

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

Case No. PGR2023–00008
U.S. Patent No. 11,260,624 B2

**DECLARATION OF RICHARD J. SPONTAK, PH.D.
IN SUPPORT OF PETITIONERS' OPPOSITION TO
PATENT OWNER'S REVISED MOTION TO AMEND**

Table of Contents

I.	INTRODUCTION.....	1
II.	QUALIFICATIONS AND RELEVANT EXPERIENCE	3
III.	MATERIALS CONSIDERED.....	3
IV.	APPLICABLE LEGAL STANDARDS.....	6
	A.Standard for Motions to Amend under 35 U.S.C. § 326.....	7
	B.Standard for Obviousness under 35 U.S.C. § 103.....	8
	i. <i>Graham</i> factors.....	9
V.	SUMMARY OF THE AMENDED CLAIMS OF THE '624 PATENT.....	13
	A.“the base layer consisting of the aluminum”.....	13
	B.Loading of a first layer and second layer of the tie layer	13
	C.Aggressive Chemical-Resistant Films.....	15
VI.	LEVEL OF ORDINARY SKILL IN THE ART.....	17
VII.	CLAIM CONSTRUCTION.....	18
VIII.	SUMMARY OF THE APPLIED REFERENCES.....	19
	A.Riis (EX. 1004).....	19
	B.Wypych (EX. 1005)	19
	C.Tohara (EX. 1033).....	19
	D.Holzmuller (EX. 1034).....	19
	E. Rivers (EX. 1035).....	21
IX.	PATENTABILITY OF THE CHALLENGED CLAIMS OVER THE APPLIED REFERENCES	21
	F. The Combination of Riis and Wypych Renders Substitute Claims 14, 15, and 20–24 Obvious.	22
	i. Riis discloses a base layer consisting of aluminum.	22
	ii. Riis discloses a “coextrusion layer consisting of [a] tie layer [comprising a first layer and a second layer] and [a] contact layer.....	23
	G.The Combination of Riis and Wypych Renders Substitute Claim 15 Obvious	24
	H.The Combination of Riis and Wypych Renders Substitute Claim 20 Obvious	24
	I. The Combination of Riis and Wypych Renders Substitute Claim 21 Obvious	25
	J. The Combination of Riis and Wypych Renders Substitute Claim 22 Obvious	26
	K.The Combination of Riis and Wypych Renders Substitute Claim 23 Obvious	28

L. The Combination of Riis and Wypych Renders Substitute Claim 24 Obvious	28
M. The Combination of Riis, Wypych, and Holzmuller Renders Substitute Claim 16 Obvious	29
N. The Combination of Riis, Wypych, and Holzmuller Renders Substitute Claim 17 Obvious	42
O. The Combination of Riis, Wypych, and Holzmuller Renders Substitute Claim 18 Obvious	49
P. The Combination of Riis, Wypych, and Rivers Renders Substitute Claim 19 Obvious	55
X. CONCLUSION	56

I, Richard J. Spontak, hereby declare and state as follows:

I. INTRODUCTION

1. I have previously authored and signed two declarations in this matter, my first declaration on November 30, 2022, which I understand was submitted as Exhibit 1003, and my second declaration on December 5, 2023, which I understand was submitted as Exhibit 1037. I may alternatively refer to the first declaration as “Exhibit 1003,” “EX1003,” or “Original Declaration.” I may alternatively refer to the second declaration as “Exhibit 1037,” “EX1037,” or “Second Declaration.” In this Third Declaration, I incorporate the facts and opinions set forth in my Original Declaration and my Second Declaration as they relate to the unpatentability of the challenged claims in view of Patent Owner’s Revised Motion to Amend.

2. I have been retained as an expert witness on behalf of Huhtamaki Flexible Packaging Germany GmbH & Co. KG (“Huhtamaki”) for the above-captioned post-grant review (“PGR”). I am being compensated for my time in connection with this PGR through which Patterson Intellectual Property Law, P.C. has agreed to pay me for my services at a rate of \$500 per hour. My compensation is not contingent upon my opinion or testimony or the outcome of this PGR.

3. This Third Declaration incorporates my opinions and analysis as it relates to Patent Owner’s Revised Motion to Amend the claims of U.S. Patent No. 11,260,624 (EX1001, the “’624 patent”), including how Patent Owner’s proposed substitute

claims are unpatentable as obvious, pursuant to 35 U.S.C. § 103, as understood by a person of skill in the art (“POSITA”) or, alternatively, a skilled artisan.

4. I understand that Patent Owner has filed a Revised Motion to Amend that provides amendments to the original claims of the ’624 patent and proposes to replace original claims 1-13 with substitute claims 14-24. I have been asked to provide my independent technical review, analysis, insights, and opinions regarding the substitute claims submitted by Patent Owner for the ’624 patent and the prior-art references that form the basis for the grounds of unpatentability in Petitioner’s Opposition (“the Opposition”).

5. In preparing this declaration, I have reviewed and am familiar with all the documents cited herein. I have reviewed and am familiar with the ’624 patent and its file history. I confirm that, to the best of my knowledge, the accompanying exhibits are true and accurate copies of what they purport to be, and that an ordinarily skilled artisan in the field would reasonably rely on them to formulate opinions such as those set forth in this declaration.

6. The matters and opinions stated herein are true and correct to the best of my understanding. The facts set forth in this declaration are personally known to me and I have firsthand knowledge thereof. If called upon to do so, I could and would competently testify to these matters under oath.

II. QUALIFICATIONS AND RELEVANT EXPERIENCE

7. My experience, qualifications, and CV are set forth in my Original Declaration and are not reproduced here.

8. In forming the opinions expressed in this Third Declaration, I have considered and relied upon my approximately thirty-nine years' experience in polymer science, my education, and my knowledge in the relevant (and related) art. In addition, I have reviewed and relied upon additional materials in preparation of this declaration, as described below. In formulating my opinions, I have also considered the viewpoint of a POSITA before the time of the invention, which I have been told to assume for this case is December 29, 2015.

III. MATERIALS CONSIDERED

9. In my study of this matter, I have received various materials from counsel for Huhtamaki (these are listed on the following page, along with their Exhibit Nos.), and I have likewise searched for and examined relevant background material as I would with any project.

10. I have reviewed and relied upon the materials cited herein, as well as those listed in the table below, in preparation of this declaration. Citations to these materials that appear in this report are meant to be exemplary but not exhaustive. Although some references listed may not be directly cited in this declaration, they still informed my consideration of the knowledge of a POSITA and my opinions

depending thereon.

Exhibit No.	Description
1001	U.S. Patent No. 11,260,624 to Christensen <i>et al.</i>
1002	U.S. Patent No. 11,260,624 Prosecution History
1004	WIPO International Pub. No. 2015/123211 A1 to Riis <i>et al.</i>
1005	Wypych, G. (2012), Handbook of Polymers, ChemTec Publishing
1006	U.S. Pat. App. Pub. No. 2005/0037162 A1 to Adams
1007	U.S. Patent No. 6,120,860 to Bowen <i>et al.</i>
1008	U.S. Patent No. 9,452,593 to Tatarka <i>et al.</i>
1009	U.S. Patent Appl. No. 15/780,999 Application File History
1010	Curriculum Vitae of Richard J. Spontak, Ph.D.
1011	Dow NUCREL™ 3990 Product Data Sheet
1012	Dow LDPE 4012 Product Data Sheet
1013	U.S. Patent No. 8,003,179 to Merical <i>et al.</i>
1014	U.S. Patent Appl. Pub. No. 2006/0198973 to Jester
1015	U.S. Patent Appl. Pub. No. 2018/0354702 to Liu <i>et al.</i>
1016	Plastics News: Topas and MSM Make Progress on Barex Replacements
1017	Topas Advanced Polymers: TOPAS COC is Commercial Alternative to Barex
1018	Declaration of Julie Glascock

1019	Topas Cyclic Olefin Copolymers - March 2006 Brochure
1020	Declaration of Samuel A. Raque
1021	U.S. Patent Appl. Pub. No. 2009/0208685 to Rivers <i>et al.</i>
1022	Topas COC 8007F-400 Safety Data Sheet (2015)
1023	Topas COC 8007F-400 Safety Data Sheet (2017)
1024	Dr. Detlev Schulz Declaration
1025	WO 2012/037180 to Bonekamp <i>et al.</i>
1026	Reproduction of Fig. 2 – U.S. Patent No. 11,260,624 to Christensen <i>et al</i>
1027	Diagram #1 of 4-layer multilayer film
1028	Diagram #2 of 4-layer multilayer film
1029	PGR2022-00001 – EX1003 – Declaration of Stephen McCarthy PhD
1030	U.S. Patent No. 10,889,093 to Wang
1031	U.S. Patent No. 6,903,161 to Morris
1032	Deposition of Dr. Stephen McCarthy
1033	U.S. Patent App. Pub. No. 2017/0348246 to Tohara <i>et al.</i>
1034	U.S. Patent App. Pub. No. 2008/0286512 to Holzmuller <i>et al.</i>
1035	WO 2009/105205 to Rivers <i>et al.</i>
1036	The Science and Technology of Flexible Packaging – Morris
1037	Second Declaration of Richard J. Spontak, Ph.D.

1039	Transcript of Second Deposition of Dr. Stephen McCarthy
------	---

11. I relied on counsel for my legal understandings, particularly with respect to patent law. While I do not possess detailed knowledge of or practical background in patent law, my opinions provided herein relate my expertise regarding polymer science and polymer engineering to the patentability of the '624 patent.

