UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

AMERICAN FUJI SEAL, INC.
Petitioner

v.

BROOK & WHITTLE LIMITED
Patent Owner

IPR2025-01176
Patent No. 11,961,422

PATENT OWNER'S PRELIMINARY RESPONSE

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LISTING OF EXHIBITS

EX	DESCRIPTION
2001	*Brook + Whittle LTD v. Nestle USA, Inc. et al.*, 2:24-cv-00735-JRG-RSP, Dkt. 1 (Complaint)
2002	*Brook + Whittle LTD v. Nestle USA, Inc. et al.*, 2:24-cv-00735-JRG-RSP, Dkt. 46 (Fuji Reply to Motion to Dismiss)
2003	*Brook + Whittle LTD v. Nestle USA, Inc. et al.*, 2:24-cv-00735-JRG-RSP, FSI Resp. to Plaintiff's Interrogatories
2004	*Brook + Whittle LTD v. Nestle USA, Inc. et al.*, 2:24-cv-00735-JRG-RSP, Dkt. 50 (Defendants' Unopposed Motion for Leave to Supplement Invalidity Contentions Under P.R. 3-6(b))
2005	*Brook + Whittle LTD v. Nestle USA, Inc. et al.*, 2:24-cv-00735-JRG-RSP, Dkt. 51 (Order granting D.I. 50)
2006	*Brook + Whittle LTD v. Nestle USA, Inc. et al.*, 2:24-cv-00735-JRG-RSP, Docket Report, generated Sept. 4, 2025
2007	*Brook + Whittle LTD v. Nestle USA, Inc. et al.*, 2:24-cv-00735-JRG-RSP, Dkt. 16 (Docket Control Order)
2008	*American Fuji Seal, Inc. v. Brook + Whittle LTD*, 1:24-cv-01215-MN, D.I. 24 (Order granting motion to stay)
2009	*American Fuji Seal, Inc. v. Brook + Whittle LTD*, 1:24-cv-01215-MN, D.I. 13 (Motion to dismiss)
2010	E.D. Tex. Median Time to Trial Statistics
2011	*Brook + Whittle LTD v. Nestle USA, Inc. et al.*, 2:24-cv-00735-JRG-RSP, Dkt. 80 (Report and Recommendation recommending denying motion to dismiss for improper venue)
2012	*Brook + Whittle LTD v. Nestle USA, Inc. et al.*, 2:24-cv-00735-JRG-RSP, Dkt. 87 (Order adopting Report and Recommendation and denying motion to dismiss)
2013	*Brook + Whittle LTD v. Nestle USA, Inc. et al.*, 2:24-cv-00735-JRG-RSP, Invalidity Contentions
2014	*Brook + Whittle LTD v. Nestle USA, Inc. et al.*, 2:24-cv-00735-JRG-RSP, Dkt. 61
2015	*Brook + Whittle LTD v. Nestle USA, Inc. et al.*, 2:24-cv-00735-JRG-RSP, Dkt. 62
2016	*Brook + Whittle LTD v. Nestle USA, Inc. et al.*, 2:24-cv-00735-JRG-RSP, Dkt. 64
2017	*Brook + Whittle LTD v. Nestle USA, Inc. et al.*, 2:24-cv-00735-JRG-RSP, Dkt. 71

2018	*Brook + Whittle LTD v. Nestle USA, Inc. et al.*, 2:24-cv-00735-JRG-RSP, Dkt. 72
2019	*Brook + Whittle LTD v. Nestle USA, Inc. et al.*, 2:24-cv-00735-JRG-RSP, Dkt. 83 (Joint claim construction and prehearing statement).
2020	Stipulation of American Fuji Seal, Inc.
2021	Stipulation of Nestle USA, Inc.
2022	Stipulation of Fuji Seal International, Inc.
2023	Deposition Transcript of Dr. Robson F. Storey, *Brook + Whittle LTD v. Nestle' USA, Inc. et al.*, 2:24-cv-00735-JRG-RSP (September 16, 2025, rough).
2024	U.S. Patent Application Publication 2017/0223879 ("Mitchell")
2025	Evaluation of the Near Infrared (NIR) Sorting Potential of a Whole Plastic Article (SORT-B-01)
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2027	*Brook + Whittle LTD v. Nestle USA, Inc. et al.*, 2:24-cv-00735-JRG-RSP, Dkt. 93 (B+W Opening Claim Construction Brief)
2028	Declaration of Andy Sharp
2029	PACKAGING EUROPE, *Winners of the Sustainability Awards 2024 Announced!*, (Nov. 14, 2024).
2030	PACKAGING EUROPE, *Sustainability Awards 2024 Finalist Interview: Brook+Whittle's Recyclable, Light-Blocking Shrink Sleeve*, (Sept. 24, 2024).
2031	*AWA Sleeve Label Awards 2024 - Winners* (October 28, 2024)
2032	US Plastics Pact 2023 LinkedIn Post
2033	US Plastics Pact 2024 LinkedIn Post
2034	*Brook + Whittle LTD v. Nestle USA, Inc. et al.*, 2:24-cv-00735-JRG-RSP, Dkt. 44 (B+W's Opposition to Motion to Dismiss)
2035	*Brook + Whittle LTD v. Nestle USA, Inc. et al.*, 2:24-cv-00735-JRG-RSP, Dkt. 91 (Nestle Answer to Complaint)
2036	https://packagingeurope.com/shrink-sleeve-labelling-how-fuji-seal-is-engineering-the-future-of-circularity/13433.article
2037	https://www.linkedin.com/posts/association-of-plastic-recyclers_we-are-proud-to-celebrate-a-major-milestone-activity-7371184359241932800-y0Lp
2038	Email from A. Leonard (Nestle) to S. Figueroa (B+W)

Pursuant to 37 C.F.R. § 42.107(a), Patent Owner Brook + Whittle Limited ("Patent Owner") submits this Preliminary Response in response to the Petition for *inter partes* review ("IPR") of U.S. Patent No. 11,961,422 ("the '422 Patent") filed by American Fuji Seal, Inc. ("Petitioner").

