

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

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

v.

ADAPA FLEXIBLES DENMARK SLAGELSE A/S,
Patent Owner.

PGR2023-00008
Patent 11,260,624

**PATENT OWNER'S SUR-REPLY TO PETITIONER'S REPLY TO
PATENT OWNER'S RESPONSE**

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PTAB Consolidated Trial Guide, 73, § II.I (Nov. 2019).....	21

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

I. INTRODUCTION

On December 5, Petitioner replied to Patent Owner's ("Adapa's") Response filed September 12. In its Reply, Petitioner attacks "straw man" positions it self-manufactured for Adapa; fails to refute Adapa's actual positions; makes assertions that are directly refutable by Dr. Spontak¹; makes selective omissions; and impermissibly introduces new arguments.

In this Sur-Reply, Adapa (1) sets forth the plain and ordinary meaning ("POM") of the claimed "tie layer" applied by Dr. McCarthy², as demonstrated in Dr. McCarthy's declaration and testimony, the testimony of Dr. Spontak, and Riis; (2) confirms that the .65 mil LDPE layer's primary purpose in the film of Riis's Example 5 ("Film") is as a bulk layer; (3) confirms that the level of ordinary skill for the '624 Patent requires hands-on experience; and (4) demonstrates that Petitioner's Barex argument is impermissible and fails on the merits.

II. THE PLAIN AND ORDINARY MEANING OF "TIE LAYER"

In Section II of the Reply, Petitioner manufactures a *construction*³ of the claimed⁴ "tie layer" for Adapa and then rejects this manufactured construction as

¹ Petitioner's expert

² Adapa's expert.

³ Petitioner mistakenly alleges Adapa has *construed* the term "tie layer;" however, the parties have agreed to use the POM of "tie layer" so no *construction* is needed, nor has one been provided by Adapa, for "tie layer."

⁴ In the '624 Patent.

overly narrow. Reply, 4–8. Particularly, Petitioner alleges that, under Adapa's **POM** of tie layer in a multi-layer film ("film"), a tie layer must be limited to (i.e., **solely** serve) its primary purpose and can serve no other purpose. *See id.*, 5.

To be clear, Adapa never proffered the construction that Petitioner attempts to attack, rendering Petitioner's arguments on this issue entirely misplaced. Rather, the POM for the claimed tie layer, as applied by Adapa's expert, Dr. McCarthy, is as follows.

A. Applying *Phillips*, which requires the '624 Patent's terms to be viewed through a POSITA's eyes, Riis, Dr. McCarthy, and Dr. Spontak all confirm that the POM of "tie layer" is a layer (1) that serves the primary purpose of providing sufficient adhesion between adjacent layers; (2) that has properties known by a POSITA as being consistent with serving that purpose; and (3) for which a primary reason for including the layer in the film was to serve that purpose.

Phillips requires that the POM of a claim term be determined in the context of the entire patent **and** a POSITA's understanding of the claim term. *Phillips v. AWH Corp.*, 415 F.3d 1303, 1313 (Fed. Cir. 2005) (when determining the "ordinary and customary" meaning of claim terms, a POSITA "is deemed to read the claim term . . . ***in the context of the entire patent***;" "it is the [POSITA] ***through whose eyes the claims are construed***;" "[s]uch person is deemed to read the words used in the patent documents ***with an understanding of their meaning in the field***" (emphasis added)⁵). *Id.*

⁵ Emphasis added throughout this Sur-Reply unless otherwise noted.

The '624 Patent specification provides that a tie layer provides sufficient adhesion between adjacent layers of a film (specifically with reference to the base layer and the coextrusion layer). EX1001, 4:35–37. Riis, Dr. McCarthy's declaration and testimony, and Dr. Spontak's declaration and testimony all agree on this point. However, as mandated by *Phillips*, the analysis for determining the POM of the tie layer does not end with reading a single sentence of the '624 Patent, as Petitioner would have the Board believe. Instead, a POSITA's understanding of a tie layer must also be considered.

To that end, Riis, Dr. McCarthy's declaration and testimony, *and* Dr. Spontak's testimony *all* provide that tie layers have particular characteristics (e.g., thickness and material properties) that render a tie layer suitable for providing sufficient adhesion between adjacent layers. For example, all sources agree that a tie layer is a thin layer in a film, where "thin" would be understood by a POSITA as being thin relative to the other layers in the film and/or the entire film. *See* EX1004 ¶ [0071]; EX2014 ¶ 160; EX2015, 75:10–20 (Dr. Spontak acknowledging that "the adhesive layer in any laminated . . . structure, for the purpose of adhesion, should be *relatively thin compared to the other layers* comprising the structure of interest . . . should *be relatively thin compared to the entire structure*"), 76:7–20 ("the analog is if you were trying to assemble a plastic model, you would use a *very, very thin layer* of glue to hold the parts together . . . you want to . . . ensure

that you're getting the . . . most use of the polymer with *as little polymer as possible* . . . you want to ensure that it is *a relatively thin contribution to the overall assembly*"), 79:24–81:7.