12. This Third Declaration represents my findings based on information available as of the date of this declaration. Additional information may become available that could further support or modify the conclusions that I have reached to date. I reserve the right to analyze newly discovered information and provide an updated report. Furthermore, I reserve the right to consider and comment on any additional expert statement and testimony provided in this matter. Any changes or necessary amplification of these conclusions will be addressed in supplemental reports or testimony, which I reserve the right to provide.

IV. APPLICABLE LEGAL STANDARDS

13. I have been told the following legal principles apply to an analysis of patentability. While I have endeavored to list the applicable legal standards here in this section, other portions of my Declaration may also be relevant, and may also contain my understanding of the legal standards as I applied them to the challenged claims, prior art, and other materials considered.

14. I understand that I must evaluate the patentability of each claim separately. Even if an independent claim is unpatentable, this does not mean that the dependent claims that ensue from it are automatically unpatentable. Rather, I must separately consider the unpatentability of each claim. That is, I understand that I must evaluate the issue of patentability on a claim-by-claim basis.

A. Standard for Motions to Amend under 35 U.S.C. § 326

15. I understand that in a post-grant review (PGR), a Patent Owner may file a motion to amend the claims. I understand that the motion to amend must demonstrate: (1) the amendment proposes a reasonable number of substitute claims; (2) the amendment does not seek to enlarge the scope of the claims of the patent or introduce new subject matter; (3) the amendment responds to a ground of unpatentability involved in the trial; and (4) the original disclosure sets forth written description support for each proposed claim. 35 U.S.C. § 326(d)(1)(B), (d)(3); 37 C.F.R. §42.221.

16. Regarding the requirement that the amendment must not enlarge the scope of the claims or introduce new subject matter, I understand that any claimed subject matter that lacks written description support in the original disclosure constitutes “new matter.” I understand written description support can be found in the text of the specification and also from the figures.

17. I understand that proposed amendments in a motion to amend are reflected

through the use of underlining for additions and strikethroughs or double bracketing for deletions.

B. Standard for Obviousness under 35 U.S.C. § 103

18. I have also been told that, in a PGR proceeding, a patent claim may be deemed unpatentable if it is shown by a preponderance of evidence that the claim is rendered obvious by one or more prior art patents or publications under 35 U.S.C. § 103.

19. I understand that documents and materials such as printed publications or patents that qualify as prior art can be used to invalidate a patent claim as anticipated or as obvious.

20. I understand that terms of the claims are given their ordinary and customary meaning in light of the specification and prosecution history—that is, the meaning that the term would have to a POSITA in question at the time of the application’s filing date.

21. I understand that, once the claims of a patent have been properly construed, the second step in determining obviousness of a patent claim requires a comparison of the properly construed claim language to the prior art on a limitation-by-limitation basis.

22. I understand that a patent may not be obtained “if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person

having ordinary skill in the art to which said subject matter pertains.”

i. ***Graham* factors**

23. I further understand that an obviousness determination requires consideration of four factual inquiries. First, one must consider the scope and content of the prior art. Second, one must determine the differences between the prior art and the claims at issue. Third, one must resolve the level of ordinary skill in the pertinent art at the time of invention. Fourth, one must consider any objective evidence of non-obviousness.

24. With respect to determining the proper scope of prior art to examine, I understand that, for a prior art reference to be properly used in an obviousness ground under 35 U.S.C. § 103, the prior art reference must be analogous art to the claimed invention. I have been told that a reference is analogous art to the claimed invention only if: (1) the reference is from the same field of endeavor as the claimed invention; or (2) the reference is reasonably pertinent to the particular problem solved by the inventor.

25. I understand that factors relevant to determining the proper field of endeavor include the inventor’s explanations of the subject matter (including the patent specification), as well as the claimed invention’s structure and function. And I further understand that to be reasonably pertinent to the particular problem solved by the inventor, a prior art reference must logically commend itself to the inventor’s

attention in considering his or her problem.

26. I have been told that an analogous reference may be modified or combined with other analogous references or with the POSITA's own knowledge if the person would have found the modification or combination obvious. I have also been told that a POSITA is presumed to know all the relevant, analogous prior art, and the obviousness analysis may take into account the inferences and creative steps that a POSITA would employ.

27. In determining whether a prior art reference could have been combined with another prior art reference or other information known to a POSITA, I have been told that the following principles may be considered:

- a. A combination of familiar elements according to known methods is likely to be obvious if it yields predictable results;
- b. The simple substitution of one known element for another is likely to be obvious if it yields predictable results;
- c. The use of a known technique to improve similar devices, products, or methods in the same way is likely to be obvious if it yields predictable results;
- d. The application of a known technique to a prior art reference that is ready for improvement is likely obvious if it yields predictable results;
- e. Any need or problem known in the field and addressed by the reference can provide a reason for combining the elements in the manner claimed;

- f. A POSITA often will be able to fit the teachings of multiple, but related, references together like a puzzle; and
- g. The proper analysis of obviousness requires a determination of whether a POSITA would have a “reasonable expectation of success”—not “absolute predictability” of success—in achieving the claimed invention by combining prior art references.

28. I understand that whether a prior-art reference renders a claim unpatentable as obvious is determined from the perspective of a POSITA. I have also been told that, while there is no requirement for the prior art to contain an express suggestion to combine known elements to achieve the claimed invention, a suggestion to combine known elements to achieve the claimed invention may come from the prior art as a whole or individually, as filtered through the knowledge of one skilled in the art. In addition, I have been told the inferences and creative steps a POSITA would employ are also relevant to the determination of obviousness.

29. I also understand that when a work is available in one field, design alternatives and other market forces can prompt application-specific variations, either in the same field or in another. I have also been told that if a POSITA can implement a predictable variation and would see the benefit of doing so, that variation is likely to be obvious. I have been told that in many fields, there might be little discussion of obvious combinations, and in these fields market demand—not scientific

literature—may drive design trends. I have been told that, when there is a design need or market pressure and there are a finite number of predictable solutions, a POSITA has good reason to pursue those known options.

30. I also understand that when comparing claimed ranges with disclosures of ranges in the prior art, a specific range disclosed in the prior art which is within a claimed range anticipates the claimed range. I also understand that prior art which teaches a range overlapping or touching the claimed range anticipates the claimed range if the prior art discloses the claimed range with sufficient specificity. I further understand that ranges in the prior art which encompass a somewhat narrower range or which overlap with a claim range establish a *prima facie* case of obviousness of the claimed range.

31. I have been told there is no rigid rule prescribing that a reference or combination of references must contain a “teaching, suggestion, or motivation” to combine references. But I also have been told that the “teaching, suggestion, or motivation” test can be a useful guide in establishing a rationale for combining elements of the prior art. I have been told this test poses the question as to whether there is an express or implied teaching, suggestion, or motivation to combine prior art elements in a way that realizes the claimed invention, and that it seeks to counter impermissible hindsight analysis.

32. I understand that the relevant time for considering whether a claim would have

been obvious to a POSITA is the time of the invention, which I have been told to assume for this case is December 29, 2015.

V. SUMMARY OF THE AMENDED CLAIMS OF THE '624 PATENT

33. In my Original Declaration, I provided a technical overview section relating to the Original Claims of the '624 Patent. In my Second Declaration, I provided a technical overview section relating to the Substitute Claim of the '624 Patent. I am further providing a supplemental section relating to features added to the Substitute Claims of the '624 Patent in Patent Owner's Revised Motion to Amend ("RMTA").

A. "the base layer consisting of the aluminum"

34. The proposed Substitute Claims 14 and 24 now recite a base layer that does not comprise, but consists of, aluminum. I understand that the phrase "consists of" excludes any element, step, or ingredient not specified in the claim.

35. For support in the written description, I understand Patent Owner identifies disclosures from the '108 Application and the '962 Application, with the disclosure from the priority '962 Application providing that "[t]he disclosure provides that the 'base layer, which is water and/or oxygen resistant, is selected from the group consisting of a metal foil, preferably aluminum foil." RMTA, 3 (citing '108 App., ¶23; '962 App. 9:9-10).

B. Loading of a first layer and second layer of the tie layer

36. I understand Substitute Claims 16, 17, and 18 all recite loading ranges of a

first layer and a second layer, individually, of the tie layer. RMTA, 27-28. Each of Substitute Claims 16, 17, and 18 depend from Substitute Claim 14. First, Substitute Claim 16 recites the following:

wherein a loading of an entirety of the tie layer is in the range of 7 to 20 g/m², and wherein a loading of the first layer of the tie layer is in the range of 1 to 14 g/m² and a loading of the second layer of the tie layer is in the range of 1 to 14 g/m².

RMTA, 27. Second, Substitute Claim 17 recites the following:

wherein a loading of ~~at least a portion of~~ the entirety of the tie layer is in the range of 7 to 20 g/m², wherein the first layer of the tie layer is adjacent to the base layer, wherein the second layer of the tie layer is adjacent to the first layer and the contact layer, and wherein a loading of the first layer of the tie layer is in the range of 5 to 19 g/m² and a loading of the second layer of the tie layer is in the range of 1 to 14 g/m².

RMTA, 27. Third, Substitute Claim 18 recites the following:

wherein ~~the one or more layers of~~ the tie layer comprises a plurality of layers consisting of the first layer of the tie layer and the second layer of the tie layer, [[and]] wherein a loading of the ~~plurality of layers~~ first layer of the tie layer is in the range of 7 to 20 g/m² and a loading of the second layer of the tie layer is in the range of 7 to 20 g/m².

RMTA, 28.

37. For support in the written description, I understand Patent Owner identifies disclosures from the '108 Application and the '962 Application. For the new loading ranges recited in Substitute Claims 16–18, I understand Patent Owner identifies the following disclosures as supporting the new loading ranges of individual tie layers:

- [I]n one embodiment, the tie layer or plurality of tie 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. '108 App, ¶43; '962 App, 8:12–15.