I. INTRODUCTION AND SUMMARY OF ARGUMENT

The Petition asserts two grounds of purported unpatentability challenging all claims of the '422 Patent. Each ground falls far short of demonstrating "a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition." 35 U.S.C. § 314(a). To start, although Petitioner advances an inaccurate construction of a term unquestionably material to all claims: "recyclable shrink label is recyclable with a PET container," inconsistent with both the Patent Owner's proposed construction and the Board's preliminary construction in the co-pending PGR, neither of the Petitioner's proposed Grounds disclose this element under ***any*** proffered construction. The Petition can be denied on that basis alone. Further, each ground is undermined by Petitioner's lack of explanation for why a person of ordinary skill in the art ("POSITA") would have been motivated to combine prior art and how such a combination would render the claims obvious. Although the Petition repeatedly asserts that a POSITA would have arrived at the claimed invention through "routine optimization," the Petition fails to articulate a reasoned explanation as to why a POSITA would have been specifically motivated

to undertake the particular optimizations required by the claims, or why a POSITA would have reasonably expected success in doing so. So conclusory are Petitioner's assertions, its own expert immediately disclaimed his obviousness opinions in his E.D. Tex. deposition. As an example, although Petitioner asserts that a POSITA would be motivated to combine Lee's teaching of a recyclable label and container unit with Kitano's light-blocking features, Dr. Storey entirely abandoned any opinion that Lee provides any such teaching, instead asserting that he "has no opinion" whether Lee teaches a label recyclable with a container. EX2023 at 175:3-176:11. And, Petitioner's other ground, based on Schurr, also fails to disclose a label that can be recycled with a container for the same reasons that the art before the examiner was previously overcome.

Petitioner, while fully aware of significant evidence of secondary considerations, also failed to adequately address these objective indicia of non-obviousness in the Petition. The Board has repeatedly denied institution where a petitioner (like here) fails to adequately address known evidence of secondary considerations. *See, e.g.*, *Aardevo N. Am., LLC v. Agventure B.V.*, IPR2025-00136, Paper 9 at 28-35 (P.T.A.B. May 1, 2025); *Stryker Corp. v. KFX Med., LLC*, IPR2019-00817, Paper 10 at 28–29 (P.T.A.B. Sep. 16, 2019) (denying institution for failure to address known evidence of secondary considerations); *Coalition for Affordable Drugs V LLC v. Hoffman–LaRoche, Inc.*, IPR2015-01792, Paper 14 at

18–19 (P.T.A.B. Mar. 11, 2016) (denying institution for failure to address evidence of secondary considerations considered by Examiner during original prosecution); *Merck Sharp & Dohme Corp. v. Genentech, Inc.*, PGR2021-00036, Paper 10 at 32–34 (P.T.A.B. July 24, 2021) (denying institution for petitioner's failure to adequately address evidence of secondary considerations evidence offered during prosecution); *Praxair Distribution, Inc. v. Mallinckrodt Hosp. Prods.*, IPR2016-00779, Paper 11 at 8–10, 12 (P.T.A.B. Sep. 22, 2016) (denying institution for petitioner's failure to address evidence of secondary consideration presented during prosecution and in earlier proceedings); *see also Robert Bosch Tool Corp. v. SD3, LLC*, IPR2016-01751, Paper 15 at 22–34 (P.T.A.B. Mar. 22, 2017) (denying institution for failure to address objective indicia presented during an ITC proceeding); *Omron Oilfield & Marine, Inc. v. MD/TOTCO, A Div. of Varco, L.P.*, IPR2013-00265, Paper 11 at 12–16 (P.T.A.B. Oct. 31, 2013) (denying institution for failure to address objective indicia successfully argued in a reexamination). Here, all of the objective indicia evidence cited is either already part of the district court record, publicly available, or consists of evidence belonging to the real party in interest (*i.e.*, Nestle). Accordingly, Petitioner has no excuse for failing to address it. As Petitioner's grounds are meritless and fail to address these known objective indicia, Patent Owner respectfully requests that the Board deny institution of the Petition.

II. BACKGROUND

A. Technology Overview and the '422 Patent

The '422 Patent is directed to a recyclable shrink label with a light blocking layer to block at least 80% of incident light with wavelengths between 200 nm and 900 nm in which the label is recyclable along with a container. EX1001 at Abstract. The '422 Patent recognizes that "[t]he dairy, food, nutraceutical, and other markets also require light protective packaging to block ingredient harmful light waves from impacting the shelf life and performance of those products." EX1001 at 1:16-20. Moreover, according to the '422 Patent, "[t]he consumer packaged-goods markets globally aspire to utilize recyclable packaging for most products." EX1001 at 1:14-15. While "[c]lear PET packaging provides a cost effective recyclable option," "[t]raditionally, color impregnated bottles or containers, and/or white shrink films printed with or sometimes without functional light blocking layers are used to block the harmful light waves." EX1001 at 1:14-25. Color impregnated PET bottles or containers are not readily recyclable, however. EX1001 at 1:23-25. Therefore, the '422 Patent recognizes "there remains a need for recyclable, light protective packaging options for many markets, including the food and nutraceutical markets." EX1001 at 1:26-28.

The '422 Patent accordingly discloses a variety of exemplary embodiments aimed at providing a recyclable, light blocking, heat shrink label that can be

embellished with various layers, such as an indicia layer to convey a message (*e.g.*, characteristics of a product in a package, the quantity of a product in a package, or other messages), a high opacity layer to provide a white background for the indicia layer, and a light-blocking layer to block light from interacting with the contents of the container. EX1001 at 17:13-20, 11:55-64, 1:36-3:3, 5:4-43, Figs. 1A-1E, 2. The labels claimed by the '422 Patent "may cover at least some clear or transparent parts of a package," and "serve to block light from reaching a product inside the package." EX1001 at 6:23-29, Fig. 2.

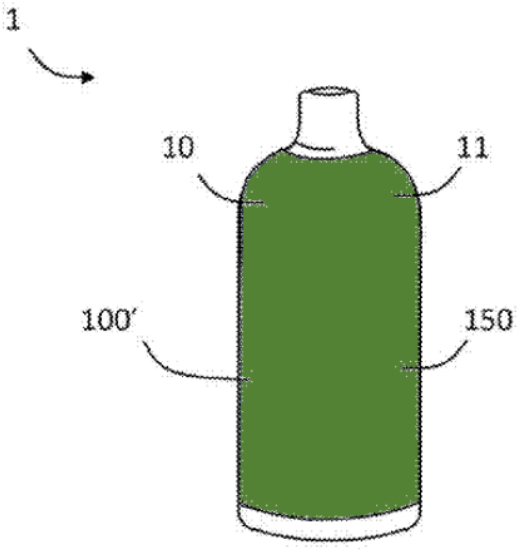


Fig. 2

EX1001 at Fig. 2 (annotated)

The '422 Patent describes the various layers comprising a heat shrink, light blocking label. For example, the heat shrink label can comprise a polyester heat shrink film as is used in the packaging industry. EX1001 at 7:38-43. When heated,

the shrink label can shrink anywhere from 1% up to 50% or more in order for the label to conform to the container. EX1001 at 8:15-37. The heat shrink film can then have layers added to it that may contain pigments, fillers, stabilizers, light protective agents, or other suitable modifying agents. EX1001 at 9:50-54.

