0174]. Riis discloses that adhesive layers may also be primers or specialty adhesive resins. *Id.* ¶ [0071]. Riis further discloses "anchor coating a water-based polyethyleneimine (PEI) primer (Layer 2) that was contact coated onto the corona treated side of the OPET film." *Id.* ¶ [0163]. An anchor coating is similar to a tie layer in that it promotes adhesion between layers. EX2014 ¶ 90; *see also* EX1004 ¶ [0071]. Moreover, contact coating is typically applied using a smooth roll applicator or a gravure applicator, and the typical contact coating is less than .002 mil after drying. EX2014 ¶ 90. Thus, Riis discloses that the thickness of the ?? mil PEI layer is ~.002 mil.

The film structure also includes a *sealant film* having a three-layer coextrusion of EAA, LDPE, and Ethylene-norbornene copolymer (COC) that is extrusion coated on the aluminum foil surface of the multilayer base film. EX1004, ¶ [0174]. The sealant film is made of a .17 mil EAA layer/ a .65 mil LDPE layer/ and a .43 mil COC layer. *Id.* Together the base film and sealant film result in an eight-layer film having the following structure .92 mil OPET/ ~.002 mil PEI/ .42 mil LDPE/ .1 mil EAA/ .35 mil foil/ .17 mil EAA/ .65 mil LDPE/ .43 mil COC. *Id.* Thus, adding up the thicknesses of the layers, Riis discloses the eight-layer film has a total thickness of at least 3.042 mils. *Id.* Riis rounds the total thickness of the eight-layer film down to 3.0 mils (*Id.*), which explains why Riis ignores the thickness of the ~.002 mil PEI layer for the purposes of calculating the total thickness of the eight-layer film. This is confirmed with reference to examples 1 through 4 of Riis, which similarly ignore the thickness of the ~.002 mil PEI layer in the calculation of the total thickness of the multi-layer films disclosed in examples 1 through 4. *Id.* ¶¶ [0160]–[0172].

So, Riis describes an eight-layer film that is composed of *a base film* that, among other layers, includes a .92 mil OPET layer (that primarily serves the purpose of an exterior protection layer), a ~.002 mil PEI layer (that primarily serves the purpose of a tie layer), a .42 mil LDPE layer (that primarily serves the purpose of a bulk layer), a .1 mil EAA layer (that primarily serves the purpose of a

tie layer), and a .35 mil Al foil layer (that primarily serves the purpose of an oxygen barrier layer). EX2014 ¶¶ 98–102. And *a sealant film* that includes a .17 mil EAA layer (that primarily serves the purpose of a tie layer), a .65 mil LDPE layer (that primarily serves the purpose of a bulk layer), and a .43 mil COC layer (that primarily serves the purpose of a product contacting layer), where the .17 mil EAA layer, the .65 mil LDPE layer, and the .43 mil COC layer of *the sealant film* are coextrusion coated (by way of a three-layer coextrusion) to the .35 mil Al foil layer of the base film. EX2014 ¶¶ 103–105.

The eight-layer film can be depicted and characterized as shown:



Response, Figure 1.

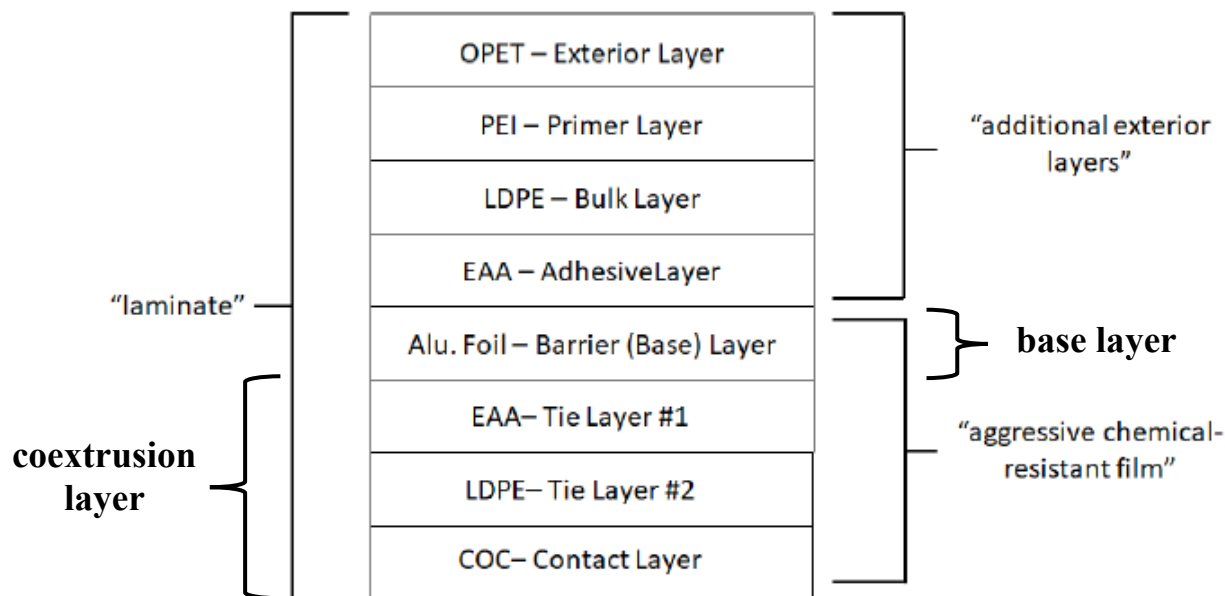
With regard to the process for forming the eight-layer film, Riis describes (1) providing the base film including, among other layers, the .35 mil Al foil layer; (2) providing the sealant film including the .17 mil EAA layer, the .65 mil LDPE

layer, and the .43 mil COC layer; and (3) coextrusion coating (by way of a three-layer coextrusion) the .17 mil EAA layer, the .65 mil LDPE layer, and the .43 mil COC layer of the sealant film onto *the .35 mil Al foil layer of the base film* to obtain the eight-layer film. EX1004 ¶¶ [0163]–[0174].

With regard to the coextrusion step disclosed in example 5, Riis does not contemplate processing parameters and material properties such as relative melting points and loading ranges (as conceded by Petitioner at pages 30 and 31 of the Petition). That is, Riis does not concern itself with determining processing parameters or material properties such as relative melting points and loading ranges that improve the processability of the eight-layer film. *See* EX2014 ¶ 107.