- For the co-extrusion layers, the loading of the tie layers was between 4–18 g/m² and the loading of the contact layer was 8–12g/m². '108 App, ¶147; '962 App, 19:1–6.

RMTA, 4.

C. Aggressive Chemical-Resistant Films

38. In my Original Declaration, I provided a discussion regarding the technology background of aggressive chemical-resistant films relating to the Original Claims of the '624 Patent. I further provided an overview of the different definitions the '624 Patent discloses for an “aggressive chemical-resistant film.” See EX1003, ¶¶96-112.

39. I understand that Substitute Claims 19 and 22 now recite specific requirements, or limitations, that the films must meet to qualify as an aggressive chemical-resistant film. RMTA, 28-29. For instance, Substitute Claim 19 now recites “the aggressive chemical-resistant film is resistant to the chemical based at least in part on allowing less than 10% of the chemical to migrate into the aggressive chemical-resistant film.” And substitute claim 22 recites “the aggressive chemical-resistant film is resistant to the chemical based at least in part on allowing 90% to 110% of the chemical in the first patch to migrate into a first pouch formed by the

aggressive chemical-resistant film relative to an amount of the chemical in a second patch allowed to migrate into a second pouch formed by a second film comprising a contact layer that comprises polyacrylonitrile.”

40. For support of Substitute Claim 19 in the written description, I understand Patent Owner identifies the following disclosure from the '108 Application and the '962 Application: “[I]n the context of the present disclosure aggressive chemical-resistant film means that no more than 1% of the original amount of API [active pharmaceutical ingredient] to be packaged (or sometimes no more than 10%) is migrated into the packaging material after 24 weeks. Typically, the degree of uptake is complete after 12 weeks or less.” RMTA, 4 (citing '108 App, ¶33; '962 App, 6:26-29).

41. For support of Substitute Claim 22 in the written description, I understand Patent Owner identifies the following disclosure from the '108 Application and the '962 Application: “A value of 90%-110% of the original does after one week when stored at 40°C using Barex® as index 100 is considered acceptable.” “As can be seen from Figure 5, both inventive laminates have a lower value than the index 100 Barex® comparative product, however with at [sic] a value within the acceptable limits.” “The lower value of the laminates according to the invention indicates that more lidocaine has disappeared from the patch.” RMTA, 5 (citing '108 App, ¶158-59, Fig. 5; '962 App, 20:16-26). I understand Patent Owner identifies the following

disclosures from the '108 Application and the '962 Application: “A known polymer that fulfils the requirements of extreme chemical resistance and inert properties is a polyactyllonitrile [sic] (PAN) based film, which is soled for example as resins under the trademark Barex®.” RMTA, 5 (citing '108 App, ¶5; '962 App, 1:30–31).

VI. LEVEL OF ORDINARY SKILL IN THE ART

42. Huhtamaki has requested that I provide my understanding of what would be the qualifications of a POSITA with respect to the '624 patent. I understand from Huhtamaki's counsel that a POSITA is a hypothetical person who is presumed to have known the relevant art at the time of the invention. I further understand that factors to be considered in determining the level of ordinary skill in the art may include: (1) the types of problems encountered in the art, (2) the prior art solutions to those problems, (3) the rapidity with which innovations are made, (4) the sophistication of the technology, and (5) the educational level of active workers in the field.

43. In my Original Declaration, I opined that a POSITA with respect to the subject matter of the '624 patent at the time of its invention can fairly be described as someone with at least a bachelor's degree (or equivalent) in Chemical Engineering, Polymer Science and Engineering, Materials Science and Engineering, or the like, and 2–3 years of experience in laminate or film manufacture or similar packaging manufacture. Less hands-on experience may be necessary with additional education

and vice versa.

44. I understand that Patent Owner presents a different level of skill in the art, which is someone with “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.”

45. In my professional opinion, both proposed definitions of a POSITA are not substantially different and overlap significantly. It is further my opinion that the difference in the levels of skill do not change the analysis below in determining the unpatentability of the proposed substitute claims.

VII. CLAIM CONSTRUCTION

46. My understanding of the principles of claim construction and my methodology for determining the meaning of claimed limitations are provided in my Original Declaration.

47. I further understand that in the context of a motion to amend, a substitute claim cannot present “new matter.” I understand that “new matter” refers to subject matter that does not have written description support in the originally filed application. In my Original Declaration, I provided my understanding of written description support. EX1003 ¶¶18-21.

48. In my opinion, other than the terms discussed in my Original Declaration as

indefinite (“aggressive chemical-resistant film” and “loading”), the ’624 Patent does not use any other unusual claim terms. Nor do any claim terms aside from “aggressive chemical-resistant film” and “loading” appear to be used outside their plain and ordinary meaning, as understood by a POSITA and in view of the ’624 Patent specification and the prosecution history and other patent content.

VIII. SUMMARY OF THE APPLIED REFERENCES

A. Riis (EX. 1004)

49. My summary of Riis is provided in my Original Declaration and not reproduced here.

B. Wypych (EX. 1005)

50. My summary of Wypych is provided in my Original Declaration and not reproduced here.

C. Tohara (EX. 1033)

51. My summary of Tohara is provided in my Second Declaration and not reproduced here.

D. Holzmuller (EX. 1034)

52. My summary of Holzmuller is provided in my Second Declaration and is restated here.

53. The work of Holzmuller is entitled “Multilayered Laminate for Tubes Having an Embedded Aluminum Layer, a Process for the Production Thereof and a Tube

Produced Therefrom.” EX1034, Title. Holzmuller relates to multilayered laminates that contain embedded aluminum barrier layers surrounded by protective layers, which are joined to the aluminum barrier layer by one or more intermediate layers. EX1034, ¶2, Abstract. In particular, Holzmuller provides that multilayered laminates are used in the packaging industry sector and are useful because they provide dimensionally stable properties for producing items such as tubes, bags, and other packages for containing substances. *Id.*, ¶3. The aluminum foil layer positioned in the film acts as a blocking (or barrier) layer to effectively prevent the diffusion of chemical species, including volatile substances. *Id.* The intermediate layer(s) are provided to bond the outer protective layer to the aluminum layer. *Id.*, ¶10.

54. Holzmuller recognizes that prior art multilayered laminates suffered from a lack of protection of the aluminum barrier layer, poor haptic/mechanical properties, and risk of delamination mostly due to the varying levels of thickness associated with each layer of the laminate. EX1034, ¶¶3-7. While thicker laminate layers provide a longer diffusion path for penetrating volatile chemicals and the damage-prone aluminum barrier layer, such added thickness drives up cost and often results in poor haptic/mechanical properties of the laminate. EX1034, ¶¶3-7.

55. Holzmuller teaches that exterior protective layers and various intermediate layers can be utilized to protect the internal aluminum barrier layer while simultaneously balancing the overall thickness. EX1034, ¶¶8-11, 16-17. To prevent

undesirable delamination, Holzmuller teaches the use of multilayer adhesive and bonding intermediate layers of varying potential thicknesses. EX1034, ¶18-19. Holzmuller teaches that use of such intermediate adhesive and bonding layers yields a synergistic effect according to the combination of materials employed, yielding “an additive effect” of the “intermediate layer material which, on the one hand, has both high mechanical stability and high chemical stability,” and also provides “a high degree of stretchability combined at the same time with high tear resistance, a high level of resistance to diffusion and the possibility of achieving good drive [and] good haptic properties.” EX1034, ¶20. Holzmuller further teaches that the various intermediate layers may be formed through joint extrusion, tandem extrusion, and coextrusion processes to form a multi-ply composite. EX1034, ¶¶24-26.

E. Rivers (EX. 1035)

56. My summary of Rivers is provided in my Second Declaration and not reproduced here.

IX. PATENTABILITY OF THE CHALLENGED CLAIMS OVER THE APPLIED REFERENCES

57. I understand Patent Owner’s proposed Substitute Claims 14-24 are provided such that if any of original 1 and 4-13 are found unpatentable, the Board may substitute the corresponding claim, pending the substitute claim is patentable over the prior art. Patent Owner makes substantive amendments to the independent claims

and various dependent claims that are addressed further below. For all claims and limitations not substantively amended in the substitute claims, I refer generally to the opinions and facts presented in my Original Declaration and in my Second Declaration. *See generally* EX1003, ¶¶120-262; EX1037, ¶¶78-190.

F. The Combination of Riis and Wypych Renders Substitute Claims 14, 15, and 20–24 Obvious.

58. I understand that Substitute Claim 14 proposes two main substantive amendments: (1) replacing the claim language “the base layer comprises aluminum” with narrower language of “the base layer consists of aluminum”; and (2) clarifying the “coextrusion layer consist[s] of [a] tie layer [comprising a first layer and a second layer] and [a] contact layer.” *See* RMTA, 26.

59. It is my opinion that the combination of Riis and Wypych disclose and render obvious the added limitations of Substitute Claim 14, and therefore render obvious the claim as a whole in combination with the disclosures of Riis and Wypych as discussed in my Original Declaration for Original Claim 1. *See* EX1003, ¶¶121-165, 212. Claim limitations not explicitly discussed herein are disclosed by the prior art as discussed in my Original Declaration.

i. Riis discloses a base layer consisting of aluminum.

60. This claim element is the same as previously amended in Patent Owner’s original Motion to Amend for Substitute Claim 14. I substantively addressed this claim limitation in my Second Declaration, which I refer to as my opinion with

respect to Riis disclosing a base layer consisting of aluminum. *See* EX1037, ¶¶80-89.

ii. Riis discloses a “coextrusion layer consisting of [a] tie layer [comprising a first layer and a second layer] and [a] contact layer.