Moreover, as set forth by both Dr. McCarthy *and* Dr. Spontak, a tie layer is a layer whose *primary purpose* in the film is to ensure that adjacent layers do not come apart. *See* EX2014 ¶ 16; EX2015, 75:10–20, 76:7–20 (Dr. Spontak acknowledging that "[t]he tie layer *serves only one primary purpose, and that is basically to behave as an adhesive*"), 79:24–81:7 ("[t]he adhesive layer *serves the purpose of* ensuring that the contact layer doesn't come apart from the base layer . . . *[t]hat is its primary function*"). Thus, Petitioner's own expert directly refutes Petitioner's assertions that (1) "[n]o documentary evidence uses this 'primary purpose' terminology or synonymous language" (2) there is "no supporting or corroborating evidence of such use other than" Dr. McCarthy's; and (3) that an "assignment of a 'primary purpose' . . . is arbitrary and based solely on subjective intent." Reply, 5, 6.

Indeed, a POSITA would generally understand that a layer primarily included in a film for a non-tying purpose is not a tie layer, even if that layer serves a secondary function of providing adhesion between adjacent layers. Accordingly,

if a POSITA determined that the bulking function of Riis's .65 mil LDPE layer⁶, for example, was unnecessary for the Film's target application, then the POSITA could consider removing the .65 mil LDPE layer despite the .65 mil LDPE layer's ability to adhere to its adjacent layers. Conversely, were the .65 mil LDPE layer included primarily for a tying purpose, the POSITA would retain the .65 mil LDPE layer in the Film despite finding the bulking function unnecessary, since removing a layer primarily included for tying would be expected to reduce one or more of the Film's tying-related mechanical parameters.⁷ Thus, it is important that the "primary purpose" element be included in the POM of tie layer because it dictates how a POSITA would interact with a layer identified in a film as a tie layer.

B. Petitioner's proposed POM of "tie layer" is overly broad.

Petitioner's allegation that the POM of "tie layer" is "simply a layer that provides adhesion between layers or surfaces"⁸ (Reply, 5) is overly broad.

Applying its definition, Petitioner alleges that Riis's .65 mil LDPE layer in the Film is a tie layer because the .65 mil LDPE layer is "adhered" on one side to

⁶ As established herein and elsewhere, a POSITA would identify the .65 mil LDPE layer's primary purpose as a bulk purpose.

⁷ Dr. Spontak performs a similar exercise in his latest Declaration, opining that, were the exterior protective layer 1 removed from the film in Riis's FIG. 1, the adhesive tie layer 2 would also be omitted "since [the adhesive tie layer's] ***purpose*** is to promote adherence between the exterior protective layer and the aluminum foil barrier layer." EX1037, 33.

⁸ Petitioner also stating that "all that is required of the claimed tie layer is to provide sufficient adhesion between layers." Reply, 5; 7

the .17 mil EAA layer and on the other side to the .43 mil COC layer. Reply, 7.

However, every intermediary layer in a film is "adhered" on one side to one layer and the other side to another layer. Thus, under Petitioner's POM of tie layer, every intermediary layer would be a tie layer⁹, rendering this and all other terminology meaningless.

C. Adapa's POM of "tie layer" does not restrict a tie layer's functionality to only its primary purpose.

Under Adapa's POM of tie layer, a tie layer's primary purpose need not be its *exclusive* purpose, as alleged by Petitioner (*See* Reply, 5; citing examples in the '624 Patent and Riis where a tie layer or a bulk layer provides additional functionality apart from their primary purpose). Indeed, Adapa has already acknowledged that a layer in a film can provide other functions than the functions of the layer's primary purpose. Response, 9.

Thus, Petitioner's arguments in Section II of its Reply should be rejected.

III. RIIS'S .65 MIL LDPE LAYER'S PRIMARY PURPOSE

In Section III of the Reply, Petitioner alleges that even if the "primary purpose" element is included in the POM of tie layer, Adapa's "arguments regarding why the primary purpose of [Riis's] .65 mil LDPE layer *is not [as] a 'tie layer'* are wrong." Reply, 8–16. This is incorrect.