2. *Petitioner's Interpretation of Riis.*

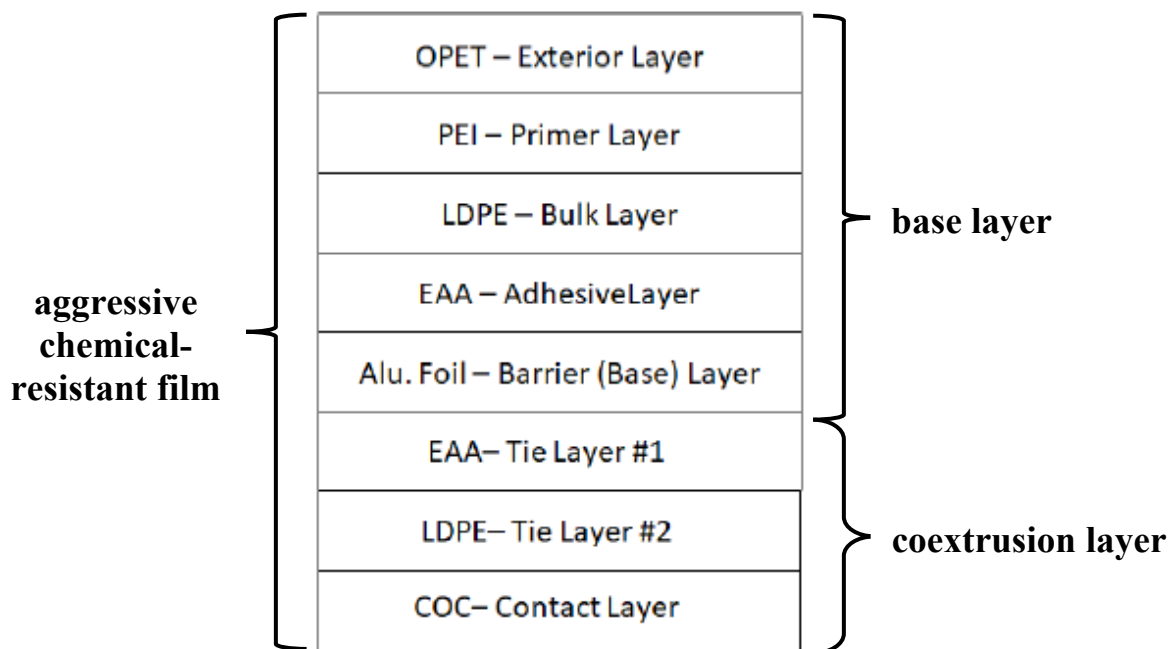
Petitioner depicts and characterizes, as applied to the issued claims of the '624 Patent, the eight-layer film disclosed in example 5 of Riis as follows:



Petition, p. 38 (annotated).

Thus, Petitioner alleges that the .35 mil Al foil "barrier" layer of the base film of the eight-layer film and the .17 mil EAA "tie" layer, the .65 mil LDPE "tie" layer (which, as set forth *infra*, would in fact be understood to be by a POSITA as a "bulk" layer), and a .43 mil COC "contact" layer of the sealant film of the eight-layer film compose the aggressive chemical-resistant film of a laminate, while the other layers compose the exterior layers of the laminate.

In the alternative, in the event "the exterior and intermediate / adhesive layers are considered part of the 'base layer,'" Petitioner depicts and characterizes, as applied to the issued claims of the '624 Patent, the eight-layer film as follows:



See Petition, p. 39.

Thus, in this second interpretation, Petitioner alleges that the entire base film and the .17 mil EAA "tie" layer, the .65 mil LDPE (alleged) "tie" layer, and the .43 mil COC "contact" layer of the sealant film compose the aggressive chemical-resistant film of a laminate.

In both interpretations, Petitioner purports that the .65 mil LDPE (polyolefin) layer that contacts the .43 mil COC layer would be characterized by one skilled in the art as a "tie" layer, rather than a "bulk" layer. Petitioner does so in opposition to the express disclosures of Riis (which confirm that one skilled in the art would understand the .65 mil LDPE layer to be serving as a bulk layer) and with scant supporting evidence (relying solely on a single sentence in paragraph [0135] of Riis stating, *in the context of the generalized six-layer film*, that a

polyolefin bulk layer *can* serve as a tie layer⁸). Petitioner otherwise provides no evidence that the .65 mil LDPE layer *in the eight-layer film is* serving as a tie layer, and in fact, Riis's own disclosures mandate that the .65 mil LDPE layer is in fact a bulk layer, as detailed below.

Though Riis does disclose, in paragraph [0135], that a polyolefin bulk layer *can* serve as a tie layer, the disclosure of Riis does not require a polyolefin bulk layer to do so, and, in the specific context of the eight-layer film, the disclosed .65 mil LDPE layer clearly serves as a bulk layer. Riis's general disclosures (not directed to the eight-layer film), do not provide any criteria for determining when a polyolefin bulk layer serves as a tie layer. Nevertheless, one skilled in the art would understand whether a polyolefin bulk layer is serving as a "tie" layer, as defined in Riis, to depend on the thickness of the polyolefin layer, the material(s) used for the polyolefin bulk layer, as well as the thickness and materials of the adjacent layers. EX2014 ¶¶ 92–95, 152–162.

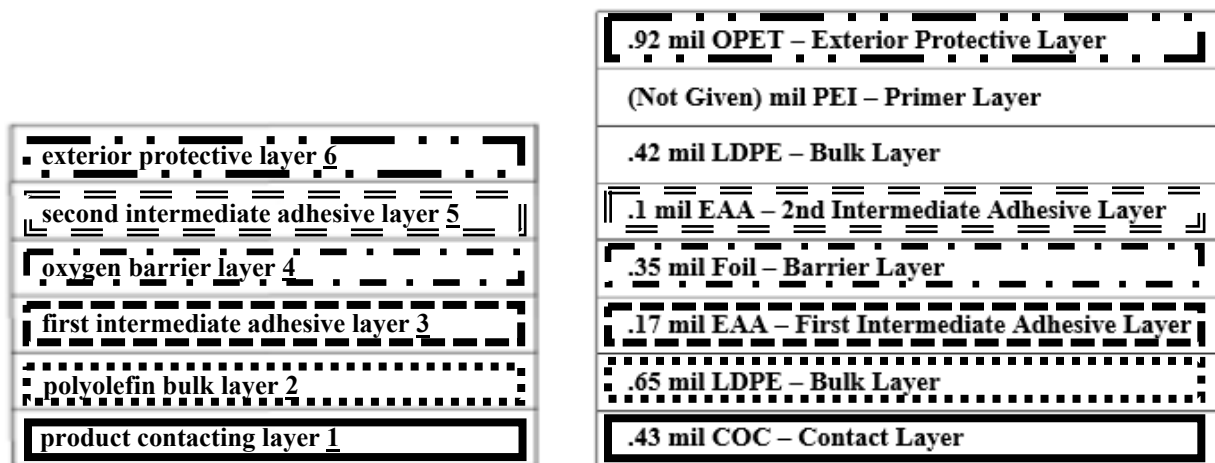
Contrary to Petitioner's assertions, there is no disclosure in Riis indicating that, *in the context of the eight-layer film disclosed in example 5*, the .65 mil LDPE layer in the sealant film is primarily serving as a tie layer (let alone serving