61. I understand the Substitute Claim 14 proposes adding a first layer of the tie layer and a second layer of the tie layer, with the loading of the entire tie layer being in the range of 7 to 20 g/m², or each of the first layer and the second layer, individually, being in the range of 7 to 20 g/m². RMTA, 26.

62. It is my opinion that Substitute Claim 14’s recitation of “the tie layer comprises a first layer and a second layer, and wherein the tie layer, or each of the first layer of the tie layer and the second layer of the tie layer, has a loading in the range of 7 to 20 g/m²” includes options that the tie layer as a whole may be in a loading range of 7–20 g/m² or each layer separately may be in a loading range of 7–20 g/m². EX1039, 37:11–38:23.

63. Accordingly, it is my opinion that Substitute Claim 14 as provided in Patent Owner’s RMTA does not alter my previous analysis of how Riis discloses the claimed film other than to require the tie layer as having a first layer and a second layer. I previously demonstrated that when Riis’ disclosure of thickness for each of the EAA and LDPE tie layers are converted from mils to loading, the 0.17 mil EAA layer and 0.65 mil LDPE layer of Example 5 disclose a loading range of 19.08 g/m²–

19.49 g/m². *See* EX1003, ¶¶150–165, 174–180, 225–241, 250. Because the claimed loading range of 7–20 g/m² of the entirety of the tie layer is met, it is my opinion that the combination of Riis and Wypych renders obvious the claimed tie layer loading range for the same reasons as set forth in my Original Declaration.

G. The Combination of Riis and Wypych Renders Substitute Claim 15 Obvious

64. I understand that Substitute Claim 15 recites verbatim original claim 4: “wherein the contact layer has a loading in the range of 4 to 20 g/m².” *See* RMTA, 27.

65. I substantively addressed this claim limitation in my Original Declaration regarding original claim 4, which I refer to as my opinion with respect to Riis disclosing the loading range of the contact layer falling in the range of 4–20 g/m². *See* EX1003, ¶¶170–173, 246–249.

H. The Combination of Riis and Wypych Renders Substitute Claim 20 Obvious

66. I understand that Substitute Claim 20 recites verbatim original claim 9: “wherein coating the coextrusion layer to the base layer comprises performing a coextrusion coating.” *See* RMTA, 28.

67. I substantively addressed this claim limitation in my Original Declaration regarding original claim 9, which I refer to as my opinion with respect to Riis disclosing coating the coextrusion layer to the base layer comprising performing a

coextrusion coating. *See* EX1003, ¶¶126-131, 195-196, 214-220, 254.

I. The Combination of Riis and Wypych Renders Substitute Claim 21 Obvious

68. I understand that Substitute Claim 21 proposes the following amendment to original claim 10: “wherein at least one of the ~~one or more layers~~ first layer of the tie layer and the second layer of the tie layer comprises an acrylic acid layer or a polyethylene layer.” *See* RMTA, 29.

69. I substantively addressed this claim limitation in my Original Declaration regarding original claim 10, which I refer to as my opinion with respect to Riis disclosing at least one of the tie layers comprises an acrylic acid layer or a polyethylene layer. *See* EX1003, ¶¶197-198.

70. With respect to the amendments submitted by Patent Owner, it is my opinion that Substitute Claim 21 merely clarifies that the tie layer includes a first layer and a second layer, as proposed in Substitute Claim 14 from which Substitute Claim 21 depends.

71. The exemplary film of Riis utilizes a three-layer coextrusion with EAA (acrylic acid layer) and LDPE (polyethylene layer) as the first and second layer of the tie layer, combined with COC as the contact layer, thereby producing a “sealant film,” which is adhered to an aluminum barrier layer of a base film to form a multilayer film or laminate. EX1004, ¶¶159–62, 173–74. It is my opinion that the

combination of Riis and Wypych disclose and render obvious the added limitations of Substitute Claim 21.

J. The Combination of Riis and Wypych Renders Substitute Claim 22 Obvious

72. I understand that Substitute Claim 22 clarifies the first and second layers of the tie layer and proposes adding the following limitations to original claim 11 which is directed to defining what film qualifies as an aggressive chemical-resistant film: “the chemical is provided in a first patch, and the aggressive chemical-resistant film is resistant to the chemical based at least in part on allowing 90% to 110% of the chemical in the first patch to migrate into a first pouch formed by the aggressive chemical-resistant film relative to an amount of the chemical in a second patch allowed to migrate into a second pouch formed by a second film comprising a contact layer that comprises polyacrylonitrile.” See RMTA, 29. I understand Substitute Claim 22 substantially mirrors Substitute Claim 20 from Patent Owner’s first Motion to Amend, except that the Substitute Claim 22 in the RMTA recites polyacrylonitrile instead of Barex®. *Compare* RMTA, 29, *with* MTA, 28–29.

73. It is my opinion that the combination of Riis and Wypych disclose and render obvious the added limitations of Substitute Claim 22, and therefore Substitute Claim 22 is rendered obvious as a whole in combination with the disclosures of Riis and Wypych as discussed in my Original Declaration for original claim 11. See EX1003, ¶¶199, 257.

74. For the same reasons as discussed in my Second Declaration, it is my opinion that Riis discloses that the package formed by its inventive film can be used to contain, for example, a transdermal drug delivery patch. *See* EX1037, ¶¶158–63 (citing EX1004, ¶¶2, 4, 55, 91-92, 114, 122, 137, 160, 174).

75. As expressed in my Second Declaration, Riis also discloses an aggressive chemical-resistant film that allows 90-110% migration of the chemical when compared with Barex®. EX1037, ¶¶161–63 (citing EX1004, ¶¶129, 132). It is my opinion that Riis also recognizes that Barex® films include polyacrylonitrile as a common antiscalping material employed for packaging of transdermal patches. Riis provides that polyacrylonitrile is often sold under the Barex® trademark by Ineos. EX1004, ¶4.

76. Thus, for the same reasons as discussed in my Second Declaration, it is my opinion that Riis discloses an aggressive chemical-resistant film is resistant to the chemical based on allowing 90-110% chemical migration as compared to films comprising polyacrylonitrile, because a POSITA would understand Riis's comparison of films comprising Barex® includes films comprising polyacrylonitrile. *See* EX1037, ¶¶158–63.

77. With respect to the claim limitations requiring the first layer and second layer of the tie layer comprising an acrylic acid and a polyethylene, the combination of Riis and Wypych provides first and second layers of the tie layer comprising an

acrylic acid layer (EAA) and a polyethylene layer (LDPE). *See* EX1003, ¶¶197–99, 255–57; EX1004, ¶174).

K. The Combination of Riis and Wypych Renders Substitute Claim 23 Obvious

78. I understand that Substitute Claim 23 recites verbatim original claim 12: “wherein the acrylic acid layer comprises ethylene acrylic acid.” RMTA, 29.

79. I substantively addressed this claim limitation in my Original Declaration regarding original claim 12, which I refer to as my opinion with respect to Riis disclosing the acrylic acid layer comprising an ethylene acrylic acid. *See* EX1003, ¶¶200, 258.

L. The Combination of Riis and Wypych Renders Substitute Claim 24 Obvious

80. I understand that Substitute Claim 24 is nearly identical in scope to Substitute Claim 14, the difference being that the claim is directed to a laminate instead of a film, and the portion of the claim referring to “the aggressive chemical-resistant film is resistant to a chemical selected from nicotine, fentanyl, rivastigmine, or lidocaine” has been moved to a different location in the claim. RMTA, 30.

81. For the same reasons above regarding Substitute Claim 14 and for the same reasons I discussed in my Original Declaration regarding original claim 13, the combination of Riis and Wypych discloses and render obvious Substitute Claim 24. *See supra* § IX.A; *see also* EX1037, ¶¶80–89; EX1003, ¶¶201–10, 259–62. For the

same reasons in my Original Declaration, it is my opinion that Riis provides a laminate that includes an aggressive chemical-resistant film as claimed in Substitute Claim 24. EX1003, ¶¶204–05.

M. The Combination of Riis, Wypych, and Holzmuller Renders Substitute Claim 16 Obvious

82. I understand that Substitute Claim 16 depends from Substitute Claim 14 and proposes requiring a loading of each of the first layer and the second layer of the tie layer: wherein a loading of an entirety of the tie layer is in the range of 7 to 20 g/m², and wherein a loading of the first layer of the tie layer is in the range of 1 to 14 g/m² and a loading of the second layer of the tie layer is in the range of 1 to 14 g/m².

RMTA, 27.

83. It is my opinion that the combination of Riis, Wypych, and Holzmuller disclose and render obvious the added limitations of Substitute Claim 16, and therefore render obvious the claim as a whole in combination with the disclosures of Riis and Wypych as discussed in my Original Declaration for original claim 5. See EX1003, ¶¶150–159, 174–180, 226–234, 250.

84. As discussed in my Original Declaration and in my Second Declaration, a POSITA would be able to determine the loading of any layer of material by multiplying the thickness of the layer by the mass density to yield an area density. EX1003, ¶152; EX1037, ¶112. I utilize the same methodology to ascertain loading ranges in this Third Declaration.

85. As discussed in my Original Declaration, the first layer of the tie layer is the EAA layer and the second layer of the tie layer is the LDPE layer. EX1003, ¶¶194, 253. As also discussed in my Original Declaration, the 0.17 mil EAA layer disclosed in the three-layer coextrusion sealant film of Example 5 of Riis has a loading range of 3.97-4.15 g/m², which falls inside the newly claimed range of 1 to 14 g/m² as recited in Substitute Claim 16. EX1003, ¶¶150-159, 226-234.