⁹ Even intermediate aluminum layers.

Before turning to Petitioner's arguments, Adapa notes that Petitioner does not set forth, herein or elsewhere, a *single* argument for why a primary purpose of the .65 mil LDPE is as a tie layer — Petitioner merely provides generalizations that a polyolefin bulk layer in Riis or that LDPE *can, in theory* be used as/for a tie layer (generalizations which Adapa does not dispute).

A. Riis's disclosure, a POSITA's knowledge, and Petitioner's own interpretation of Riis all confirm that Riis's .65 mil LDPE layer's primary purpose is as a bulk layer.

1. Riis's disclosure confirms that the .65 mil LDPE layer is a polyolefin "Riis-bulk"¹⁰ layer.

Riis's failure to label Riis's .65 mil LDPE layer as a bulk layer is not proof that Adapa's assertion that "the .65 mil LDPE layer is not a tie layer" is wrong, as alleged in Petitioner's leading argument (Reply, 8).

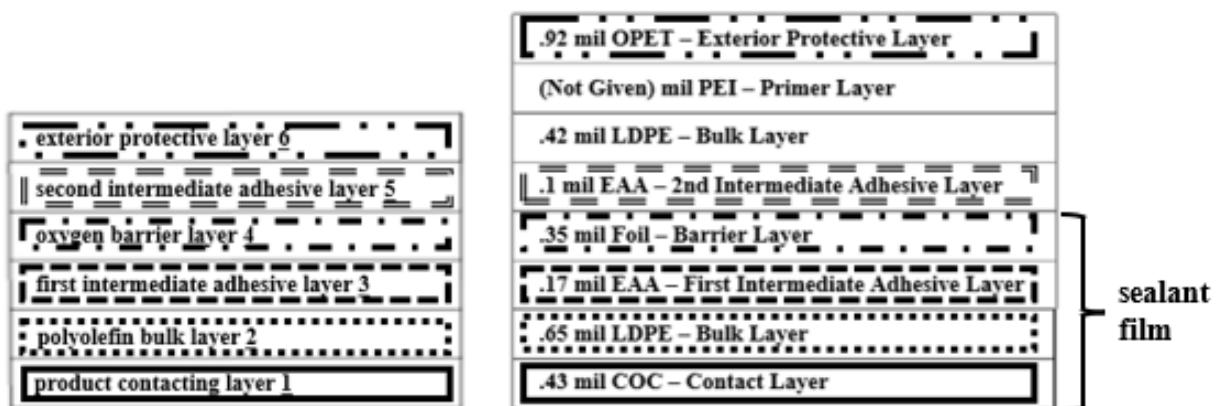
Riis does not label any of the layers in the Film's sealant film.¹¹ Moreover, Dr. Spontak acknowledges that each layer in a film "serves a particular purpose that is relevant to the target application." Thus, Riis's labeling deficiency is simply an invitation for a POSITA to uncover the purposes and labels of the layers.¹²

¹⁰ The "Riis-" terminology signifies that the definition of the following term is derived from Riis.

¹¹ It is unlikely Petitioner is asserting that Riis's failure to label the .17 mil EAA layer discredits Petitioner's own labeling of the .17 mil EAA layer as a tie layer, for example. *See* Petition 38.

¹² Indeed, both Adapa and Petitioner have performed this same exercise.

To determine the labels, a POSITA would need to understand the primary purposes of the layers. This need would certainly lead the POSITA to inspect Riis's disclosure, and Riis's first figure (which describes a generalized six-layer film of the invention) would be a natural place to begin. As a result of analyzing the Film in the context of Riis's Figure 1, a POSITA would undoubtedly identify the correspondence illustrated below, which would powerfully suggest to the POSITA that the polyolefin bulk layer 2 of Figure 1 corresponds to the .65 mil LDPE layer of the Film.



Response, Figure 2 (annotated)¹³

As the Film of Riis's Example 5 is "of the invention," the POSITA would also look to Riis's claims and find additional evidence that the .65 mil LDPE layer serves as a polyolefin Riis-bulk layer — indeed, Riis's Claim 18 *explicitly labels* the layer between the COC layer and the first intermediate adhesive layer as a "polyolefin

¹³ Side-by-side comparison of the six-layer film of FIG. 1 (left side) and the Film of Riis's Example 5 (right side).

bulk layer." Moreover, Riis *explicitly labels* the similarly structured .42 mil LDPE layer¹⁴ in the base film as a Riis-bulk layer. EX1004 ¶¶ [00162], [00163].