The '422 Patent also describes multiple layers that can be added to the heat shrink film. For example, an optional high opacity layer can be added, which may be useful to such that graphics can be more visible. EX1001 at 11:55-64. High opacity layers may contain white pigments such as titanium dioxide. EX1001 at 11:65-12:5.

In addition to the high opacity layer, the '422 Patent also describes the use of a light blocking layer to prevent light from interacting with the contents of the container. The light blocking layer described by the '422 Patent may include one or more light blocking components, including one or more metals such as aluminum. EX1001 at 13:48-63. The light blocking component can be a particulate material, characterized by a particle size diameter of between 0.1 μm to 100 μm.

In addition, heat shrink labels claimed by the '422 Patent can also include an indicia layer applied to the shrink film to use graphics to convey a message about the packaging or its contents, including printed messages and/or pictorial designs. EX1001 at 15:54-59, 16:49-53.

The labels claimed by the '422 Patent are applied to an article (*e.g.*, a bottle or other container). EX1001 at 17:24-26. Figures 1A-1E illustrate various embodiments in which the layers of the heat shrink label can be employed in different configurations depending on the desired characteristics. For example, in Figure 1A, the heat shrink label includes a heat shrink film 120, upon which indicia layer 125 (*e.g.*, graphics) is disposed on one surface thereof and an opposing surface includes a high opacity layer 110 and a light blocking layer 115 on the high opacity layer 110, such that the light blocking layer 115 is the closest to the article that the heat shrink label 100 is applied to.

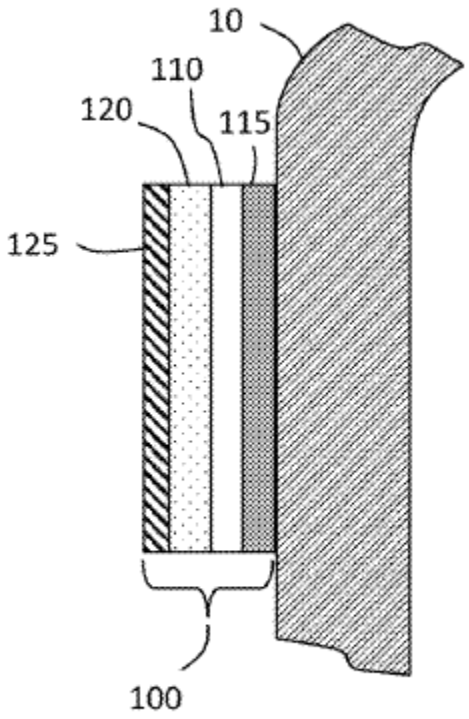
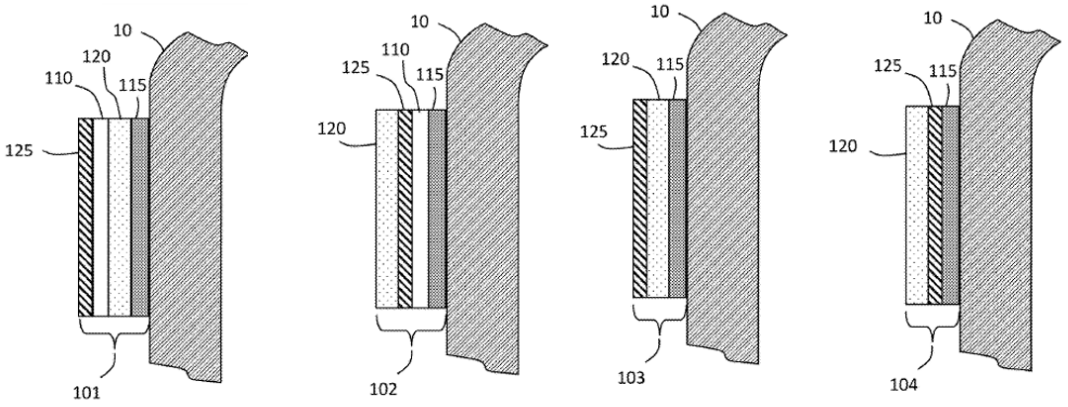


FIG. 1A

EX1001 Fig. 1A

In other embodiments, the layers can be applied in different orders, depending on the needs of the label. Figures 1B-1E depict alternative embodiments where the various layers are applied in alternative orders.



EX1001 at Figs. 1B-1E

An important aspect of the '422 Patent is that the claimed labels are recyclable along with their underlying containers. For example, in some embodiments, the article or container may be made of the same or similar polymer as the label such that both the container and label can be recycled together. EX1001 at 18:25-30. With respect to Claim 1, the '422 Patent explains what is meant by the claimed "shrink label is recyclable with a PET container." EX1001 at Cl. 1. For example, the Abstract states "[a]rticles including the recyclable shrink label may be recycled in a process where both the container and the label are recognized as a resin and may be directed into a corresponding recycling stream. In some cases, both the container and the label include PET." EX1001 at Abstract.

B. Prosecution History of the '422 Patent

The '422 Patent issued from U.S. Patent Application No. 18/103,234 (the "'234 Application"), filed on January 30, 2023. EX1001 at Cover. The '234 Application is a continuation of Application No. PCT/US2022/029280, which was filed on May 13, 2022, and claims priority to Provisional Application No. 63/188,794, filed on May 14, 2021. EX1001 at Cover.

The '234 Application was originally filed with 4 independent claims—claim 1 reciting a "recyclable shrink label," claim 16 reciting "[a]n article" comprising a container and shrink label, claim 20 reciting "[a] method of making a label for a container," and claim 21 reciting "[a] method of recycling an article." EX1002 at 9-11. Concurrently with the initial application, Applicant submitted an Information Disclosure Statement ("IDS") listing several guidance documents from the Association of Plastic Recyclers ("APR") including: Shrink Sleeve Labels on PET Containers APR Resource Document (1/4/2021) (the "APR Resource Document"); Critical Guidance Protocol for Clear PET Articles with Labels and Closures (8/17/2021) (the "APR Critical Guidance Protocol"); Evaluation of the Near Infrared (NIR) Sorting Potential of a Whole Plastic Article (5/15/2018) ("SORT-B-01"); and Evaluation of Sorting Potential for Plastic Articles Utilizing Metal, Metalized, or Metallic Printed Components (5/15/2018) ("SORT-B-03") (collectively, "APR Guidance Documents"). EX1002 at 68-69. On June 8, 2023, the Examiner issued a

Requirement for Restriction/Election, requiring Applicant to restrict the application to one of the following inventions: (1) claims 1-19, drawn to a recyclable shrink label, or (2) claims 20-21, drawn to a method of making a label for a container. EX1002 at 208. Applicant elected Group 1 (claims 1-19), drawn to a recyclable shrink label (and article comprising the recyclable shrink label). EX1002 at 213.