86. As additionally discussed in my Original Declaration, the 0.65 mil LDPE layer disclosed in the three-layer coextrusion sealant film of Example 5 of Riis has a loading range of 15.11-15.34 g/m², which falls outside of the newly claimed range of 1 to 14 g/m² as recited in Substitute Claim 16. EX1003, ¶¶150-159, 226-234. As further discussed in my Original Declaration, Riis discloses that the polyolefin bulk layer, which may be a tie layer, “may be of any suitable thickness from 0.1 to 7 mils,” which provides a broad loading range beyond the approximate 15 g/m² disclosed in Example 5 of Riis and the range of densities taught in Wypych. EX1003, ¶233 (citing EX1004, ¶65). Considering the disclosure of Riis and its various suitable thicknesses for the tie layer, the thickness of the LDPE layer can be altered to be of any suitable thickness within Riis’ disclosed range.

87. In addition to Riis, a POSITA would also consider Holzmuller’s teachings of multilayered laminates disclosing various preferred ranges of thicknesses of intermediate bonding layers to produce a synergistic effect of both high mechanical

and chemical stability along with other added benefits. *See supra* § VIII.D. In particular, Holzmuller teaches that adequate protection of a sandwiched aluminum barrier layer can be obtained while also balancing haptic/mechanical properties and costs by utilizing more than one intermediate bonding layers of varying thicknesses to yield an “additive effect.” EX1034, ¶¶18-20. Additional benefits of this approach include “high tear resistance, a high level of resistance to diffusion and the possibility of achieving good drive [and] good haptic properties.” EX1034, ¶20.

88. It is my opinion that a POSITA would appreciate Holzmuller’s teaching that varying the thicknesses of intermediate bonding layers would produce an additive effect, yielding multiple positive benefits for the end laminate or film, including “high mechanical stability and high chemical stability,” and also provides “a high degree of stretchability combined at the same time with high tear resistance, a high level of resistance to diffusion and the possibility of achieving good drive [and] good haptic properties.” EX1034, ¶20. Thus, a POSITA would be motivated to modify and optimize the interacting thicknesses of the layers that make up the tie layer to promote adhesion, prevent undesirable lamination, and otherwise produce an additive effect through routine experimentation.

89. As discussed above, Holzmuller teaches various thicknesses of intermediate bonding layers, including an allowable layer thickness, a preferred layer thickness, and an especially preferred layer thickness. EX1034, ¶¶19, 23. Thus, a POSITA

would be motivated to start with the broad allowable ranges taught by Holzmuller and experiment within those ranges, including into the narrower preferred and especially preferred layer thickness ranges, to determine which thicknesses produce the desired additive effect.

90. Regarding intermediate bonding layers, Holzmuller teaches that such layers may be formed from polyolefins, such as polyethylene, and from EAA. EX1034, ¶19. Holzmuller teaches exemplary thicknesses of bonding layers formed from polyolefins such as polyethylene to be in an allowable range of 5-140 μm (0.197-5.512 mils), a preferred range of 8-95 μm (0.315-3.740 mils), and an especially preferred range of 10-50 μm (0.394-1.968 mils). EX1034, ¶19.

91. As discussed above, a POSITA would be able to determine the loading of any layer of material by multiplying the thickness of the layer by the mass density to yield an area density. EX1003, ¶152. For Holzmuller, a POSITA would understand to take the thickness of each polymer layer as disclosed in microns and convert it to centimeters, then multiply its thickness in centimeters by the mass density (typically expressed in grams per cubic centimeter), and finally convert the result to an area of square meters. Table 1 is provided below to summarize the dimensional analysis of allowable loading, preferred loading, and especially preferred loading of Riis's LDPE layer as taught by Holzmuller's polyethylene layers.

Layer	Thickness	LDPE Density	Square Meter Conversion
Allowable	5-140 μm = 0.0005-0.014 cm	$\frac{(0.915-0.929) \text{ g}}{1 \text{ cm}^3}$	$\frac{10,000 \text{ cm}^2}{1 \text{ m}^2}$
Preferred	8-95 μm = 0.0008-0.0095 cm		
Especially Preferred	10-50 μm = 0.001-0.005 cm		

Table 1

92. According to the methodology employed in my Original Declaration for determining loading, Holzmuller teaches loading ranges of Riis's LDPE from 4.6-130.1 g/m², preferably from 7.3-88.3 g/m², and especially preferably from 9.2-46.4 g/m² (keeping to one decimal place for consistency). I note that a POSITA would understand LDPE to correspond to low-density polyethylene (the "low-density" qualifier provides a relatively simple classification to indicate the extent of polymer crystallization). See *e.g.*, EX1004, ¶¶69, 74 ("The interior, exterior, intermediate or tie layers may be formed of any suitable thermoplastic materials, for example . . . polyolefins, and in particular members of the polyethylene family such as . . . LDPE.").

93. Holzmuller thus teaches an allowable loading range of LDPE that encompasses the claimed range recited in Substitute Claim 16. Holzmuller's preferred and especially preferred ranges overlap with the new claimed range recited in Substitute Claim 16. Accordingly, it is my opinion that Holzmuller's LDPE layer loading ranges render obvious the claimed range of "a loading of a second layer of

the tie layer is in the range of 1 to 14 g/m².”

94. Holzmuller further teaches exemplary thicknesses of bonding layers (such as a first bonding layer) formed from EAA to be in the same allowable range of 5-140 µm (0.197-5.512 mils), a preferred range of 8-95 µm (0.315-3.740 mils), and an especially preferred range of 10-50 µm (0.394-1.968 mils). EX1034, ¶19.

95. Table 2 is provided below summarizing the dimensional analysis of allowable loading, preferred loading, and especially preferred loading of Riis’s EAA layer as taught by Holzmuller’s EAA layers.

Layer	Thickness	EAA Density	Square Meter Conversion
Allowable	5-140 µm = 0.0005-0.014 cm	$\frac{(0.92-0.96) \text{ g}}{1 \text{ cm}^3}$	$\frac{10,000 \text{ cm}^2}{1 \text{ m}^2}$
Preferred	8-95 µm = 0.0008-0.0095 cm		
Especially Preferred	10-50 µm = 0.001-0.005 cm		

Table 2

96. According to the methodology employed in my Original Declaration for determining loading, Holzmuller teaches loading ranges of Riis’s EAA of an allowable range of 4.6-134.4 g/m², preferred ranges of 7.4-91.2 g/m², and especially preferred ranges of 9.2-48.0 g/m² (keeping to one decimal place for consistency).

97. Holzmuller thus teaches an allowable loading range of EAA that encompasses the claimed range recited in Substitute Claim 16. Holzmuller’s preferred and especially preferred ranges overlap substantially with the new claimed range recited

in Substitute Claim 16. Accordingly, it is my opinion that Holzmuller's EAA layer loading ranges render obvious the claimed range of "a loading of a first layer of the tie layer is in the range of 1 to 14 g/m²."

98. As discussed above, Holzmuller's teachings of not only allowable ranges of bonding layer thicknesses, but also of preferred and especially preferred thickness ranges would have motivated a POSITA to tailor the thicknesses, and thus the loadings, of the intermediate bonding layers to achieve the desired additive effects. It is thus my opinion that a POSITA would optimize the ranges of intermediate bonding layers taught by Holzmuller to the LDPE and EAA tie layers of the combination of Riis and Wypych to achieve desired synergistic properties of intermediate layers and thus impart the associated beneficial characteristics upon the resultant film or laminate, including high mechanical and chemical stability, a high degree of stretchability combined at the same time with high tear resistance, a high level of resistance to diffusion, the possibility of achieving good drive, and good haptic/mechanical properties.

99. Further, Holzmuller teaches the need to balance materials and thicknesses of intermediate bonding layers used in multilayered laminates of the packing industry to prevent delamination, block internal barrier layers from packaged substances, optimize haptic properties like stiffness, provide chemical and mechanical stability, have high tear resistance, and to keep costs low. EX1034, ¶¶3–4, 7, 20. Holzmuller

emphasizes that multilayered intermediate bonding layers in such films can produce additive effects. EX1034, ¶¶19, 20, 23. It is my opinion that, similar to Riis, Holzmuller recognizes using polymers like EAA and polyethylene provide suitable bonding layers for use in such laminates. EX1034, ¶18. Based on this disclosure, Holzmuller would have motivated a skilled artisan to tailor and optimize the thicknesses, and thus the loadings, of the intermediate bonding layers as applied to Riis's LDPE and EAA tie layers to achieve desired synergistic properties of the multilayered intermediate tie layers. EX1037, ¶126.