Thus, after analyzing Riis's disclosure, a POSITA would presume, with near certainty, the .65 mil LDPE to be a polyolefin Riis-bulk layer, and the properties of the .65 mil LDPE layer would elevate this presumption to certainty. *See* § III.A.2, *infra*.

2. Riis's disclosure confirms that the .65 mil LDPE polyolefin Riis-bulk layer does not also serve as a Riis-tie layer.

Adapa does not dispute that, in Riis, a polyolefin Riis-bulk layer can¹⁵ also serve as a "Riis-tie" layer, in theory¹⁶. *See* Response, 42. Instead, Adapa submits that Riis's .65 mil LDPE¹⁷ polyolefin Riis-bulk layer *does not* serve as a "Riis-tie" layer. To determine whether this layer also serves as a Riis-tie layer, a POSITA would look to both the definition of a Riis-bulk layer and the definition of a Riis-tie layer disclosed therein, which confirm that the .65 mil LDPE polyolefin Riis-bulk layer does not also serve as a Riis-tie layer.

¹⁴ The .42 mil LDPE layer has a thickness around four times the thickness of, and is coextruded with, the adjacent .1 mil EAA layer in a two-layer coextrusion.

¹⁵ Nowhere does Riis disclose that a polyolefin Riis-bulk layer *always* serves as a Riis-tie layer.

¹⁶ *E.g.*, in a film configuration that includes a multifunctional polyolefin layer (on the thicker side of the 2-10% range) as the only layer between a polar and a non-polar layer.

¹⁷ LDPE is a polyolefin.

Adapa has set forth the POM of tie layer applied by its expert in § II.A, *supra*. The POM of "bulk layer," applied by Adapa's expert, is a layer that (1) serves the primary purpose of improving a structural integrity, heat sealability, machinability of a film, or extending the thickness of an adjacent layer at a lower cost (*see* EX2014 ¶ 159; EX2015, 69:9,10; EX1036, 196); (2) that has properties (*e.g.*, thickness and material properties) known by a POSITA as being consistent with serving that purpose; and (3) for which a primary reason for including the layer in the film was to serve that purpose.

Like for Petitioner's proposed POM of "tie layer," Petitioner's expert has applied a POM of "bulk layer" that is overly broad and renders this terminology meaningless. *See* EX2015, 100:13–21 (Dr. Spontak stating that a "bulk layer" is a layer that "is sufficiently thick that we can use the bulk properties of the polymer"); *see also, id.*, 100:22–105:25 (Dr. Spontak performing mental gymnastics to rationalize this definition). Every layer in the Film is sufficiently thick to use bulk properties. *See* EX2015, 103:15–104:1. Thus, under Petitioner's POM of bulk layer, every layer would be a bulk layer.

The definitions of a Riis-tie layer and Riis-bulk layer are similar to the POMs of these terms, except that the definition of a Riis-tie layer is narrower, and the definition of a Riis-bulk layer is broader. That is, Riis (1) restricts the definition

of a Riis-tie layer to a single-layer tie layer that is multifunctional¹⁸ and has a thickness between 2% and 10% of the film's total thickness (EX1004 ¶ [0071]), and (2) broadens the definition of a Riis-bulk layer to a bulk layer that improves barrier properties. *Id.* ¶ [0065].

Thus, *in Riis*, for a polyolefin Riis-bulk layer to also serve as a Riis-tie layer, the polyolefin "Riis-bulk/Riis-tie" layer must satisfy both of Riis's definitions for these terms. In Riis, a polyolefin Riis-bulk/Riis-tie layer must (1) serve the primary purpose of adhering adjacent layers together *and* improving stiffness, heat sealability, machinability, cost, flexibility, or a barrier; (2) be a single multifunctional layer that, on its own, ties two dissimilar layers together; (3) have a thickness between 2% and 10% of the multilayer film's total thickness; and (4) be primarily included in the film to serve a tying purpose *and* a bulking purpose¹⁹.

As set forth herein (*see also* Response, 43–53), under Riis's definitions, the .65 mil LDPE layer fails to qualify as a polyolefin Riis-tie layer — while qualifying as a polyolefin Riis-bulk layer. That is, among other reasons, (1) Riis's definition of a Riis-tie layer as multifunctional;²⁰ (2) Riis's definition of a Riis-tie

¹⁸ "[T]o aid in the adherence of one layer to another layer *without the need of using separate adhesives*." EX1004 ¶ [0071].