On August 9, 2023, the Examiner rejected the elected claims under 35 U.S.C. § 112(b), as well as under § 103 over various prior art references, including U.S. Patent Application Publication 2017/0223879 ("Mitchell"). EX1002 at 224-227. Among other reasons, the Examiner noted that Mitchell teaches an "electromagnetic radiation blocking label arrangement and a container comprising the radiation blocking label arrangement thereon." EX1002 at 224. The Examiner also noted that the "term 'recyclable' is considered functional language related to the intended use of the product and is accorded limited weight as the language does not further limit the structure." EX1002 at 225. In light of this, the Examiner explained that Mitchell "teaches all the structural features of claim 1" and "would be capable of performing in the manner claimed" because it "teaches that the shrinkable labels provide easy separate during recycling processes." EX1002 at 225. The Examiner also signed the January 30, 2023 IDS listing the APR Guidance Documents and noted that "ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH." EX1002 at 68. None of the APR Guidance Documents were lined through. EX1002 at 68.

On October 16, 2023, Applicant amended both pending independent claims to add the limitations requiring "a heat shrink film comprising polyethylene terephthalate (PET)" and "wherein the recyclable shrink label is recyclable with a PET container." EX1003 at 82. Applicant also amended several claims to remove certain limitations in order to traverse § 112 rejections.

In making its amendments to overcome the Examiner's rejections, Applicant explained that it disagreed with Examiner's assertion that "[t]he term recyclable is considered functional language related to the intended use of the product and is accorded limited weight as **the language does not further limit the structure** or the process." EX1003 at 88 (internal quotes omitted) (emphasis in original). As Applicant explained, "[t]he term 'recyclable' does further limit the claim in that the claimed label **must be capable of being recycled**" and cautioning that "[n]ot all combinations of shrink films and light blocking materials are capable of being recycled." EX1003 at 88 (emphasis in original). Applicant further explained: "It should also be noted that ***removing the label before or during the recycling process is not evidence of the recyclability of the label***." EX1003 at 88 (emphasis added).

Thus, Applicant distinguished the claimed invention over the Mitchell reference, which teaches that "it would be desirable that the labels are **removable** from the surface of the container but also **separable** in the normal sink-float washing process thus *promoting recycling* ***of the container***." EX1003 at 88 (emphasis in

original). In contrast to Mitchell, Applicant states that "removing the label before or during the recycling process is not evidence of the recyclability of the label" and "[i]f anything, the desire to provide a removable label implies that the label may not be recyclable and must be removed before the container itself can be recycled." EX1003 at 88. According to the Applicant, "[r]emoving the label during the recycling process is not equivalent to actually recycling the label." EX1003 at 88.

Applicant further distinguished the Mitchell reference by referring to the APR Resource Document:

> APR recommends films that are compatible with PET recycling such as:
>
> 1. Films that float in water and that can be **separated from PET** that sinks in water, or,
>
> 2. **PET based films** that crystallize and **can be recovered *with the PET stream***.

EX1003 at 89 (emphasis in original); *see also* EX1003 at 98-107 (APR Resource Document). Applicant specifically distinguished the Mitchell reference stating it "does not fall into the second category [of the APR Resource Document] and is not recyclable ***with the PET stream***." EX1003 at 89 (emphasis added).

On November 13, 2023, the Examiner issued a final rejection of the pending independent claims under §§ 102 and 103 over Japanese Patent No. 2009-214535A ("Sasaki"). Critically, the Examiner noted in her response to Applicant's amendments that "Applicant's arguments with respect to claims 1-4, 6-16 and 23-

26 have been considered but are moot because the new ground of rejection does not rely on any reference applied in the prior rejection of record for any teaching or matter specifically challenged in the argument." EX1003 at 121.

On January 10, 2024, Applicant further amended the claims to include the limitation "wherein the light blocking component comprises a particulate having a particle size of 0.1 μm to 100 μm, wherein the particulate comprises metal, metal oxide, a reflective pigment, carbon black, mica, or a combination thereof." EX1003 at 176. According to Applicant, the claim amendment included the subject matter of claim 12, which is not rejected under § 102 over Sasaki and is therefore patentable. EX1003 at 183.

On February 6, 2024, the Examiner issued a Notice of Allowance for all claims, noting that Applicant's arguments have been fully considered and are persuasive. EX1003 at 188. The '422 Patent accordingly issued on April 16, 2024. EX1001 at Cover.

III. CLAIM CONSTRUCTION

Terms of a claim subject to a *inter partes* review are "construed using the same claim construction standard that would be used to construe the claim in a civil action …, including construing the claim in accordance with the ordinary and customary meaning of such claim as understood by one of ordinary skill in the art and the prosecution history pertaining to the patent." 37 C.F.R. §42.100(b). Claim

terms must be read "not only in the context of the particular claim in which the disputed term appears, but in the context of the entire patent, including the specification." *Phillips v. AWH Corp.*, 415 F. 3d 1303, 1313 (Fed. Cir. 2005). Here, although Petitioner advances an inaccurate construction for the term "recyclable," under any of Petitioner's construction, Patent Owner's construction, or the preliminary construction applied by the Board in the co-pending PGR,[1] none of Petitioner's grounds disclose or render obvious the term "recyclable" and the claim construction dispute is irrelevant to the Board's institution decision.

[1] In the co-pending PGR, the Board preliminarily construed the term "wherein the recyclable shrink label is recyclable with a PET label" to mean that "a label is *not* recyclable with a PET container if (1) the label must be removed from the PET recycling stream for the PET container to be recycled (e.g., because the label itself is made of materials that are not recyclable with a PET container, such as polypropylene, polyethylene, or paper) or (2) the label contains inks or pigments that could not be removed during [the] recycling process, such as by washing, so that the inks or pigments would contaminate the PET polymer flake during the recycling process." *Multi-Color Corp. v. Brook + Whittle, Ltd.*, PGR 2025-00025, Paper 14 at 11 (P.T.A.B. Sep. 19, 2025) (emphasis in original).