⁸ By using the language in paragraph [0135] of Riis to support the allegation that the .65 mil LDPE layer is serving as a tie layer, Petitioner concedes that the .65 mil LDPE layer corresponds to the polyolefin bulk layer 2 of FIG. 1 and, thus, concedes that one skilled in the art would understand the .65 mil LDPE layer to be a "bulk" layer.

a tying purpose). In fact, the express disclosure of Riis, the knowledge of one skilled in the art, and Petitioner's own interpretations of Riis confirm both that the .65 mil LDPE layer serves as a bulk layer and that the properties and configuration of the .65 mil LDPE layer are inconsistent with a tie layer for at least the following reasons.

First: Riis discloses the generalized six-layer film depicted in FIG. 1 of Riis, which generally corresponds to the eight-layer film (*see* Figure 2). 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. Given the foregoing, one skilled in the art would understand that the product contacting layer 1 corresponds to the .43 mil COC layer, *the polyolefin bulk layer 2 corresponds to the .65 mil LDPE layer*,⁹ the first intermediate adhesive layer 3 corresponds to the .17 mil EAA layer, and the oxygen barrier layer 4 corresponds to the .35 mil Al foil layer. *See* EX2014 ¶ 152.

⁹ LDPE is a type of polyolefin. EX2015, p. 158.



Response, Figure 2 (side-by-side comparison)

One skilled in the art would further understand from paragraph [0135] that a polyolefin bulk layer *can* serve as a "tie" layer. Petitioner relies exclusively on this statement to baselessly conclude that the .65 mil LDPE layer *is* serving as a "tie" layer (without any consideration for the material properties of the .65 mil LDPE layer, the thickness of the .65 mil LDPE layer, or the material properties or thicknesses of adjacent layers).¹⁰ EX1003 ¶ 82. As detailed *infra*, Dr. Spontak's attempts to cure the deficiencies of Petitioner's earlier assertions during the deposition amounted to no more than to admissions of hindsight bias and bare proclamations that Dr. Spontak "immediately" assigned the .65 mil LDPE layer to

¹⁰ As similarly noted in note 8, by extending the statement that "a polyolefin bulk layer can serve as a tie layer" to the .65 mil (polyolefin) LDPE layer, Petitioner concedes that one skilled in the art would understand the .65 mil LDPE layer to be a "bulk" layer.

be a "tie" layer of the '624 Patent — proclamations absent from his expert declaration. *See* EX2015, pp. 58, 112, 143–148.

Many types of polymers qualify as polyolefins.¹¹ *See* EX1004 ¶ [0022]. Moreover, Riis discloses that a "bulk layer may be of any suitable thickness from 0.1 to 7 mils or may even be omitted for use *in certain applications*." EX1004 ¶ [0065]. Thus, Riis discloses a nearly limitless range of possible bulk layer configurations (e.g., combinations of polyolefin(s) and thicknesses), and one skilled in the art would understand that not each of the possible bulk layer configurations would be suitable to serve as a tie layer. EX2014 ¶ 153. Thus, to determine whether an implemented polyolefin bulk layer configuration is serving as a tie layer, one skilled in the art would independently analyze that polyolefin bulk layer.¹² EX2014 ¶ 153.

For at least the following reasons, 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.

¹¹ Riis lists "polyethylene [(PE)], 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 [(EVA)], and other polymeric resins falling in the 'olefin' family classification" as preferred polyolefins for bulk layers. EX1004 ¶ [0065].

¹² It is noted that nowhere does Riis disclose that an LDPE layer can or does serve as a "tie" layer.

Second: The thickness of the .65 mil LDPE layer relative to the overall thickness of the eight-layer film. As noted above, one skilled in the art would understand the thickness of the eight-layer film to be 3.0 mils. Thus, 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]. Accordingly, to maintain consistency with Riis's disclosure, one skilled in the art would not consider the .65 mil LDPE layer as primarily serving as a tie layer and would instead acknowledge the .65 mil LDPE layer as primarily serving as a bulk layer, as defined by Riis.

As known to those skilled in the art, a thicker bulk layer (relative to the overall thickness of a multi-layer film) results in improved machinability, flexibility, structural integrity, and barrier properties. EX2014 ¶ 159; EX2015, p. 83. Given that the thickness of the .65 mil LDPE layer is 21% of the overall thickness of the eight-layer film, one skilled in the art would understand that the .65 mil LDPE layer is primarily serving as a bulk layer. *See* EX2014 ¶ 159. Moreover, 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. Thus, one skilled in the art would understand that the relative thickness of the .65 mil LDPE layer to be consistent with a desired thickness of a layer used to primarily serve as a bulk layer. EX2014 ¶ 159.

As known to those skilled in the art, 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. Thus, one skilled in the art would further understand that the relative thickness of the .65 mil LDPE layer to be inconsistent with a desired thickness of a layer primarily used to serve as a tie layer. EX2014 ¶ 160.

Third: The thickness of the .17 mil EAA tie layer relative to the overall thickness of the eight-layer film. 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. Additionally, one skilled in the art would find the thickness of the .17 mil

EAA layer to be consistent with a desired thickness of a layer that primarily serves as a tie layer. EX2014 ¶ 93; EX2015, pp. 75, 76, 79, 80.

Fourth: The relative thicknesses of the .17 mil EAA tie layer and the .65 mil LDPE bulk layer. 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.

The .65 mil LDPE layer is approximately four times as thick as the .17 mil EAA layer. Thus, the thickness (relative to the .17 mil EAA layer) of the bulk layer is consistent with a layer primarily serving as a bulk layer, and not a layer primarily serving as a tie layer. EX2014 ¶ 94.

Fifth: The combined thickness of the .17 mil EAA layer and the .65 mil LDPE 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.

Therefore, one skilled in the art would find the combined thickness of the .17 mil EAA layer and .65 mil LDPE layer to be inconsistent with Riis's disclosure in paragraph [0071] of a layer that primarily serves as a tie layer being between 2%

and 10% of the overall thickness of the eight-layer film. EX2014 ¶ 158. Moreover, one skilled in the art would find the combined thickness of the .17 mil EAA layer and .65 mil LDPE layer to be inconsistent with a desired thickness of a layer used to primarily serve as a tie layer. EX2014 ¶ 160; EX2015, pp. 75, 76, 79, 80.