¹⁹ A POSITA would only remove a polyolefin Riis-bulk/Riis-tie layer from a film after determining that *both* the tying and bulking functionality of the polyolefin Riis-bulk/Riis-tie layer are unnecessary for the target application.

²⁰ The .65 mil LDPE layer is not disclosed as having, or being used for, multifunctional capability.

layer having a thickness between 2% and 10% of the overall thickness of a multilayer film;²¹ (3) Riis's preference for single-layer tie layers;²² (4) Riis's definition of a Riis-bulk layer as providing stiffness, heat sealability, machinability, cost, flexibility, barrier properties;²³ and (5) the correspondence²⁴ between the six-layer film of Riis's FIG. 1 and the Film *all* point, under Riis's definitions, to the .65 mil LDPE layer being included in the Film primarily to serve as a polyolefin Riis-bulk layer and away from the .65 mil LDPE layer being used to serve as a polyolefin Riis-tie (or Riis-bulk/Riis-tie) layer.

3. Under the POMs, Riis's .65 mil LDPE layer serves a primary purpose as a bulk layer and does not serve a primary purpose as a tie layer.

Similarly, as set forth herein (*see also* Response, 43–53), under the POMs, Riis's .65 mil LDPE layer fails to qualify as a tie layer — while qualifying as a bulk layer. That is, among other reasons, (1) the .65 mil LDPE layer's excessive thickness relative to the other layers and the entire structure;²⁵ (2) the .65 mil LDPE layer's contribution to the structure, machinability, heat sealability, and cost of the Film;²⁶ (3) the close correspondence between Riis's definitions and the

²¹ The .65 mil LDPE layer accounting for 21.38% of the overall thickness of the Film.

²² The .65 mil LDPE layer being coextruded with the .17 mil EAA tie layer, which has been acknowledged by Petitioner as a tie layer. Petitioner, p. 38.

²³ The .65 mil LDPE layer's providing these functionalities.

²⁴ *See* § III.A.1, *supra*.

²⁵ Considering the established need for relatively thin tie layers.

²⁶ Given the POM of bulk layer.

POMs of a bulk layer and a tie layer²⁷; (4) Petitioner's own understanding of the .65 mil LDPE layer;²⁸ and (5) Petitioner's identifying the similar .42 mil LDPE layer in the base film of the Film as a bulk layer *all* point, under the POMs, to the .65 mil LDPE layer being included in the Film primarily to serve as a bulk layer and away from the .65 mil LDPE layer being used to serve as a tie layer.

4. Though LDPE may, in theory, be suitable for use as a tie layer, Riis's .65 mil LDPE layer is not.

Petitioner asserts that it is well known in the art to use LDPE as a tie layer. Reply, 9. Adapa does not dispute that LDPE, under some circumstances, can be used as a tie layer. That said, as established herein and elsewhere, Riis's .65 mil LDPE layer is not used as a tie layer.

Petitioner argues that Dr. McCarthy's opinion that the .65 mil LDPE layer is not a Riis-tie layer because LDPE is unsuitable to bond polar materials to non-polar materials "lacks credibility." Reply, 10. However, consistent with Dr. McCarthy's opinion, LDPE *is*, as stated in Morris, unsuitable to bond polar/non-polar materials unless specifically processed:

Tie resins are . . . used to bond layers together in coextrusion.

LDPE is the workhorse resin used to bond to aluminum foil, paper,

²⁷ Given a POSITA would understand the .65 mil LDPE layer to be a polyolefin Riis-bulk layer, not a polyolefin Riis-tie (or Riis-bulk/Riis-tie) layer.

²⁸ Dr. Spontak acknowledging the purpose of the LDPE layer between the EAA and COC layers as "more than likely to provide additional mechanical strength." EX2015, 69:9,10.

and other substrates in *extrusion lamination*²⁹. *When extruded at temperatures above 300°C*, oxidation occurs, producing polar groups such as aldehydes, acids, and ketones.

EX1036, 89. Discussing adhesion, Morris states that LDPE *can be* "run at elevated temperatures (~320°C)³⁰ in extrusion coating to promote the formation of *acids, aldehydes, and ketones* that help bond *to aluminum foil*³¹." *Id.*, 70.