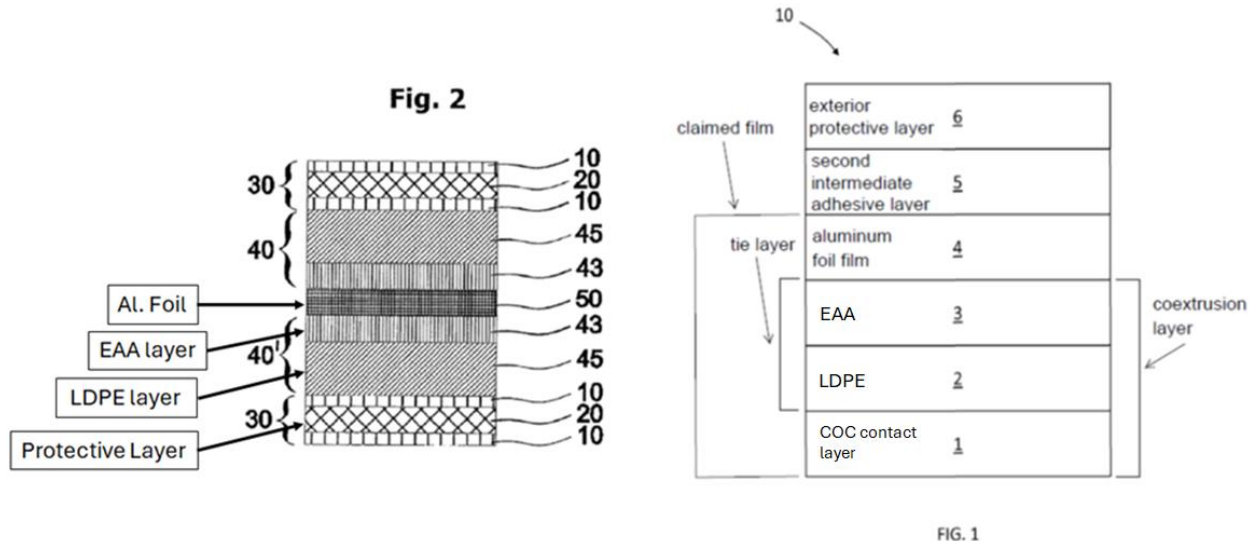
100. In my opinion, this would in turn impart the associated beneficial characteristics upon the resultant film or laminate, including high mechanical stability and high chemical stability, a high degree of stretchability combined at the same time with high tear resistance, a high level of resistance to diffusion, the possibility of achieving good drive, and good haptic/mechanical properties. EX1037, ¶126. The optimized ranges taught by Holzmuller show that a POSITA would tailor such ranges to achieve the desired results. EX1037, ¶¶136–38, 147–49. A POSITA would thus be motivated to optimize Riis's intermediate tie layers to achieve desired additive effects and would have had a reasonable expectation of success in doing so due to the similarity in structure, function, and polymeric materials considered by both Riis and Holzmuller. EX1037, ¶¶115–17, 126–27.

101. It is my opinion that a POSITA, when considering the combination of Riis,

Wypych, and Holzmuller, would not be discouraged from decreasing the thickness of Riis's exemplary 0.65 mil LDPE layer during routine experimentation. A skilled artisan recognizes that Riis specifically provides that such LDPE layers, even denoted as bulk layers, can range from 0.1–7 mils. EX1004, ¶65; EX2015, 82:24–83:6.

102. It is my opinion that a POSITA would have a reasonable expectation of success in modifying the individual tie layer thicknesses of the combination of Riis and Wypych with Holzmuller's teachings of varying thicknesses to employ among the intermediate bonding layers to achieve the additive effects benefitting the end resulting film or laminate. A POSITA would further have a reasonable expectation of success as Holzmuller similarly relates to multilayer films exposed to chemicals that may leach through the film laminate. EX1034, ¶¶2-3; EX1004, ¶¶3-5, 91-92. Both Holzmuller and Riis contain aluminum foil layers that may be sandwiched between intermediate adhesive or bonding layers formed of polyethylene and EAA and exterior layers aimed to protect against external environments and chemicals. EX1034, ¶¶8, 10; EX1004, ¶59. A side-by-side representation of the similar structures of Riis and Holzmuller is depicted below. Riis and Holzmuller similarly contemplate suitable methods of forming films and laminates, including extrusion, and coextrusion. EX1004, ¶157; EX1034, ¶24. Due to the similarity in structure, function, and polymeric materials considered, a POSITA would have a reasonable

expectation of success in implementing Holzmuller's teachings into the method of providing a film with the combination of Riis and Wypych.



(EX1034, Fig. 2 (annotated); EX1004, Fig. 1 (annotated))

103. In my opinion, the different types of processing techniques disclosed by Holzmuller and Riis are not sufficient to render the disclosures incompatible. While Holzmuller discloses some lower processing techniques, it also discloses coextrusion of certain layers, including the intermediate layers. EX2016, ¶24. A POSITA would appreciate that Holzmuller teaches relative interacting thicknesses for intermediate bonding layers (i.e., tie layers) that result in synergistic effects for the overall film. Although Holzmuller does not disclose the use of COC as a contact layer, a POSITA would appreciate that Riis already discloses the ability to coextrude EAA and LDPE with COC in a sealant film coextruded coated onto an aluminum foil surface layer. Indeed, Riis provides an exemplary film with that structure. As such, a POSITA would not rely upon incorporating an oriented coextruded

protective layer into Riis's already aggressive-chemical resistant film.

104. I understand that Patent Owner has asserted that Holzmuller is not enabling to make the claimed film. RMTA, 14–16. I understand that prior art is presumed to be operable and enabling and that prior art must enable an ordinarily skilled artisan to practice the claimed invention without undue experimentation.

105. It is my opinion that Holzmuller is fully enabled for the portions of the claims that are relied upon for its disclosure, being both self-enabling and enabled in view of other prior art references such as Riis and Wypych. Holzmuller provides a listing of a number of different materials to be used in its inventive laminate. Holzmuller further segments the exemplary materials by layer, indicating to a POSITA which materials are appropriate for each layer of its laminate. EX1034, ¶18.

106. It is also my opinion that Holzmuller provides exemplary layer thicknesses for each layer of its disclosed laminate. Like its disclosures related to materials, Holzmuller segments its disclosed thicknesses by layer, indicating to a POSITA which thicknesses are appropriate for each layer of its laminate. EX1034, ¶19. Holzmuller goes further and identifies different ranges of thicknesses for each layer, thus motivating a POSITA to experiment within those ranges, the preferred thickness ranges and especially preferred thickness ranges in particular. EX1034, ¶19.

107. Accordingly, it is my opinion that a POSITA would recognize that in forming multilayer laminates as discussed in Holzmuller and as otherwise known in the art,

a POSITA would know that selecting materials for different layers, thicknesses for each layer, and other parameters for formation of the films and laminates (like parameters used in extrusion of polymers) all require a routine amount of experimentation. Moreover, Holzmuller provides clear guideposts for the thicknesses of each layer by disclosing generally allowable thicknesses, preferred ranges of thicknesses, and especially preferred ranges of thicknesses. Accordingly, a POSITA would be motivated to experiment within the especially preferred ranges of Holzmuller.

108. As I discussed in this ground of challenge above, Substitute Claim 16 is disclosed and rendered obvious by the combination of Riis, Wypych, and Holzmuller. As explained in my Original Declaration, Riis discloses the claimed film structure, including the particular materials to be used for each layer of the tie layer and further includes thickness ranges for each layer of the tie layer. EX1003, ¶¶126–131, 149–165, 199–200, 214–220, 224–241, 257–258. In looking to Holzmuller, a POSITA would appreciate that Holzmuller recognizes the materials of its intermediate bonding layers are the same as the materials disclosed in Riis's tie layer. See EX1004, ¶¶68–74, 174; EX1034, ¶18. Thus, as stated above, a POSITA would have been motivated to modify and optimize the tie layer thicknesses disclosed by Riis with the thickness ranges, especially the preferred and especially preferred thickness ranges, taught by Holzmuller.

109. I also understand that Patent Owner has alleged the claimed ranges of the '624 Patent are critical and produce new and unexpected results. RMTA, 17. I understand that Patent Owner has identified certain portions of the '624 Patent as providing evidence of criticality of the claimed ranges. RMTA, 17 (citing EX1001, 2:63–67, 6:1–13, 6:24–28). I understand that Patent Owner's expert identified additional disclosures during his deposition that he asserts are evidence of criticality of the claimed invention. EX1039, 30:8–23, 34:10–11 (citing EX1001, 3:1–3, 3:4–15, 6:17–20).

110. Based upon my review of each of the disclosures of the '624 Patent identified by Patent Owner and its expert, it is my opinion that none of those disclosures show an unexpected result linked to the tie layer loading ranges claimed in the '624 Patent. That is, I see no evidence of criticality with respect to loading ranges. In particular, the disclosures identified in column 2 appear to be a general statement of novelty of the invention of the '624 Patent; they do not mention the loading ranges. Further, the disclosures identified in column 3 are related to relative energy differences (RED) values of polymers in the film, not loading ranges. EX1001, 3:1–15. Finally, the disclosures identified in column 6 are related to the melting characteristics of different layers of the film, not loading ranges. EX1001, 6:17–20, 6:24–28). Accordingly, it is my opinion that Patent Owner has not shown how the loading ranges of the '624 Patent produce unexpected results or otherwise show criticality

of those ranges. The portions of the '624 patent and Dr. McCarthy's declaration relied upon present no data, comparative results or otherwise, to tie the specific claimed ranges to any special characteristic or critical operability of the claimed invention and therefore do not provide any evidence of unique criticality in comparison to the prior art.

N. The Combination of Riis, Wypych, and Holzmuller Renders Substitute Claim 17 Obvious

111. I understand that similar to Substitute Claim 16, Substitute Claim 17 proposes adding an order of arrangement and a loading of each of a first layer and a second layer of the tie layer to original claim 6 as follows: “wherein a loading of ~~at least a portion of the entirety of~~ the tie layer is in the range of 7 to 20 g/m², wherein the first layer of the tie layer is adjacent to the base layer, wherein the second layer of the tie layer is adjacent to the first layer and the contact layer, and wherein a loading of the first layer of the tie layer is in the range of 5 to 19 g/m² and a loading of the second layer of the tie layer is in the range of 1 to 14 g/m².” MTA, 27.

112. It is my opinion that the combination of Riis, Wypych, and Holzmuller disclose and render obvious the added limitations of Substitute Claim 17, and therefore render obvious the claim as a whole in combination with the disclosures of Riis and Wypych as discussed in my Original Declaration for original claim 6. See EX1003, ¶¶150–159, 181–187, 226–234, 251.