Sixth: Petitioner's own interpretation of the eight-layer film. In Petitioner's depiction of Riis on page 38 of the Petition and in paragraph 144 of the Declaration of Dr. Spontak (EX1003), Petitioner acknowledges that the .42 mil LDPE layer in the base film primarily serves as a bulk layer. Petition, p. 38; EX1003 ¶ 144; EX2015, p. 145. The .42 mil LDPE layer in the base film is similarly configured to the .65 mil LDPE layer in the sealant film. That is, a thickness of the .42 mil LDPE layer is greater than 13% of the overall thickness of the eight-layer film and is approximately four times as thick as the adjacent .1 mil EAA layer. Based on the similarities between the .42 mil LDPE layer and the .65 mil LDPE layer, one skilled in the art would understand the layers to serve similar primary purposes. EX2014 ¶ 156.

Petitioner provides no explanation why one skilled in the art would interpret the analogous .65 mil LDPE "tie" layer when the Petitioner-admitted primary purpose of the .42 mil LDPE layer is as a bulk layer. *See also* EX2015, pp. 143–148. Instead, Petitioner admits to relying on hindsight reasoning in coming to this conclusion. EX2015, pp. 143–148. That is, during the deposition, Dr. Spontak

admitted that, for the lower part of the diagram (Petitioner's depiction of the eight-layer film) depicted in paragraph 144 of EX1003, the eight-layer film is taken and recast in terms of what the '624 Patent requires. EX2015, p. 143. Dr. Spontak further admits that, for the lower part of the eight-layer film, "I am assigning the [.65 mil] LDPE as part of the adhesive." EX2015, p. 145. And additionally states that for the .65 mil LDPE layer in the lower portion ("which is the basis for the '624 Patent, I don't consider it to be used for a mechanical-property basis . . . [but] assume[] that it is part of the adhesive layer." EX2015, p. 148. Doctor Spontak also admits, at page 58 of EX2015, to "immediately assigning the .65 mil LDPE layer as an adhesive layer" and similarly admits, at page 112 of EX2015, to "immediately" assigning the .65 mil LDPE layer as an adhesive layer when it was situated between the contact layer and the EAA layer. Thus, to date, the only support provided by Petitioner for the idea that the .65 mil LDPE layer is serving as a "tie" layer is (1) a single sentence in paragraph [0135] of Riis noting that "a polyolefin bulk layer *can* serve as a tie layer" (emphasis added) and (2) Dr. Spontak's baseless and immediate assumptions that were admittedly, and improperly, influenced by the '624 Patent.

For the upper "exterior layer" portion, Dr. Spontak's analysis was performed without the influence of the '624 Patent. EX2015, pp. 143, 144. It is telling that without the influence of the '624 Patent, Dr. Spontak identified the analogous .42

mil LDPE layer as a "bulk" layer. EX1003 ¶ 144. That is, despite all its similarities with the .65 mil LDPE layer, Dr. Spontak did not "immediately" assign the .42 mil LDPE layer as a "tie" layer. Instead, the first time Dr. Spontak even suggested that the .42 mil LDPE layer could be a part of an adhesive layer was only after being directly presented with this inconsistency at the end of his deposition. EX2015, p. 144.

Seventh: Riis teaches away from using multiple adjacent tie layers. Specifically, Riis notes that adhesive layers (also known as tie layers) are "selected to promote the adherence of *adjacent* layers to one another in a multilayer film and to prevent undesirable delamination." EX1004 ¶ [0071] (emphasis added). "A multifunctional [adhesive] 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 [multifunctional adhesive] layer to the first and second layers [— i.e., multifunctional] adhesive layers comprise materials found in both the first and second layers." *Id.* (emphasis added). Thus, Riis discloses that the use of a *single* multifunctional adhesive layer is preferred.

The .17 mil EAA layer can be used to adhere a polar Al layer to a non-polar layer. EX2014 ¶ 160. Both the .65 mil LDPE layer and the .43 mil COC layer are non-polar layers, and the .17 mil EAA layer can be used to adhere the .35 mil Al foil layer directly to the .65 mil LDPE layer or directly to the .43 mil COC layer.

EX2014 ¶¶ 86, 160, 163. Thus, one skilled in the art would characterize the .17 mil EAA layer as a multifunctional layer. EX2014 ¶ 86. Moreover, using the .65 mil LDPE layer as an additional adhesive layer between the .17 mil layer and the .43 mil COC layer would be inconsistent with Riis's stated preference for a single multifunctional adhesive layer. EX2014 ¶ 86.

Eighth: Riis teaches away from having an LDPE layer primarily serve as a tie layer. Though Riis discloses that a polyolefin bulk layer can serve as a tie layer, nowhere does Riis disclose that an LDPE layer can serve as a tie layer. Moreover, having an LDPE layer serve as a tie layer in the context of example 5 would be inconsistent with Riis's express preference for a single, multi-functional tie layer. That is, 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 multifunctional 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. Accordingly, one skilled in the art would not characterize the .65 mil LDPE layer as a multifunctional adhesive layer. EX2014 ¶ 161. Therefore, Riis's disclosed preference for a single multi-functional tie layer teaches away from characterizing an LDPE layer (let alone the .65 mil LDPE layer) as an "adhesive" layer as defined in paragraph [0071] of Riis.

Moreover, as noted herein, one skilled in the art would understand and refer to a layer based on its primary purpose. To determine whether a layer of a multi-layer film is serving a primary purpose (such as tying two layers together), one skilled in the art could remove that layer and test the multi-layer film to determine whether the performance of the multi-layer film was improved, unchanged, or worsened, in that aspect — e.g., is the adhesion between the two layers improved, unchanged, or worsened. If the performance of the multi-layer film is improved or unchanged, one skilled in the art would understand that the primary purpose of the removed layer is not directed to that aspect. In Riis, if one skilled in the art were to remove the .65 mil LDPE layer, the skilled artisan would find that the .17 mil EAA layer provides improved adhesion between the .35 Al foil layer and the .43 COC layer without the presence of the .65 mil LDPE layer — due to the properties (e.g., thickness, material, etc.) of the .65 mil LDPE layer. EX2014 ¶ 94. Thus, one skilled in the art would not understand the .65 mil LDPE layer to be serving as a tie layer.

As further evidence that the .65 mil LDPE layer is not primarily serving as a tie layer (as defined in Riis), the .65 mil LDPE layer is not "peelable." That is, Riis discloses in paragraph [0020] that tie layers may be peelable. However, in paragraph [0065], Riis discloses that a polyolefin bulk layer is used to improve heat sealability and would, thus, not constitute a peelable layer.