In fact, Morris lends additional support to Adapa's position that the .65 mil LDPE layer in the Film's three-layer coextrusion is a bulk layer that is primarily used to extend the .43 mil COC layer at a low cost. EX2014, ¶ 95. Indeed, Morris *explicitly identifies* an LDPE layer positioned between an ionomer sealant layer (the innermost layer, EX1036, 70) and an ACR tie layer in a three-layer coextrusion as a "bulking layer." Specifically, Morris references a study performed to understand the effect of downgauging the sealant layer on heat sealing performance by adding a less expensive bulking layer (layer B) to a three-layer coextrusion, using three different resins for layer B: ACR, LDPE, and metallocene plastomer. EX1036, 196. Moreover, figure 7.15 (bottom graph) of Morris depicts results for multiple films, each including LDPE as a bulking layer that is significantly (5–7.3 times) thicker than the ACR tie layer.

²⁹ Extrusion coating is the subject of the '624 Patent claims.

³⁰ Nothing in Riis indicates the .65 mil LDPE layer is processed at such high temperatures.

³¹ The .65 mil LDPE layer is not adjacent to the .43 mil Al layer.

5. Adapa's thickness arguments find direct support in Petitioner's expert's own testimony.

Adapa's thickness arguments find direct support in Dr. Spontak's own testimony in direct contrast to Petitioner's allegations that Adapa's thickness arguments lack support (Reply, 11).

Dr. Spontak provides ample support for the use in the art of "thin" tie layers. *See* § II.A, *supra*. Petitioner particularly alleges that Adapa's only support for the assertion that "a POSITA would understand that a thicker tie layer (relative to the overall thickness of the film) is more prone to delamination and is less mechanically stable" is Dr. McCarthy's "conclusory" testimony. Reply, 12. However, as acknowledged by Petitioner (Reply, fn. 5), Dr. Spontak provided testimony directly supporting Adapa's assertion. EX2015, 79:24–81:7 ("if you start to make that . . . adhesive layer thicker and thicker, you might find that now the mechanical properties can be compromised . . . [since] you're looking at mobile chains on the surface . . . ***adhesives tend to have relatively poor mechanical properties by themselves . . . so we don't want that adhesive layer to be too thick . . . from a performance standpoint***").

Dr. Spontak also provides support for the use in the art of "thick" bulk layers. Petitioner particularly alleges that Dr. McCarthy's testimony that "one of the identifications of a bulk layer is that it is thicker, has a higher thickness than that of a tie layer" finds no basis in Riis. Reply, 12. Riis aside, Dr. Spontak again

provided testimony directly supporting Dr. McCarthy's. EX2015, 82:24-83:22 (in response to Adapa's question asked in the context of discussing thicknesses:

[I]f you're including a bulk layer, you're going to want that bulk layer to be relative to the other layers in that multilayer film?

Dr. Spontak responded:

[I]f you wanted to *contribute to machinability, mechanical properties, et cetera*, then you might want it to be *slightly thicker* [but] [i]f you want it to be used [as an adhesive] *in concert with another adhesive* like EAA, then you probably want it to be on the *thinner side*).³²

6. Adapa's thickness arguments do not lead to absurd results.

Taking Adapa's assertion that "the thickness of the LDPE layer . . . indicates to a POSITA that the LDPE layer primarily functions as a bulk layer" to its logical conclusion does not lead to absurd results, as alleged by Petitioner (Reply, 11, 12).

Petitioner alleges that using thickness to identify a layer's primary purpose allows the layer's primary purpose to be changed by changing layer thicknesses or adding layers to a film. To illustrate this point, Petitioner notes that increasing the .42 mil LDPE in the Film's base film to 7 mils causes Riis's .65 mil LDPE layer's thickness in the Film's sealant film to represent 6.76% of the overall thickness of

³² The .65 mil LDPE layer is the second thickest layer in the Film and the thickest layer in the sealant film. Accordingly, Dr. Spontak's testimony supports the assertion that the thicker .65 mil LDPE layer is being used to contribute to machinability and mechanical properties (bulk layer purposes) not adhesive purposes.

the modified film, thereby allegedly changing the .65 mil LDPE layer's designation to a tie/Riis-tie layer.³³

But Adapa has never asserted that thickness *alone* determines a layer's primary purpose. Instead, thickness is one of multiple properties that *indicates* a layer's primary purpose to a POSITA, and Dr. Spontak has closely tied thickness to the purpose and definition of a layer on numerous occasions (*see* § II.A, *supra*).

Moreover, even under Petitioner's gratuitous example, a POSITA would identify the .65 mil LDPE layer as a Riis-bulk/bulk layer and not a Riis-tie/tie layer — *e.g.*, based at least on (1) the .65 mil LDPE layer's thickness in relation to the adjacent layers in the sealant film of the modified film; (2) the non-multifunctional nature of the .65 mil LDPE layer; (3) the .65 mil LDPE layer's contribution to the heat stability, cost, and barrier properties of the modified film; and (4) the close correspondence between Riis's definitions and the POMs of a bulk layer and a tie layer.