A. "recyclable" (claims 1-19)

Claim Term	Petitioner Construction	Patent Owner Construction
recyclable	capable of entering a PET recycling stream simultaneously with a PET container and can undergo the recycling process alongside the container	capable of being recycled without removing the label from a container before or during the recycling process

Claims 1-19 recite the term "recyclable" in the context of a recyclable shrink label that is recyclable with a PET container. Although the parties offer different constructions, and the Board entered its own preliminary construction in the PGR, resolution of the claim construction dispute is not necessary to deny institution of the Petition. That is because none of the prior art relied upon in the Petition disclose this element under ***any*** of the proffered constructions.

For example, as explained in greater detail below, both Schurr and Kitano disclose a label that is ***separable*** from the container and provides no disclosure that its label can undergo the recycling process along with the container. EX1006 at 15:40-60; EX1007, [0009]. For Lee, although Petitioner initially asserts that Lee discloses a label that is recyclable along with a container, Petition's expert entirely abandoned this argument in his E.D. Tex. deposition. EX2023 at 175:3-176:11. Thus, under Petitioner's proposed construction, the prior art does not teach or render obvious a label "capable of entering a PET recycling stream simultaneously with a PET container and can undergo the recycling process alongside the container."

Similarly, Petitioner's cited art would not disclose or render obvious the '422 claims under the Board's preliminary construction because the labels are removed before or during the recycling process and there is no disclosure that the inks or pigments on the label would be removed during the recycling process without contaminating the PET flake. Likewise, under Patent Owner's proposed construction, none of the prior art disclose or render obvious labels ***capable*** of being recycled without removing the label from a container before or during the recycling process because the references disclose separating the label from the container and do not disclose inks or pigments that do not contaminate or discolor PET flake. Therefore, Petitioner fails to articulate any ground that discloses or renders obvious the term "wherein the recyclable shrink label is recyclable with a PET container" under any construction, and the claim construction dispute is moot for the purposes of the Board's institution decision.

Petitioner advances an incorrect construction for the term "recyclable" that finds no basis in the plain meaning, specification, or prosecution history. Nor is Petitioner's proposed construction consistent with the Board's preliminary construction entered in the pending PGR. *Multi-Color Corp.*, PGR 2025-00025, Paper 14 at 11. There, the Board preliminarily construed the term "wherein the recyclable shrink label is recyclable with a PET label" to mean that "a label is *not* recyclable with a PET container if (1) the label must be removed from the PET

recycling stream for the PET container to be recycled (e.g., because the label itself is made of materials that are not recyclable with a PET container, such as polypropylene, polyethylene, or paper) or (2) the label contains inks or pigments that could not be removed during [the] recycling process, such as by washing, so that the inks or pigments would contaminate the PET polymer flake during the recycling process." *Id*. (emphasis in original). As explained further below, Patent Owner's proposed construction is consistent with the Board's preliminary construction, the specification, and the prosecution history, and should therefore be adopted.

Claim construction begins with the words of the claim itself, and there is a "heavy presumption" that those words receive their ordinary and customary meaning. *Aventis Pharm. Inc. v. Amino Chems. Ltd.*, 715 F.3d 1363, 1373 (Fed. Cir. 2013). "[O]rdinary and customary" meaning is that understood by a person of ordinary skill in the art ("POSITA") at the time of the invention in the context of the specification and prosecution history. *Phillips*, 415 F.3d at 1313. "The plain meaning of claim language ordinarily controls unless the patentee acts as his own lexicographer and provides a special definition for a particular claim term or the patentee disavows the ordinary scope of a claim term either in the specification or during prosecution." *InterDigital Commc'ns, LLC v. Int'l Trade Comm'n*, 690 F.3d 1318, 1324 (Fed. Cir. 2012).

During prosecution, Applicant added the claim language "wherein the recyclable shrink label is recyclable with a PET container" to the pending independent claims on October 16, 2023. EX1003 at 82. In the remarks accompanying amendment, Applicant acted as its own lexicographer, stating, "[t]he term 'recyclable' does further limit the claim in that the claimed label **must be capable of being recycled**." EX1003 at 88 (emphasis in original). Applicant explained:

> Not all combinations of shrink films and light blocking materials are capable of being recycled, as further discussed below. It should also be noted that ***removing the label before or during the recycling process is not evidence of the recyclability of the label***. If anything, the desire to provide a removable label implies that the label may not be recyclable and must be removed before the container itself can be recycled. Removing the label during the recycling process is not equivalent to actually recycling the label.

EX1003 at 88 (emphasis added). Applicant further explained that even where the label is made of a polymer that is compatible with PET recycling, the pigments or inks used on the label may render the label unrecyclable. According to Applicant:

> An important consideration for inks on shrink sleeve labels is that the ink **not contaminate or discolor PET flake** when mixed in hot caustic wash water used in the recycling process.

EX1003 at 90 (emphasis in original). Applicant, therefore, clearly defined the scope of "recyclable" to exclude "removing the label before or during the recycling process" while simultaneously providing context for determining if a label is capable of being recycled (*i.e.*, inclusion of inks does not contaminate or discolor PET flake).

The '422 Patent specification also provides guidance as to whether a label is capable of being recycled with a PET container. For example, the '422 Patent indicates that labels can meet industry guidance for determining whether a label is fully recyclable with the container or bottle, including the Association for Plastic Recyclers (APR) Critical Guidance Protocol for Clear PET Articles with Labels and Closures (PET-CG-02). This is the same industry guidance document cited by Applicant in the prosecution history to identify labels that are fully recyclable with PET containers. EX1003 at 89. Moreover, other APR documents cited in the specification provide complementary guidance on other aspects of the recyclability of plastic articles, such as "[t]he Evaluation of the Near Infrared (NIR) Sorting Potential of a Whole Plastic Article (SORT-B-01)" and "[t]he Evaluation of Sorting Potential for Plastic Articles Utilizing Metal, Metalized or Metallic Printed Components (SORTB-03)." EX2025 at 2; EX2026 at 2.