Taken together, the express disclosure of Riis, Petitioner's own interpretation of Riis, and the knowledge of one skilled in the art, it is evident that the relatively thick .65 mil LDPE layer of the eight-layer film is primarily serving the purpose of a bulk layer, while the relatively thin .17 mil EAA layer is primarily serving the purpose of a multifunctional tie layer. EX2014 ¶ 163.

Dr. Spontak's explanations during the deposition failed to cure Petitioner's deficient allegation that one skilled in the art would understand the .65 mil LDPE layer to be serving as a "tie" layer, and instead, further undermine Petitioner's strained reading of the same. EX2015, pp. 58, 59, 82, 100–105, 111, 112, 117, 119, 120. That is, in response to Patent Owner's request for Dr. Spontak to explain why one skilled in the art would consider the .65 mil LDPE layer a "tie" layer and not a "bulk" layer, Dr. Spontak launched into an explanation 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 explained that his provided 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.

Dr. Spontak's explanation simply cannot be squared with the express disclosure of Riis. That is, 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]. Riis is entirely silent with regard to the alternative definition of the term "bulk" manufactured by Dr. Spontak during the deposition. Moreover, for every other layer in the six-layer film disclosed in paragraph [0135], Riis describes each layer in terms of its primary purpose — i.e., a *product contacting* layer, a polyolefin *bulk* layer, an *intermediate adhesive* layer, an *oxygen barrier* layer, etc. It is nonsensical to suggest that, solely for the polyolefin bulk layer, the Board should ignore the term "bulk" and replace it with this alternative, non-functional definition manufactured by Dr. Spontak which would render the term "bulk" as used in Riis meaningless.

Furthermore, after denying that the .65 mil LDPE layer is a "bulk" layer outright, Dr. Spontak provided only bare assertions supporting the assertion that the .65 mil LDPE layer is serving as a "tie" layer. That is, Dr. Spontak merely asserted that he "immediately" considered the .17 mil EAA layer and .65 mil LDPE layer to be a part of a tie layer when he saw the .65 mil LDPE layer was situated between the .17 mil EAA layer and the .43 mil COC layer. EX2015, pp. 59, 112, 113. Dr. Spontak further stated that, though LDPE can have an effect on

the bulk mechanical properties of a film, "that didn't seem to be of concern here" and that "I didn't consider those other effects, as I was directing my opinions strictly to the '624 Patent." EX2015, p. 113. In other words, Dr. Spontak forewent critical analysis of the .65 mil LDPE layer (giving no thought to the effects of the .65 mil LDPE layer on the eight-layer film) to "immediately" achieve a preordained and desired result — to arrive at the invention claimed in the '624 Patent — driven exclusively by hindsight analysis.

Returning to Petitioner's interpretation of Riis, 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 (alleging that the eight-layer film "discloses the entirety of the claimed invention except for specific material properties such as loading ranges and the relative melting points of the component tie layer and contact layer"). After conceding that Riis does not disclose the loading ranges and relative melting points of the component tie layer and contact layer, Petitioner alleges that one skilled in the art would have "found it obvious to *construct example 5 of Riis* using the components identified by Riis, which would have had the claimed material properties." *Id.* (emphasis added). Petitioner further alleges that "a skilled artisan would have been motivated to . . . *recreate the [eight-layer] film of Example 5* and

would have had a reasonable expectation of doing so to arrive at the claimed invention." *Id.*, p. 43 (emphasis added). More specifically, Petitioner alleges that one skilled in the art would arrive at the claimed invention by recreating (without modification) the eight-layer film based on applying material properties obtained from Wypych or Tatarka to the layers of the eight-layer film. *Id.*, pp. 35, 41–43, 46, 48.¹³

3. Riis fails to render obvious independent claim 1.

a) 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 claim 1.

As set forth in § V.A.1, *supra*, Riis discloses an eight-layer film that includes a .35 mil Al layer (that primarily serves as a barrier layer), a .17 EAA layer (that primarily serves as a tie layer), a .65 mil LDPE layer (that primarily serves as a bulk layer), and a .43 mil COC layer (that primarily serves as a contact layer), in that order. As noted in § V.A.2, *supra*, Petitioner alleges, without evidence, that the .65 mil LDPE layer would be understood by one skilled in the art to be a "tie" layer. However, as shown in § V.A.2, *supra*, the express disclosure of Riis, the knowledge of one skilled in the art, and Petitioner's own interpretation of

¹³ In the first 35 U.S.C. 103 allegation, Petitioner asserts both Wypych (Petition, pp. 35, 41, 42, 46, 48) and Tatarka (*Id.*, p. 46) to reference relevant material properties. By referencing the other asserted 35 U.S.C. 103 references (Wypych and Tatarka) in Ground II, Petitioner implicitly concedes that, using Riis as a starting point, the knowledge of one skilled in the art, alone, is insufficient to render the claimed invention obvious and, thus, that Ground II fails.

Riis confirm that the .65 mil LDPE layer primarily serves as a bulk layer and would be understood by one skilled in the art as a "bulk" layer. Furthermore, as noted in § V.A.2, *supra*, Petitioner provides no evidence that the .65 mil LDPE "bulk" layer can serve, or is serving, as a "tie" layer.

Therefore, 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*.

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 has a loading of 15.11 g/m² to 15.34 g/m²*. *Id.*, p. 42.

Since the .65 mil LDPE layer primarily serves as a bulk layer, one skilled in the art would not include the loading of the .65 mil LDPE layer within the calculation of the loading of the tie layer in the coextrusion layer of the eight-layer film. EX2014 ¶ 165. Thus, the loading of the tie layer in the coextrusion layer of the eight-layer film is limited to the loading of the .17 mil EAA layer. EX2014 ¶ 165.

But 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 independent claim 1.

b) Riis fails to teach or suggest a "coextrusion layer consisting of [a] tie layer[] and . . . [a] contact layer," as recited in independent claim 1.

As set forth *supra* § V.A.3.a), the coextrusion layer of Riis includes a .17 mil EAA layer (that primarily serves as a tie layer), a .65 mil LDPE layer (that primarily serves as a bulk layer), and a .43 mil COC layer (that primarily serves as a contact layer).

But a coextrusion layer that includes a "***tie***" ***layer***, a "***bulk***" ***layer***, and a "***contact***" ***layer***, as described in Riis, 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).

As noted in *Multilayer Stretch Cling Film Holdings, Inc. v. Berry Plastics Corp.*, 831 F.3d 1350, 1359 (Fed. Cir 2016), when the phrase "consists of" appears in a clause of the body of a claim, rather than immediately following the preamble, there is an "exceptionally strong presumption that a claim term set off with 'consisting of' is closed to unrecited elements." MPEP § 2111.03(II). Accordingly, "a coextrusion layer ***consisting of*** [a] tie layer[] and . . . [a] contact layer," as recited in independent claim 1 (emphasis added) is closed to other layers, such as a "bulk" layer.

c) 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.