³³ Such an extreme example (increasing the .42 mil LDPE layer's thickness over sixteen times) ignores the effect on other layers — *e.g.*, increasing the size of certain layers may improve the structure of the film obviating the need for standalone layers included for structural reasons — and the functional or commercial viability of such a film.

7. Riis's definition of a Riis-tie layer (1) excludes Riis's .65 mil LDPE layer from being a polyolefin Riis-tie (or Riis-bulk/Riis-tie) layer and (2) "teaches away" from multi-layer tie layers.

As provided herein and elsewhere, Riis's definitions point a POSITA toward determining that Riis's .65 mil LDPE layer is a Riis-bulk layer and away from determining that the .65 mil LDPE layer is a Riis-tie (or Riis-bulk/Riis-tie) layer, providing convincing evidence that the .65 mil LDPE layer is similarly a bulk layer and not a tie (or bulk/tie) layer under the POMs.

Moreover, in accordance with *In re Fulton*, 391 F.3d 1195, 1201 (Fed. Cir. 2004), Riis "teaches away"³⁴ from multi-layer tie layers³⁵ at least because Riis explicitly discourages the use of multiple adjacent adhesive layers. Specifically, Riis provides that a "multifunctional layer is preferably formulated to aid in the adherence of one layer to another layer *without the need of using separate adhesives*." EX1004 ¶ [0071]. Nowhere does Riis disclose an example with multiple adjacent adhesive layers.

As such, and unlike the cases cited by Petitioner, Riis does not disclose any other alternative embodiments in which a film could have a tie layer exceeding the 2–10% overall thickness of the film or a multi-layer tie layer. Contrarily, Riis

³⁴ "[E]ven if a reference is not found to teach away, its statements regarding preference are relevant to a finding" of obviousness). *Polaris Indus. v. Arctic Cat, Inc.*, 882 F.3d 1056, 1069 (Fed. Cir. 2018)

³⁵ Such as those claimed in the '624 Patent (*see* claims 7 and 8).

criticizes (EX1004 ¶ [0071]), and thus teaches away from, such tie layers. *See AstraZeneca AB v. Mylan Pharm. Inc.*, 19 F.4th 1325, 1337-38 (Fed. Cir. 2021) (upholding finding that reference taught away when a POSITA would have known that the control formulations were unsuitable for further experimentation, thus "discouraging investigation into" these formulations).³⁶

IV. LEVEL OF ORDINARY SKILL IN THE ART

Adapa's proposed level of ordinary skill in the art does not impart an impermissibly high bar and is not litigation driven, as alleged by Petitioner (Reply, 16–18).

A. Adapa's proposed level of ordinary skill in the art is properly suited to the coextrusion of COC at the thin levels disclosed in the '624 Patent.

Achieving a successful coextrusion, especially when using the thin layers and COC materials implicated in the '624 Patent³⁷, is not a trivial task. EX2014 ¶ 57–65. Moreover, there is a disconnect between the theory taught in the classroom and the reduction of the theory to practice in the field that can only be understood by "hands-on" experience. EX1032, 80:3–6. Here, "hands-on" experience includes any engineer who has collaborated on setting and optimizing

³⁶ *See also, U.S. v. Adams*, 383 U.S. 39, 52 (1966); *Polaris*, 1069 (stating that "a reference may be said to teach away when a [POSITA], upon reading the reference . . . would be led in a direction divergent from the path . . . taken by . . . applicant").

³⁷ The claims of US 10,889,093 (subject of IPR2014-01403) involved much thicker layers (on the order of 150 µm to 450 µm) than the '624 Patent and were silent on COC. *See* EX1030, claim 7.

the parameters for a coextrusion process (not only engineers who have physically operated the coextrusion machine) and excludes engineers who merely request and use a manufactured film that includes a coextrusion layer (but otherwise are not involved in the manufacturing process). Accordingly, most any engineer involved with the process for manufacturing a coextrusion layer falls has hands-on experience.

Dr. Spontak's lack of hands-on experience with coextrusion renders him unable to appreciate the difficulties associated with achieving successful coextrusion layers with such thin layers (especially when the intricacies of COC resins are involved). Thus, for the '624 Patent, Dr. Spontak's opinions regarding (1) the difficulty of achieving such thin layers when coextruding with COC resins; (2) whether the processing parameters for the polymers of the '624 Patent used to obtain the thin layers would be obvious; (3) whether the resulting coextrusion would be successful; and (4) whether considering the foregoing, it would be obvious to change loading parameters of individual layers, and if so, which layer and how, should be given little, if any, weight.