Thus, the '422 Patent provides guidance both as to what is *not* recyclable with a PET container (*i.e.*, a label that is removed prior to or during the recycling stream) and what *is* recyclable with a PET container (*i.e.*, a label that comports with the complementary industry standards). As the Patent Owner made clear, merely being "separable" from a PET container is insufficient to show that the label is recyclable; the label must be capable of being processed and recycled together with the container without impeding PET recovery, as determined by objective, industry-recognized

criteria. Petitioner and its expert, Dr. Storey, agree. In the pending E.D. Tex. litigation, Petitioner proposed a construction for the term "wherein recyclable shrink label is recyclable with a PET container" to mean "wherein the claimed heat shrink label is capable of being processed and recovered in its entirety, together with a PET container in the same PET recycling stream, ***without being separated from the PET container***." EX2027 at 7 (emphasis added). While Patent Owner disagrees with the propriety of Petitioner's proposed construction, this proposal shows that Petitioner agrees that "recyclable" as used in the '422 Patent does not include labels that must be separated from an underlying container. Similarly, in his deposition, Dr. Storey testified that "the applicant of the '422 Patent disclaimed any label this is meant to merely separate from PET[…]," and that whether a label is recyclable with a PET container or not is not an abstract concept but rather is informed by established industry practices and guidelines such as by the Association of Plastic Recyclers in North America. EX2023 at 191:11-18, 74:15-76:23. Patent owner's proposed construction, therefore, is consistent with the preliminary construction applied by the Board, which similarly addressed what is *not* recyclable (*i.e.*, a label that must be removed from the PET recycling stream or label contains inks or pigments that could not be removed during the recycling process) and what *is* recyclable (*e.g.*, one that comports with industry guidance). *Multi-Color Corp.*, PGR2025-00025, Paper 14 at 11-13.

In view of the '422 specification's identification of industry guidance, and the clear definitions provides in the prosecution history, the proper construction of the term "recyclable," is "capable of being recycled without removing the label from a container before or during the recycling process." This construction comports with the Board's preliminary claim construction, and under *Phillips*, accounts for statements made during the prosecution history.

IV. PETITIONER CANNOT SHOW THAT AT LEAST ONE CLAIM OF THE '422 PATENT IS UNPATENTABLE AS OBVIOUS OVER THE CITED PRIOR ART

Ground	Claims	Basis
1	1-19	§103 – Schurr and Knowledge of a POSITA
2	1-19	§103 – Kitano, Lee, and Knowledge of a POSITA

For an *inter partes* review to be instituted, "the information presented in the petition filed under section 311" must demonstrate "a reasonable likelihood that the petitioner would prevail with respect to at least 1 of the claims challenged in the petition." 35 U.S.C. § 314(a). Here, Petitioner has failed to meet this burden for any of its asserted grounds.

A. Ground 1: Schurr and Knowledge of a POSITA do not render obvious the claims of the '422 Patent under 35 U.S.C. §103

Petitioner acknowledges that Schurr alone does not teach or disclose each and every limitation of Claims 1 and 19 of the '422 Patent, such as the precise light

blocking percentage over the claimed 200-900nm range, specific shrinkage values at 100°C, and coating amounts expressed in "ppr." Pet. at 26-27 ("Schurr teaches or suggests nearly all [the] limitations"). Patent Owner agrees that Schurr is deficient in the many respects conceded by Petitioner. Most importantly, however, Schurr fails to teach the "recyclable with a PET container" limitation for the same reasons that the Mitchell reference was found deficient during prosecution.

Petitioner argues that Schurr teaches a label "recyclable with a PET container" because Schurr describes that "[w]hen the object is recycled, the material of the films or hoses **can be separated** from the material of the transparent object by processes known in the art, for example on the basis of differing densities." Petitioner further explains that Schurr's "[d]ensity-based **separation** (**float/sink**) is a standard method in PET container recycling to separate PET flake from labels" and contends that "[b]y disclosing a film designed for easy recycling via density separation—a key mechanism for label removal in PET container recycling—Schurr teaches a label constructed for compatibility and separability within standard PET recycling, i.e., 'recyclable with a PET container.'" Pet. at 39-40. This argument is substantially the same as that made by the Examiner during examination, which Patent Owner successfully traversed.

Like Schurr, Mitchell teaches that "it would be desirable that the labels are **removable** from the surface of the container but also **separable** in the normal **sink-**

float washing process thus *promoting recycling* **of the container**." Patent Owner, however, explained that "[i]t should also be noted that ***removing the label before or during the recycling process is not evidence of the recyclability of the label,***" thereby distinguishing references like Mitchell and Schurr from the claimed invention. EX1003 at 88 (emphasis added). Thus, Schurr does not teach the "recyclable with a PET container" limitation under any of the three proposed constructions discussed in § III above. As such, any dispute over the proper construction for the term "recyclable" does not have any impact on the Board's institution decision. Moreover, any attempt to fill this critical gap in Schurr with generalized knowledge of a POSITA is improper and cannot substitute for the express limitations required by the claims. *See K/S Himpp v. Hear-Wear Techs., LLC*, 751 F.3d 1362, 1366 (Fed. Cir. 2014) ("an assessment of basic knowledge and common sense as a replacement for documentary evidence for core factual findings lacks substantial evidence support"); *Arendi S.A.R.L. v. Apple Inc.*, 832 F.3d 1355, 1362 (Fed. Cir. 2016) ("[O]ur cases repeatedly warn that references to 'common sense'—whether to supply a motivation to combine or a missing limitation—cannot be used as a **wholesale substitute** for reasoned analysis and evidentiary support").

1. Petitioner Fails To Establish A Generalized Motivation To Modify Or Reasonable Expectation Of Success

Petitioner spends nearly eight pages describing the desire within the industry to make a light-blocking shrink film that is recyclable with the underlying container

and discussing the "motivation to apply POSITA knowledge to Schurr and reasonable expectation of success." Pet. at 27-35. Yet, this section's sole achievement is a recitation of the alleged state of the art, bolstered by *ipse dixit*, and generalized statements about the environment in which a POSITA allegedly operated as of May 2021. Recognition that the industry wanted to achieve a never-before-done solution is not evidence that it was obvious to do so and nowhere in its parade of dogmatic yet unsubstantiated conclusions does Petitioner (or its expert) ever analyze ***how*** a POSITA would have modified the prior art to render obvious the '422 Patent claims.

Perhaps more fatal, Petitioner's arguments actually ***bolster*** the '422 Patent's novelty by describing the objective indicia of nonobviousness that abound here, including for example, the long-felt but unresolved need for a container wrapped with a recyclable shrink film with light blocking layers that can be recycled together, the failure of others in developing such a container-label unit that is recyclable together, and the unexpected results obtained by the '422 Patent. Pet. at 27-35. For example, Petitioner recites various events that occurred around the priority date of the '422 Patent that allegedly illustrate "well-understood industry needs and practices that a POSITA would have applied to Schurr's teachings." Pet. at 28. Specifically, Petitioner lists four generalized "industry needs and practices," including: (1) need for PET recycling compatibility, (2) need for broad spectrum

light protection, (3) application of standard industry practices and material characterization, and (4) consideration of known design alternatives for functional benefit. Pet. at 28-33. While these generalized industry and market considerations may provide an explanation of the ***need*** for improved films that are recyclable with a container, they provide no analysis for ***what*** improvements a POSITA would have been motivated to make or ***how*** a POSITA would have known how to implement any improvements. Rather, these paragraphs merely form a backdrop for the ***novelty*** of Patent Owner's invention claimed in the '422 Patent by identifying the long-felt yet unresolved need for a light-blocking packaging that is recyclable with a container. Pet. at 28-33; *See Graham v. John Deere Co.*, 383 U.S. 1, 17-18 (1966).