Petitioner alleges that the eight-layer film "discloses the entirety of the claimed invention *except for specific material properties such as loading ranges and the relative melting points* of the component tie layer and contact layer."

Petition, pp. 30, 31, lns. 17–4 (emphasis added). After conceding that Riis does not disclose the loading ranges and relative melting points of the component tie layer and contact layer, Petitioner alleges that one skilled in the art would have "found it obvious to *construct example 5* of Riis using the components identified by Riis, which would have had the claimed material properties." *Id.* (emphasis added).

Petitioner further alleges that "a skilled artisan would have been motivated to . . . *recreate the [eight-layer] film of Example 5* and would have had a reasonable expectation of doing so to arrive at the claimed invention." *Id.*, pp. 43 (emphasis added); *see also id.*, pp. 44, 53. It is this replication of the eight-layer film (without modification) that Petitioner alleges renders the claims of the '624 Patent obvious. *See id.*, pp. 30–53 (which reference the eight-layer film of example 5 at least 48 times); *see also* EX2015, pp. 128, 129, 131, 134.

After recreating the eight-layer film, Petitioner does not contemplate any modification to any aspect of the eight-layer film, let alone to the loading ranges and melting characteristics of the layers, or the configuration of the layers

themselves. That is, Petitioner fails to contemplate changing loadings of the layers of the recreated eight-layer film, changing the melting points of the layers of the recreated eight-layer film, adding or removing layers of the recreated eight-layer film, or the like. Nor does Petitioner consider how such changes would affect the other layers, or the overall performance, of the eight-layer film. Petitioner additionally fails to articulate any reasons as to why one skilled in the art would be motivated to modify any aspect of the recreated eight-layer film, let alone any one aspect (e.g., layer) of the recreated eight-layer film, the components and properties (e.g., thicknesses) of which were carefully and intentionally selected to form a completed multi-layer film. EX2014 ¶ 173.

d) Petitioner's failure 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 precludes Petitioner from providing any arguments in support of modifying the recreated eight-layer film in its Reply to this Response.

37 CFR 42.23(b) provides that "[a] reply may only respond to arguments raised in the . . . patent owner preliminary response, patent owner response, or decision in institution." As stated in the Patent Trial Practice Guide, Petitioner "may not submit new evidence or argument in reply that it could have presented earlier, e.g. to make out a prima facie case of unpatentability." Patent Trial and Appeal Board Consolidated Trial Guide, p. 73, § II.I (Nov. 2019); *see also Cisco System, Inc. v. Finjan, Inc.*, Case IPR2018-00391, slip op. at 38 (PTAB May 23,

2019) (Paper 33) *citing SAS Inst., Inc. v. Iancu*, 138 S. Ct. 1348, 1355 (2018) (the Board refusing to allow the petitioner to rely on a new reason-to-combine argument that was presented previously in the petition).

Petitioner's failure to provide any arguments in support of modifying the recreated eight-layer film (or of any motivation to modify the recreated film of Riis) precludes Petitioner from alleging, in its Reply, that the deficiencies of the eight-layer film may be overcome by modifying the material properties (e.g., loadings or melting points) of the layers of the recreated eight-layer film to arrive at the aggressive chemical-resistant film claimed in the '624 Patent.

Moreover, neither Patent Owner's preliminary response, Patent Owner's Response, nor the Decision in Institution addresses modifying material properties (e.g., loadings or melting points) of the recreated eight-layer film (nor of any motivation to modify the recreated film).

Thus, for the purposes of this proceeding, Riis is constrained to only those loadings and melting points that are derivable from the materials that are disclosed in the eight-layer film. And Riis is similarly constrained to the layer configurations of the eight-layer film.

Accordingly, Petitioner's arguments stand or fall on whether the *unmodified* recreation of the eight-layer film (by one skilled in the art using material properties

for the layers obtained from Wypych and Tatarka) discloses the aggressive chemical-resistant film claimed in the '624 Patent.

e) The .65 mil LDPE layer in the coextrusion layer of the unmodified eight-layer film disclosed in example 5 of Riis primarily serves the purpose of a bulk layer. Thus, the unmodified recreation of the eight-layer film fails to disclose the aggressive chemical-resistant film claimed in the '624 Patent.

As set forth in § V.A.3.a), *supra*, the .65 mil LDPE layer primarily serves the purpose of a bulk layer, and one skilled in the art would not include the loading of the .65 mil LDPE layer within the calculation of the loading of the tie layer in the coextrusion layer of the eight-layer film. Accordingly, the coextrusion layer including the .17 mil EAA tie layer of the sealant film having a loading of 3.97 to 4.15 g/m², as described in Riis, fails to disclose 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 claim 1.

Also, as set forth in § V.A.3.b), *supra*, the coextrusion layer of Riis includes a .17 mil EAA layer (that primarily serves as a tie layer), a .65 mil LDPE layer (that primarily serves as a bulk layer), and a .43 mil COC layer (that primarily serves as a contact layer). Accordingly, the coextrusion layer that includes a "***tie***" ***layer***, a "***bulk***" ***layer***, and a "***contact***" ***layer***, as described in Riis, 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).

Accordingly, Petitioner's arguments fail at least because the *unmodified* recreation of the eight-layer film (by one skilled in the art using material properties for the layers obtained from Wypych and Tatarka) fails to disclose the aggressive chemical-resistant film claimed in the '624 Patent.

4. Riis fails to render obvious independent claim 13.

a) 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 claim 13.

As set forth in § V.A.3.a), *supra*, the .65 mil LDPE layer primarily serves the purpose of a bulk layer, and one skilled in the art would not include the loading of the .65 mil LDPE layer within the calculation of the loading of the tie layer in the coextrusion layer of the eight-layer film. Accordingly, the coextrusion layer including the .17 mil EAA tie layer of the sealant film having a loading of 3.97 to 4.15 g/m², as described in Riis, fails to disclose 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 claim 13.

b) Riis fails to teach or suggest a "coextrusion layer consisting of [a] tie layer[] and . . . [a] contact layer," as recited in independent claim 13.

As set forth in § V.A.3.b), *supra*, the coextrusion layer of Riis includes a .17 mil EAA layer (that primarily serves as a tie layer), a .65 mil LDPE layer (that primarily serves as a bulk layer), and a .43 mil COC layer (that primarily serves as a contact layer). Accordingly, the coextrusion layer that includes a "*tie*" layer, a

"**bulk**" **layer**, and a "**contact**" **layer**, as described in Riis, fails to teach or suggest "a coextrusion layer **consisting of** [a] tie layer[] and . . . [a] contact layer," as recited in independent claim 13 (emphasis added).

c) 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.