V. PETITIONER'S BAREX® ARGUMENT

In Section V of the Reply, Petitioner asserts the new argument that the Barex standard renders the term "aggressive chemical-resistant film" indefinite. Reply,

18–20 (citing *Eli Lilly & Co. v. Apotex, Inc.*, 837 Fed. Appx. 780, 784-85 (Fed. Cir. 2020)). This is incorrect.

A. In addition to failing on the merits, Petitioner's new indefiniteness argument should not be considered by the Board because it is non-responsive to the Decision in Institution and could have already been presented.

A reply may only respond to arguments raised in the corresponding patent owner response or decision on institution (37 CFR 42.23(b)) and, moreover, a petitioner cannot submit an "argument in [a] reply that it could have presented earlier." PTAB Consolidated Trial Guide, 73, § II.I (Nov. 2019).

As a threshold matter, Petitioner could have presented, in the Petition's lengthy § 112 arguments, that the Barex standard (explicitly identified at pages 25 and 26 of the Petition) rendered the aggressive chemical-resistant film indefinite earlier but failed to do so. Thus, this new argument should not be considered by the Board.

In the Decision in Institution (Paper 14 of this proceeding), the Board noted Petitioner's failure to "demonstrate that the various testing methods [in the '624 Patent] 'result in materially different outcomes for the claim's scope' or result in absorption rates outside of the definitions" and invited the parties to "address whether there are any other reasons that the 'Barex' standard would render the term "aggressive chemical-resistant film" indefinite, *to the extent permitted under our rules.*" Decision in Institution, 21. Nothing in the Decision in Institution raises this

issue or invites Petitioner to raise this newly formed position — one that could have been raised in its Petition.

Petitioner's arguments are not responsive to the Decision in the Institution. That is, Petitioner's arguments address neither (1) whether the Barex testing method would result in materially different outcomes for the claim's scope nor (2) whether the Barex testing method would result in absorption rates outside of the definitions in the '624 Patent. Thus, this non-responsive argument should not be considered by the Board.

Moreover, Petitioner's new and non-responsive argument fails even if considered by the Board because of any one of the following: (1) the Barex standard provides a POSITA with objective boundaries for understanding the scope of the claims (indeed Riis also uses a Barex comparison method); (2) the '624 Patent provides the "absorption" method and the "Barex" method as internally consistent alternatives, either of which may be used to identify an aggressive chemical-resistant film; (3) Barex is not used in the claims³⁸; and (4) paragraph

³⁸ See *Eli Lilly*, 784-85 (noting that trade names "can introduce potential vagueness *into patent claims*"); MPEP 608.01(v) §I (a "trade name may be used *in a patent application* to identify an article" if its meaning is "established by an accompanying description" or is "well-known" to a POSITA).

[0005] of the '624 Patent identifies polyacrylonitrile (PAN) as the generic form of Barex.³⁹

VI. PETITIONER DOES NOT REFUTE ITS FAILURE TO PROVIDE A MOTIVATION TO MODIFY THE FILM

Notably, Petitioner does not refute its failure to contemplate, or articulate a motivation for, modifying the Film.

VII. CONCLUSION

For all these reasons, Petitioner has failed to meet its burden to show that the challenged claims are unpatentable, and as such, they should be upheld.

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³⁹ MPEP 2173.05(u) (noting, referring to *Eli Lilly*, that replacing the trade name in the claims with the generic name for the same substance mooted the related indefiniteness rejection during prosecution.)

CERTIFICATE OF COMPLIANCE

Pursuant to 37 C.F.R. 42.24(d), the undersigned certifies that **PATENT OWNER'S SUR-REPLY TO PETITIONER'S REPLY TO PATENT OWNER'S RESPONSE** ("Sur-Reply") complies with the type-volume limitation of 37 C.F.R. § 42.24(c)(4) of 5,600 words as the word count application of the word processing program used to prepare this Sur-Reply indicates that the Sur-Reply contains 5,560 words¹.

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¹ Excluding the cover page, signature block, and portions exempted under 37 C.F.R. 42.24(a), which include a table of contents, a table of authorities, mandatory notices, a certificate of service or word count, and appendix of exhibits or claim listing.

CERTIFICATE OF SERVICE

I, Steven A. Avena, hereby certify that a copy of the foregoing **PATENT OWNER'S SUR-REPLY TO PETITIONER'S REPLY TO 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, January 16, 2024, at the following electronic addresses:

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