113. As discussed in my Original Declaration and in my Second Declaration, a

POSITA would be able to determine the loading of any layer of material by multiplying the thickness of the layer by the mass density to yield an area density. EX1003, ¶152; EX1037, ¶112. I utilize the same methodology to ascertain loading ranges in this Third Declaration.

114. As discussed in my Original Declaration, Riis discloses a first layer of the tie layer is the EAA layer and a second layer of the tie layer is the LDPE layer. EX1003, ¶¶194, 253. As also discussed in my Original Declaration, the 0.17 mil EAA layer disclosed in the three-layer coextrusion sealant film of Example 5 of Riis has a loading range of 3.97-4.15 g/m², which falls outside the newly claimed range of 5 to 19 g/m² as recited in Substitute Claim 17. EX1003, ¶¶150-159, 226-234.

115. As additionally discussed in my Original Declaration, the 0.65 mil LDPE layer disclosed in the three-layer coextrusion sealant film of Example 5 of Riis has a loading range of 15.11-15.34 g/m², which falls outside of the newly claimed range of 1 to 14 g/m² as recited in Substitute Claim 17. EX1003, ¶¶150-159, 226-234.

116. As discussed in my Original Declaration, Riis discloses that the polyolefin bulk layer, which may be a tie layer, “may be of any suitable thickness from 0.1 to 7 mils,” which provides a broad loading range beyond the approximate 15 g/m² disclosed by the combination of Riis and Wypych. EX1003, ¶233 (citing EX1004, ¶65). A POSITA would thus be motivated to alter the thickness of the LDPE layer to be of any suitable thickness disclosed by Riis. Riis further discloses that each layer

of its inventive films and laminates may have any suitable thickness, allowing for “1, 2, 3, 4, 5, 6, 7, 8, 9, or 10 mils, or any increment of 0.1 to 0.01 mil therebetween.” EX1004, ¶91. Thus, a POSITA would be motivated to alter the thickness of any layer of Riis’s inventive film to suit its intended application and address other factors related to the manufacture of the film.

117. In addition to Riis, a POSITA would also consider Holzmuller’s teachings of multilayered laminates disclosing various preferred ranges of thicknesses of intermediate bonding layers to produce a synergistic effect of both high mechanical and chemical stability along with other added benefits. *See supra* § VIII.D. In particular, Holzmuller teaches that adequate protection of a sandwiched aluminum barrier layer can be obtained while also balancing haptic/mechanical properties and costs by utilizing more than one intermediate bonding layers of varying thicknesses to yield an “additive effect.” EX1034, ¶¶18-20. Additional benefits of this approach include “high tear resistance, a high level of resistance to diffusion and the possibility of achieving good drive [and] good haptic properties.” EX1034, ¶20.

118. It is my opinion that a POSITA would appreciate Holzmuller’s teaching that varying the thicknesses of intermediate bonding layers would produce an additive effect, yielding multiple positive benefits for the end laminate or film, including “high mechanical stability and high chemical stability,” and also provides “a high degree of stretchability combined at the same time with high tear resistance, a high

level of resistance to diffusion and the possibility of achieving good drive [and] good haptic properties.” EX1034, ¶20. Thus, a POSITA would be motivated to modify and optimize the interacting thicknesses of the layers that make up the tie layer to promote adhesion, prevent undesirable lamination, and otherwise produce an additive effect through routine experimentation.

119. As discussed above, Holzmuller teaches various thicknesses of intermediate bonding layers, including an allowable layer thickness, a preferred layer thickness, and an especially preferred layer thickness. EX1034, ¶¶19, 23. Thus, a POSITA would be motivated to start with the broad allowable ranges taught by Holzmuller and experiment within those ranges, including into the narrower preferred and especially preferred layer thickness ranges, to determine which thicknesses produce the desired additive effect.

120. Regarding intermediate bonding layers, Holzmuller teaches that such layers may be formed from polyolefins, such as polyethylene, and from EAA. EX1034, ¶19. Holzmuller teaches exemplary thicknesses of bonding layers formed from polyolefins such as polyethylene to be in an allowable range of 5-140 μm (0.197-5.512 mils), a preferred range of 8-95 μm (0.315-3.740 mils), and an especially preferred range of 10-50 μm (0.394-1.968 mils). EX1034, ¶19.

121. As discussed above, a POSITA would be able to determine the loading of any layer of material by multiplying the thickness of the layer by the mass density to

yield an area density. EX1003, ¶152. For Holzmuller, a POSITA would understand to take the thickness of each polymer layer as disclosed in microns and convert it to centimeters, then multiply its thickness in centimeters by the mass density (typically expressed in grams per cubic centimeter), and finally convert to an area of square meters. Table 1, see above (Substitute Claim 16), provides a summary of the dimensional analysis of allowable loading, preferred loading, and especially preferred loading of Riis's LDPE layer as taught by Holzmuller's polyethylene layers.

122. According to the methodology employed in my Original Declaration for determining loading, Holzmuller teaches loading ranges of Riis's LDPE from 4.6-130.1 g/m², preferably from 7.3-88.3 g/m², and especially preferably from 9.2-46.4 g/m² (keeping to one decimal place for consistency). I note that a POSITA would understand LDPE to be a polyethylene. See *e.g.*, EX1004, ¶¶69, 74 ("The interior, exterior, intermediate or tie layers may be formed of any suitable thermoplastic materials, for example . . . polyolefins, and in particular members of the polyethylene family such as . . . LDPE.").

123. Holzmuller thus teaches an allowable loading range of LDPE that encompasses the claimed range recited in Substitute Claim 17. Holzmuller's preferred and especially preferred ranges overlap with the new claimed range recited in Substitute Claim 17. Accordingly, it is my opinion that Holzmuller's LDPE layer

loading ranges render obvious the claimed range of “a loading of a second layer of the tie layer is in the range of 1 to 14 g/m².”

124. Holzmuller further teaches exemplary thicknesses of bonding layers (such as a first bonding layer) formed from EAA to be in the same allowable range of 5-140 μm (0.197-5.512 mils), a preferred range of 8-95 μm (0.315-3.740 mils), and an especially preferred range of 10-50 μm (0.394-1.968 mils). EX1034, ¶19.

125. Table 2, also provided above (Substitute Claim 16), provides a summary of the dimensional analysis of allowable loading, preferred loading, and especially preferred loading of Riis’s EAA layer as taught by Holzmuller’s EAA layers.

126. According to the methodology employed in my Original Declaration for determining loading, Holzmuller teaches loading ranges of Riis’s EAA of an allowable range of 4.6-134.4 g/m², preferred ranges of 7.4-91.2 g/m², and especially preferred ranges of 9.2-48.0 g/m² (keeping to one decimal place for consistency).

127. Holzmuller thus teaches an allowable loading range of EAA that encompasses the claimed range recited in Substitute Claim 17. Holzmuller’s preferred and especially preferred ranges overlap substantially with the new claimed range recited in Substitute Claim 17. Accordingly, it is my opinion that Holzmuller’s EAA layer loading ranges render obvious the claimed range of “a loading of a first layer of the tie layer is in the range of 5 to 19 g/m².”

128. For the same reasons as discussed above, Holzmuller’s teachings of not only

allowable ranges of bonding layer thicknesses, but also of preferred and especially preferred thickness ranges would have motivated a POSITA to tailor the thicknesses, and thus the loadings, of the intermediate bonding layers to achieve the desired additive effects. Accordingly, a POSITA would optimize the ranges of intermediate bonding layers taught by Holzmuller to the LDPE and EAA tie layers of the combination of Riis and Wypych to achieve desired synergistic properties of intermediate layers and thus impart the associated beneficial characteristics upon the resultant film or laminate. *See supra* § IX.H.

129. As discussed above with respect to Substitute Claim 16, it is my opinion that a POSITA would have a reasonable, if not high, expectation of success in modifying the individual tie layer thicknesses of the combination of Riis and Wypych with Holzmuller's teachings of varying thicknesses to employ among the intermediate bonding layers to achieve the additive effects benefitting the end resulting film or laminate. *See supra* § IX.H.

130. As similarly discussed above, it is my opinion that Holzmuller would enable a POSITA to practice the claimed invention without undue experimentation, especially when combined with the teachings of Riis and Wypych as in the asserted combination of references. And further, it is my opinion that Patent Owner has not shown how the loading ranges of the '624 Patent produce unexpected results or otherwise show criticality of the claimed ranges. *See supra* § IX.H.

O. The Combination of Riis, Wypych, and Holzmuller Renders Substitute Claim 18 Obvious

131. I understand that Substitute Claim 18 proposes adding a loading of each of a first layer and a second layer of the tie layer to original claim 7 as follows: wherein ~~the one or more layers of~~ the tie layer comprises a plurality of layers consisting of the first layer of the tie layer and the second layer of the tie layer, ~~[[and]]~~ wherein a loading of the ~~plurality of layers~~ first layer of the tie layer is in the range of 7 to 20 g/m² and a loading of the second layer of the tie layer is in the range of 7 to 20 g/m². RMTA, 28.

132. It is my opinion that the combination of Riis, Wypych, and Holzmuller disclose and render obvious the added limitations of Substitute Claim 18, and therefore render obvious the claim as a whole in combination with the disclosures of Riis and Wypych as discussed in my Original Declaration for original claim 7. See EX1003, ¶¶150–159, 188–193, 226–234, 252.

133. As discussed in my Original Declaration and in my Second Declaration, a POSITA would be able to determine the loading of any layer of material by multiplying the thickness of the layer by the mass density to yield an area density. EX1003, ¶152; EX1037, ¶112. I utilize the same methodology to ascertain loading ranges in this Third Declaration.