Indeed, Brook + Whittle has garnered significant industry praise and recognition for its innovative recyclable, light-blocking shrink sleeve. For example, in 2024, B+W was awarded the Recycling Packaging category of Packaging Europe's Sustainability Awards in recognition of B+W's GreenLabel BlockOut, a light blocking shrink label that both blocks up to 99% of light in the 200-900 nm range and is recyclable with a container. EX2029 at 6-7; *see also* EX2030 at 2-4 (interview with Brook + Whittle as a finalist in the Sustainability Awards 2024); EX2031 (B+W awarded Environmental Category Winner of AWA Sleeve Label Awards for its "innovative packaging solution" that "provides up to 99% light blocking using a clear PET bottle and the Association of Plastic Recyclers (APR)

recognized clear PET shrink sleeve, and washable inks."); EX2032 (US Plastics Pact announcing B+W's GreenLabel Blockout among the finalists for 2023 Sustainable Packaging Innovation Award-Recycling); EX2033 (US Plastics Pact announcing B+W's GreenLabel Blockout – Recylable Light-Blocking Shrink Sleeves among the finalists for 2024 Sustainable Packaging Innovation Award-Recycling).

Petitioner would have been aware of the significant evidence demonstrating the novelty and demand for B+W's invention, including evidence of sales of B+W's GreenLabel® BlockOut™ product and industry praise and recognition of the GreenLabel® BlockOut™ product, for at least three reasons. First, Petitioner has been made aware through concurrent litigation. For example, in B+W's Complaint in the parallel district court proceeding, BW pled "B+W has 100+ clients using sustainable materials, with 14+ billion sustainable labels sold." EX2001, ¶ 29. Similarly, in its opposition to Petitioner's motion to dismiss for improper venue, B+W explained, "B+W is a leading provider of recyclable packaging and the first to design, manufacture, and sell recyclable light-blocking shrink sleeve labels. It sells millions of these labels a year and obtained the patent-in-suit to protect this innovation." EX2034 at 2 (internal citation omitted). Second, Petitioner would have been aware because Petitioner and B+W operate in the same recycling community and compete for the types of awards B+W has received for its GreenLabel® BlockOut™ product. For example, Petitioner has paid for sponsored content in

Packaging Europe, the same industry news service highlighting B+W's "Sustainability Award." EX2036. In addition, both Petitioner and B+W have been recognized by the same communities for the recyclability of their products, including by the Association of Plastic Recyclers. EX2037. Third, Nestle – Fuji's customer (EX2001, ¶ 69), a defendant in the concurrent litigation represented by the same counsel as AFS (EX2035, 14), and named real party in interest (Pet. at 11) – is undeniably aware of the demand and benefits of B+W's technology. Indeed, Nestle was a customer of B+W's GreenLabel® BlockOut™ embodying technology, and repeatedly praised this technology in correspondence to B+W. As one example, after being asked about his experience with B+W's "packaging and labels that do not pollute the recycling stream," a Nestle employee closely involved in testing B+W's GreenLabel® BlockOut™ embodying technology commended B+W as "really excel[ing] in being experts in the printing process and com[ing] up with novel solutions there. I have certainly learned a lot in this journey from Andy and appreciate the education element." EX2038. Given Petitioner's knowledge of these objective indicia, its failure to address objective indicia in the Petition warrants denial of institution. *See, e.g.*, *Aardevo N. Am., LLC v. Agventure B.V.*, IPR2025-00136, Paper 9 at 28–35 (P.T.A.B. May 1, 2025); *Stryker Corp. v. KFX Med., LLC*,

IPR2019-00817, Paper 10 at 28–29 (P.T.A.B. Sep. 16, 2019) (denying institution for failure to address known evidence of secondary considerations).

Even setting aside the fact that Petitioner's motivation arguments are actually evidence of the novelty of B+W's invention, Petitioner makes only broad, conclusory assertions as to the motivation and reasonable expectation of success a POSITA would have in modifying the prior art. As just a few examples, the below assertions (highlighted in red below) are accompanied by no analysis or details as to how a POSITA would have used this information to arrive at the '422 Patent claims:

- [I]t was a fundamental understanding … that the massive scale of PET container usage generated immense market and regulatory pressure for sustainable solutions…
- A POSITA would be strongly motivated to rigorously confirm and, if necessary, optimize this compatibility for co-recycling with PET bottles, ensuring no detrimental effects …
- [T]he problem of amorphous polyester films causing fusion issues during PET container recycling…would further motivate a POSITA to ensure any PET film used was suitably crystallizable to facilitate co-recycling…
- [A] POSITA would be motivated to adapt Schurr's teachings to ensure full PET recycling compatibility…
- This fundamental need for comprehensive light protection provides a direct motivation to ensure a Schurr-based label design would effectively block light…
- A POSITA would know that achieving ≥80% blockage across this wider spectrum, using pigments taught by Schurr … would be a matter of routine formulation and process optimization.
- Motivation would also arise from the routine need to characterize product performance using standard industry metrics and conditions.

- [A] POSITA would be motivated to consider known structural alternatives to achieve functional benefits.
- A POSITA … would have possessed a strong and reasonable expectation of success in applying these routine optimizations and known techniques.
- This expectation stems from Schurr's use of a PET-based film and common light-blocking pigments—materials generally understood by a POSITA to be manageable within, or adaptable to, PET recycling paradigms, especially when applied in distinct layers as Schurr teaches.
- [A]chiev[ing] the specific performance metrics and material compositions of the '422 Patent claims would involve the application of well-understood principles and would not have required more than the ordinary skill of a POSITA using routine, predictable experimentation and optimization.
- The path from Schurr's teachings to the specific limitations of the '422 Patent claims would involve applying well-understood scientific and engineering principles common in polymer science, material formulation, and label manufacturing, leading to predictable outcomes.