As similarly set forth in § V.A.3.c), *supra*, Petitioner does not provide any arguments supporting the modification of (and articulate any reason why one skilled in the art would have modified) the eight-layer film to arrive at the aggressive chemical-resistant film claimed in independent claim 13.

d) Petitioner's failure 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 precludes Petitioner from providing any arguments in support of modifying the recreated eight-layer film in its Reply to this Response.

As set forth in § V.A.3.d), *supra*, Petitioner's failure to include such arguments in its Petition precludes Petitioner from asserting new arguments supporting the modification of (and of a motivation to modify) the eight-layer film in its Reply. Thus, Petitioner's arguments stand or fall on whether the **unmodified** recreation of the eight-layer film (by one skilled in the art using material properties for the layers obtained from Wypych and Tatarka) discloses the aggressive chemical-resistant film claimed in the '624 Patent.

e) The .65 mil LDPE layer in the coextrusion layer of the unmodified eight-layer film disclosed in example 5 of Riis primarily serves the purpose of a bulk layer. Thus, the unmodified recreation of the eight-

layer film fails to disclose the aggressive chemical-resistant film claimed in the '624 Patent.

As set forth in § V.A.3.e), *supra*, the .65 mil LDPE layer primarily serves the purpose of a bulk layer, and one skilled in the art would not include the loading of the .65 mil LDPE layer within the calculation of the loading of the tie layer in the coextrusion layer of the eight-layer film of Riis to disclose 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 claim 13. Also, the coextrusion layer of Riis includes a .17 mil EAA layer (that primarily serves as tie layer), a .65 mil LDPE layer (that primarily serves as a bulk layer), and a .43 mil COC layer (that primarily serves as a contact layer), which fails to teach or suggest "a coextrusion layer ***consisting of*** [a] tie layer[] and . . . [a] contact layer," as recited in independent claim 13 (emphasis added).

5. Riis fails to render obvious dependent claim 4.

Dependent claim 4 is reproduced below.

4. *The method according to claim 1, wherein the contact layer has a loading in the range of 4 to 20 g/m².*

a) 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).

As set forth in § V.A.3.a), *supra*, contrary to Petitioner's assertion that the .65 mil LDPE layer primarily serves as a tie layer, the .65 mil LDPE layer

primarily serves as a bulk layer, and one skilled in the art would not include the loading of the .65 mil LDPE layer within the calculation of the loading of the tie layer in the coextrusion layer of the eight-layer film.

As set forth in § V.A.2, *supra*, the .65 mil LDPE layer is used as a low-cost means for extending and strengthening the .43 mil COC layer (e.g., to remove machinability, flexibility, and barrier properties) and, thus, is consistent with a layer that primarily serves as a bulk layer.

Given the primary purpose of the .65 mil LDPE layer as a bulk layer, if asked to characterize the .65 mil LDPE layer as part of a tie layer or a contact layer of the eight-layer film, one skilled in the art would characterize the .65 mil LDPE as a layer of the contact layer. EX2014, p. 188.

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 has a loading of 15.11 g/m² to 15.34 g/m². Id., p. 42.*** Petitioner further provides that COC has a density in the range of 1.00 to 1.08 g/cm³. *Id.*, p. 48. Thus, by Petitioner's calculations, Riis discloses that ***the .43 mil COC "contact" layer has a loading of 10.92 to 11.80 g/m². Id.***

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).

Moreover, if the .65 mil LDPE layer is construed as a layer of the contact layer, a contact layer having a combined loading of 26.03 g/m² to 27.14 g/m², as described in Riis, fails to teach or suggest a coextrusion layer consisting of a "contact layer [that] has 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).

Furthermore, a coextrusion layer that includes a "*tie*" *layer*, a "*bulk*" *layer*, and a "*contact*" *layer*, as described in Riis, fails to teach or suggest "a coextrusion layer *consisting of* [a] tie layer[] and . . . [a] contact layer," as recited in dependent claim 4 (by way of incorporation of independent claim 1) (emphasis added). Let alone "a coextrusion layer consisting of [a] tie layer [having a loading in the range of 7 to 20 g/m²] and . . . [a] contact layer [having 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).

As similarly set forth in §§ V.A.3.c) and V.A.3.d), *supra*, Petitioner does not provide any arguments supporting the modification of (and articulate any reason why one skilled in the art would have modified) the eight-layer film to arrive at the

aggressive chemical-resistant film claimed dependent claim 4. Furthermore, Petitioner's failure to include such arguments in its Petition precludes Petitioner from asserting new arguments supporting the modification of (and of a motivation to modify) the eight-layer film in its Reply.

6. Riis fails to render obvious dependent claims 5 through 12¹⁴.

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. The above discussion, including those related to definiteness, non-obviousness, and motivations to combined are incorporated herein, as if set forth in full. Also, dependent claims 5 through 12 recite additional features that are not taught or suggested by Riis.

B. Riis, Wypych, Tatarka, or any combination thereof, fails to render the claims of the '624 Patent obvious under 35 U.S.C. 103.

In the third alleged ground of unpatentability, Petitioner alleges that the combination of Riis with Wypych, and Tatarka renders claims 1 through 13 of the '624 Patent obvious under 35 U.S.C. 103. Petition, p. 53.

1. Riis, Wypych, and Tatarka — alone or in any combination — fail to render obvious independent claims 1 and 13.

For at least the reasons stated in § V.A, *supra*, Riis fails to teach or suggest the features recited in claims 1 through 13 of the '624 Patent. As acknowledged in

¹⁴ Claims 2 and 3 are unconditionally canceled without prejudice or disclaimer in the Motion to Amend. Given the cancellation of claims 2 and 3, Petitioner's arguments regarding claims 2 and 3 are rendered moot.

the Petition, Wypych and Tatarka are simply used to provide material properties for the eight-layer film disclosed in Riis. Petition, p. 80. Because the addition of Wypych and Tatarka does not alter the 35 U.S.C. 103 analysis in § V.A, *supra*, it follows that Riis, Wypych, Tatarka, or any combination thereof similarly fails to render obvious claims 1 through 13 of the '624 Patent.

a) Riis, Wypych, and Tatarka — alone or in any combination — fail 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.

As set forth in § V.A.3.a), *supra*, the .65 mil LDPE layer of Riis primarily serves as a bulk layer, and one skilled in the art would not include the loading of the .65 mil LDPE layer within the calculation of the loading of the tie layer in the coextrusion layer of the eight-layer film. Accordingly, the coextrusion layer including the .17 mil EAA tie layer of the sealant film of Riis having a loading of 3.97 to 4.15 g/m² (as calculated using Wypych) fails to disclose 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 does not use Tatarka to teach or suggest loading ranges of the tie layer.

b) Riis, Wypych, and Tatarka — alone or in any combination — fail to teach or suggest "a coextrusion layer consisting of [a] tie layer[] and . . . [a] contact layer," as recited in independent claims 1 and 13.