134. As discussed in my Original Declaration, the first layer of the tie layer is the EAA layer and the second layer of the tie layer is the LDPE layer. EX1003, ¶¶194,

253.

135. As additionally discussed in my Original Declaration, the 0.17 mil EAA layer disclosed in the three-layer coextrusion sealant film of Example 5 of Riis has a loading range of 3.97-4.15 g/m², which falls outside the newly claimed range of 7 to 20 g/m² as recited in Substitute Claim 18. EX1003, ¶¶150-159, 226-234.

136. As also discussed in my Original Declaration, the 0.65 mil LDPE layer disclosed in the three-layer coextrusion sealant film of Example 5 of Riis has a loading range of 15.11-15.34 g/m², which falls within the newly claimed range of 7 to 20 g/m² as recited in Substitute Claim 18. EX1003, ¶¶150-159, 226-234. As further discussed in my Original Declaration, Riis discloses that the polyolefin bulk layer, which may be a tie layer, “may be of any suitable thickness from 0.1 to 7 mils,” which provides a broad loading range beyond the approximate 15 g/m² disclosed by the combination of Riis and Wypych. EX1003, ¶233 (citing EX1004, ¶65). Riis further discloses that each layer of its inventive films and laminates may have any suitable thickness, allowing for “1, 2, 3, 4, 5, 6, 7, 8, 9, or 10 mils, or any increment of 0.1 to 0.01 mil therebetween.” EX1004, ¶91. Thus, a POSITA would be motivated to alter the thickness of any layer of Riis’s inventive film to suit its intended application and address other factors related to the manufacture of the film.

137. In addition to Riis, a POSITA would also consider Holzmuller’s teachings of multilayered laminates disclosing various preferred ranges of thicknesses of

intermediate bonding layers to produce a synergistic effect of both high mechanical and chemical stability along with other added benefits. *See supra* § VIII.D. In particular, Holzmuller teaches that adequate protection of a sandwiched aluminum barrier layer can be obtained while also balancing haptic/mechanical properties and costs by utilizing more than one intermediate bonding layers of varying thicknesses to yield an “additive effect.” EX1034, ¶¶18-20. Additional benefits of this approach include “high tear resistance, a high level of resistance to diffusion and the possibility of achieving good drive [and] good haptic properties.” EX1034, ¶20.

138. It is my opinion that a POSITA would appreciate Holzmuller’s teaching that varying the thicknesses of intermediate bonding layers would produce an additive effect, yielding multiple positive benefits for the end laminate or film, including “high mechanical stability and high chemical stability,” and also provides “a high degree of stretchability combined at the same time with high tear resistance, a high level of resistance to diffusion and the possibility of achieving good drive [and] good haptic properties.” EX1034, ¶20. Thus, a POSITA would be motivated to modify and optimize the interacting thicknesses of the layers that make up the tie layer to promote adhesion, prevent undesirable lamination, and otherwise produce an additive effect through routine experimentation.

139. As discussed above, Holzmuller teaches various thicknesses of intermediate bonding layers, including an allowable layer thickness, a preferred layer thickness,

and an especially preferred layer thickness. EX1034, ¶¶19, 23. Thus, a POSITA would be motivated to start with the broad allowable ranges taught by Holzmuller and experiment within those ranges, including into the narrower preferred and especially preferred layer thickness ranges, to determine which thicknesses produce the desired additive effect.

140. Regarding intermediate bonding layers, Holzmuller teaches that such layers may be formed from polyolefins, like polyethylene, and from EAA. EX1034, ¶19. Holzmuller teaches exemplary thicknesses of bonding layers formed from polyolefins like polyethylene to be in an allowable range of 5-140 μm (0.197-5.512 mils), a preferred range of 8-95 μm (0.315-3.740 mils), and an especially preferred range of 10-50 μm (0.394-1.968 mils). EX1034, ¶19.

141. As discussed above, a POSITA would be able to determine the loading of any layer of material by multiplying the thickness of the layer by the mass density to yield an area density. EX1003, ¶152. For Holzmuller, a POSITA would understand to take the thickness of each polymer layer as disclosed in microns and convert it to centimeters, then multiply its thickness in centimeters by the mass density (typically expressed in grams per cubic centimeter), and finally convert to an area of square meters. Table 1, see above at Substitute Claim 16, provides a summary of the dimensional analysis of allowable loading, preferred loading, and especially preferred loading of Riis's LDPE layer as taught by Holzmuller's polyethylene

layers.

142. According to the methodology employed in my Original Declaration for determining loading, Holzmuller teaches loading ranges of Riis's LDPE from 4.6-130.1 g/m², preferably from 7.3-88.3 g/m², and especially preferably from 9.2-46.4 g/m² (keeping to one decimal place for consistency). I note that a POSITA would understand LDPE to be a polyethylene. *See e.g.*, EX1004, ¶¶69, 74 (“The interior, exterior, intermediate or tie layers may be formed of any suitable thermoplastic materials, for example . . . polyolefins, and in particular members of the polyethylene family such as . . . LDPE.”).

143. Holzmuller thus teaches an allowable loading range of LDPE that encompasses the claimed range recited in Substitute Claim 18. Holzmuller's preferred and especially preferred ranges overlap with the new claimed range recited in Substitute Claim 18. Accordingly, it is my opinion that Holzmuller's LDPE layer loading ranges render obvious the claimed range of “a loading of a second layer of the tie layer is in the range of 7 to 20 g/m².”

144. Holzmuller further teaches exemplary thicknesses of bonding layers (such as a first bonding layer) formed from EAA to be in the same allowable range of 5-140 µm (0.197-5.512 mils), a preferred range of 8-95 µm (0.315-3.740 mils), and an especially preferred range of 10-50 µm (0.394-1.968 mils). EX1034, ¶19.

145. Table 2, also above at Substitute Claim 16, provides a summary of the

dimensional analysis of allowable loading, preferred loading, and especially preferred loading of Riis's EAA layer as taught by Holzmuller's EAA layers.

146. According to the methodology employed in my Original Declaration for determining loading, Holzmuller teaches loading ranges of Riis's EAA of an allowable range of 4.6-134.4 g/m², preferred ranges of 7.4-91.2 g/m², and especially preferred ranges of 9.2-48.0 g/m² (keeping to one decimal place for consistency).

147. Holzmuller thus teaches an allowable loading range of EAA that encompasses the claimed range recited in Substitute Claim 18. Holzmuller's preferred and especially preferred ranges overlap substantially with the new claimed range recited in Substitute Claim 18. Accordingly, it is my opinion that Holzmuller's EAA layer loading ranges render obvious the claimed range of "a loading of a first layer of the tie layer is in the range of 7 to 20 g/m²."

148. For the same reasons as discussed above, Holzmuller's teachings of not only allowable ranges of bonding layer thicknesses, but also of preferred and especially preferred thickness ranges would have motivated a POSITA to tailor the thicknesses, and thus the loadings, of the intermediate bonding layers to achieve the desired additive effects. Accordingly, a POSITA would optimize the ranges of intermediate bonding layers taught by Holzmuller to the LDPE and EAA tie layers of the combination of Riis and Wypych to achieve desired synergistic properties of intermediate layers and thus impart the associated beneficial characteristics upon the

resultant film or laminate. *See supra* § IX.H.

149. As discussed above for Substitute Claims 16 and 17, it is my opinion that a POSITA would have a reasonable expectation of success in modifying the individual tie layer thicknesses of the combination of Riis and Wypych with Holzmuller's teachings of varying thicknesses to employ among the intermediate bonding layers to achieve the additive effects benefitting the end resulting film or laminate. *See supra* § IX.H.

150. As similarly discussed above for Substitute Claims 16 and 17, it is my opinion that Holzmuller would enable a POSITA to practice the claimed invention without undue experimentation, especially when combined with the teachings of Riis and Wypych as in the asserted combination of references. And further, it is my opinion that Patent Owner has not shown how the loading ranges of the '624 Patent produce unexpected results or otherwise show criticality of the claimed ranges. *See supra* § IX.H.

P. The Combination of Riis, Wypych, and Rivers Renders Substitute Claim 19 Obvious

151. I understand that Substitute Claim 19 proposes adding the following limitation to original claim 8: "the aggressive chemical-resistant film is resistant to the chemical based at least in part on allowing less than 10% of the chemical to migrate into the aggressive chemical-resistant film." *See* RMTA, 28.

152. It is my opinion that the combination of Riis, Wypych, and Rivers disclose and render obvious the added limitations of Substitute Claim 19, and therefore render obvious the claim as a whole in combination with the disclosures of Riis and Wypych as discussed in my Original Declaration for original claim 8. *See* EX1003, ¶¶126-131, 149, 194, 214-220, 225, 253.

153. I substantively addressed this claim limitation in my Second Declaration with respect to Substitute Claim 18, which I refer to as my opinion with respect to Riis disclosing that the aggressive chemical-resistant film is resistant to the chemical based at least in part on allowing less than 10% of the chemical to migrate into the aggressive chemical-resistant film. *See* EX1037, ¶¶150-155.

X. CONCLUSION

154. In signing this declaration, I recognize that this declaration will be filed as evidence in a PGR before the Patent Trial and Appeal Board of the United States Patent and Trademark Office. I also recognize that I may be subject to cross-examination in the case and that cross-examination will take place within the United States. If cross-examination is required, I will appear for cross-examination within the United States during the time allotted.

I hereby declare that all statements made herein are made of my own knowledge and are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code.

Executed on this __5th __ day of March 2024.



Richard J. Spontak, Ph.D.