As set forth in § V.A.3.b), *supra*, the coextrusion layer of Riis includes a .17 mil EAA layer (that primarily serves as a tie layer), a .65 mil LDPE layer (that primarily serves as a bulk layer), and a .43 mil COC layer (that primarily serves as a contact layer). Accordingly, the coextrusion layer that includes a "***tie***" layer, a "***bulk***" layer, and a "***contact***" layer, as described in 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 (emphasis added).

As noted, Wypych and Tatarka are simply used to provide properties of specific materials used in the eight-layer film disclosed in Riis and not to disclose "a coextrusion layer consisting of [a] tie layer[] and . . . [a] contact layer," as recited in independent claims 1 and 13.

c) Petitioner fails to provide any arguments supporting modifying (and of a motivation to modify) the recreation of the eight-layer film disclosed in example 5 of Riis (in view of Wypych and/or Tatarka).

As similarly set forth in § V.A.3.c), *supra*, Petitioner does not provide any arguments supporting the modification of (and articulate any reason why one skilled in the art would have modified) the eight-layer film to arrive at the aggressive chemical-resistant film claimed in independent claims 1 and 13.

Moreover, Wypych and Tatarka are merely asserted to allegedly provide those material properties but do not otherwise alter the eight-layer film of Riis or

Petitioner's arguments made in the first 35 U.S.C. 103 allegation. Petition, p. 80 (stating "the rationale to combine the disclosure of Riis with the material properties provided by Wypych and Tatarka is simply to provide relevant and applicable material properties one of ordinary skill in the art would look to").

d) Petitioner's failure 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 precludes Petitioner from providing any arguments in support of modifying the recreated eight-layer film in its Reply to this Response.

As set forth in § V.A.3.d), *supra*, Petitioner's failure to include such arguments in its Petition precludes Petitioner from asserting new arguments supporting the modification of (and of a motivation to modify) the eight-layer film in its Reply.

Thus, Petitioner's arguments stand or fall on whether the ***unmodified*** recreation of the eight-layer film (by one skilled in the art using material properties for the layers obtained from Wypych and Tatarka) discloses the aggressive chemical-resistant film claimed in the '624 Patent.

e) The .65 mil LDPE layer in the coextrusion layer of the unmodified eight-layer film disclosed in example 5 of Riis primarily serves the purpose of a bulk layer. Thus, the unmodified recreation of the eight-layer film fails to disclose the aggressive chemical-resistant film claimed in the '624 Patent.

As set forth in § V.A.3.e), *supra*, the .65 mil LDPE layer primarily serves as a bulk layer, and one skilled in the art would not include the loading of the .65 mil LDPE layer (as calculated using Wypych) within the calculation of the loading of

the tie layer in the coextrusion layer of the eight-layer film of Riis to disclose 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. Also, the coextrusion layer of Riis includes a .17 mil EAA layer (that primarily serves as a tie layer), a .65 mil LDPE layer (that primarily serves as a bulk layer), and a .43 mil COC layer (that primarily serves as a contact layer), which 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 (emphasis added).

2. Riis, Wypych, and Tatarka — alone or in any combination — fail to render obvious dependent claim 4.

Dependent claim 4 is reproduced below.

4. *The method according to claim 1, wherein the contact layer has a loading in the range of 4 to 20 g/m².*

a) Riis, Wypych, and Tatarka — alone or in any combination — fail 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).

As set forth in § V.A.5.a), *supra*, the coextrusion layer including the .17 mil EAA layer having a loading of 3.97 to 4.15 g/m², as described in Riis (and calculated using Wypych), 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).

Moreover, if the .65 mil LDPE layer is construed as a layer of the contact layer, a contact layer having a combined loading of 26.03 g/m² to 27.14 g/m², as described in Riis, fails to teach or suggest a coextrusion layer consisting of a "contact layer [that] has 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).

Furthermore, a coextrusion layer that includes a "*tie*" layer, a "*bulk*" layer, and a "*contact*" layer, as described in Riis, fails to teach or suggest "a coextrusion layer *consisting of* [a] tie layer[] and . . . [a] contact layer," as recited in dependent claim 4 (by way of incorporation of independent claim 1) (emphasis added). Let alone "a coextrusion layer consisting of [a] tie layer [having a loading in the range of 7 to 20 g/m²] and . . . [a] contact layer [having 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).

As similarly set forth in §§ V.A.3.c) and V.A.3.d), *supra*, Petitioner does not provide any arguments supporting the modification of (and articulate any reason why one skilled in the art would have modified) the eight-layer film to arrive at the aggressive chemical-resistant film claimed dependent claim 4. Furthermore, Petitioner's failure to include such arguments in its Petition precludes Petitioner from asserting new arguments supporting the modification of (and of a motivation to modify) the eight-layer film in its Reply.

3. Riis, Wypych, and Tatarka — alone or in any combination — fail to render obvious dependent claims 5 through 12¹⁵.

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. The above discussion, including those related to definiteness, non-obviousness, and motivations to combined are incorporated herein, as if set forth in full. Also, dependent claims 5 through 12 recite additional features that are not taught or suggested by Riis.

VI. CONCLUSION

Patent Owner respectfully requests that the Board confirm the patentability of the challenged claims for the reasons stated herein.

Respectfully submitted on behalf of DANAPAK FLEXIBLES A/S on
September 12, 2023, by:

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¹⁵ See note 14.

CERTIFICATE OF COMPLIANCE

Pursuant to 37 C.F.R. 42.24(d), the undersigned certifies that this patent owner response (“Response”) to the petition requesting post-grant review complies with the type-volume limitation of 37 C.F.R. § 42.24(b)(2) of 18,700 words. 37 C.F.R. 42.24(a) provides that the word count does not include a table of contents, a table of authorities, mandatory notices, a certificate of service or word count, or appendix of exhibits or claim listing. The word count application of the word processing program used to prepare this Response indicates that the Response contains 18,590 words, excluding the parts of the Response exempted by 37 C.F.R. § 42.24(a)(1).

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CERTIFICATE OF SERVICE

I, Steven A. Avena, hereby certify that a copy of the foregoing **PATENT OWNER'S RESPONSE** has been served on the attorneys of record of Petitioner Huhtamaki Flexible Packaging Germany GmbH & Co. KG electronically by email as of today, September 12, 2023, at the following electronic addresses:

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