Moreover, these broad, generalized motivations (which does not constitute evidence of obviousness) are even contradicted by Petitioner's expert Dr. Storey in his deposition in the parallel district court proceeding. When asked whether he would "agree that a POSITA would have understood that the goals of achieving light shielding for product integrity as well as compatibility for PET recycling were driven by prominent market forces and central design goals for packaging solutions for PET-designed containers[,]" Dr. Storey responded, "I don't know." EX2023, 107:22-108:4. That shows this invention was not generally known.

Petitioner next provides a list of "well-understood scientific and engineering principles common in polymer science, material formulation, and label

manufacturing" that would allegedly "lead[] to predicable outcomes." Pet. at 33. These too lack any analysis or explanation as to how a POSITA would actually apply such principles to reach the claims of the '422 Patent. For example, Petitioner asserts that "broadband light absorption properties of common pigments like carbon black … are fundamental concepts" and that "[a]djusting pigment concentration or layer thickness to modify light transmission follows predictable physical laws (e.g., Beer-Lambert law), making achievement of specific blockage levels a matter of routine formulation." Pet. at 33. Even taken as true, this assertion provides no analysis as to whether, or to what extent, modifying the pigment concentration or layer thickness would affect other aspects of the claimed invention such as recyclability and opacity. Similarly, Petitioner asserts "[s]electing PET grades for desired characteristics like recycling compatibility … is standard practice." Pet. at 34. But again, this assertion applies only to the characteristics of the PET used within a label, but says nothing of how the label as a whole would or would not meet the claims, including how a POSITA would have selected, manufactured, and combined the other layers and components of the label (including the light-blocking layer) to render the label recyclable with an underlying container. EX1001, cls. 1, 19.

Nor does Dr. Storey's declaration provide any reprieve to these fatal flaws in Petitioner's analysis. Rather than supplement the Petition with any additional analysis, Dr. Storey's declaration only parrots the Petition's conclusory assertions.

Compare EX1004 ¶¶ 84-93, *with* Pet. at 27-35 (containing parallel assertions with no additional explanation or "expert" analysis). Dr. Storey's declaration should therefore be afforded little weight or persuasion. *See, e.g., Kohler Co. v. Delta Faucet Co.*, IPR2024-00700, Paper 32 at 34, 59 (P.T.A.B. Oct. 1, 2025) (giving "little weight" to an expert's testimony "because it 'merely repeats, verbatim, the conclusory assertion for which it is offered to support,' and 'does not cite to any additional supporting evidence or provide any technical reasoning [in] support'"); *Xerox Corp. v. Bytemark, Inc.*, No. IPR2022-00624, Paper 12 at 5 (P.T.A.B. Feb. 10, 2023) (Vidal, Dir.) (affirming) ("[T]he Board was correct in giving little weight to Petitioner's expert because the expert declaration merely offered conclusory assertions without underlying factual support and repeated, verbatim, Petitioner's conclusory arguments."); *TQ Delta, LLC v. Cisco Sys. Inc.*, 942 F.3d 1352, 1359 (Fed. Cir. 2019) ("This court's opinions have repeatedly recognized that conclusory expert testimony is inadequate to support an obviousness determination").

2. **Claims 1 and 19**

a. **"wherein the recyclable shrink label is recyclable with a PET container"**

Petitioner fails to show a reasonable likelihood of success in demonstrating that Schurr teaches or renders obvious the limitation "wherein the recyclable shrink label is recyclable with a PET container" because Petitioner ignores the clearly defined scope of the claims and provides only unsubstantiated assertions as to the

motivation and reasonable expectation of success in modifying Schurr's teachings. Rather, Schurr explicitly discloses a label that is intended to be separated from the container prior to or during recycling and thus falls outside the scope of the claims and teaches away from any modifications. EX1006 at 15:40-60.

As discussed above and in Patent Owner's Request for Discretionary Denial (Paper 6), during prosecution of the '422 Patent, Applicant clearly defined that the scope of the claims requires a recyclable shrink label that is recyclable ***with*** a PET container. *See* §§ II.B, III, *supra*; EX1003 at 82; Paper 6 at 15-16. After Examiner initially rejected the '422 Patent claims over Mitchell, Applicant distinguished the Mitchell reference in connection with APR Resource Document. The APR Resource Document "recommends films that are compatible with PET recycling" providing two distinct options: (1) "Films that float in water and that can be **separated from PET** that sinks in water, or," (2) "**PET based films** that crystallize and **can be recovered *with the PET stream***." EX1003 at 89 (emphasis in original). Applicant explained that the label of the Mitchell reference is not recyclable because the "film does not fall into the second category." EX1003 at 89. Moreover, Applicant noted that the film taught by Mitchell includes a metal layer sandwiched between other layers such that the label becomes unrecyclable. EX1003 at 89-90. Accordingly, Applicant explained that "[e]ven if the label in Mitchell '879 was otherwise capable of being recycled, the pigments being incorporated into the core layer polymer

would contaminate the polymer flake during the recycling process." EX1003 at 90. As Applicant explained, "[n]ot all combinations of shrink films and light blocking materials are capable of being recycled." EX1003 at 88.

Schurr's disclosure is no different than Mitchell's, which has already been overcome during prosecution. Petitioner makes no new arguments to show why Schurr, in contrast with Mitchell, discloses or renders obvious the claims of the '422 Patent. Petitioner asserts that "Schurr explicitly states its film overall can be recycled easily." Pet. at 39 (internal quotation omitted). Yet, this says nothing of Schurr's label's ability to be recycled ***with*** the bottle. In fact, Schurr expressly intends that its label be removed from the bottle to facilitate recycling of the bottle. EX1006, 15:43-63. Like Mitchell, Schurr explicitly teaches that its label is designed such that "[t]he film … wraps the object, for example, a bottle or can" and "[w]hen the object [i.e., the bottle or can] is recycled, the material of the films…**can be separated from the material of the transparent object**." EX1006, 15:40-60 (emphasis added). As Schurr explains, the ability of the label to be separated from the object allows "the transparent material **of the object [i.e., bottle or can]** [to] be used again…after the recycling process." EX1006, 15:60-63 (emphasis added). Accordingly, Schurr, like Mitchell, teaches a recycling process in which the label is advantageously removed from the container prior to or during recycling. EX1006, 15:43-63; EX1003 at 88. Schurr's disclosure is explicitly outside the scope of the

'422 claims as Applicant explained during prosecution that "[r]emoving the label during the recycling process is not equivalent to actually recycling the label." EX1003 at 88.

Petitioner's attempts to differentiate the prosecution history are also unavailing. Petitioner asserts that "Patent Owner's prosecution arguments—that including light blocking materials *embedded* in PET film renders it unrecyclable by caustic wash—are misplaced and factually incorrect regarding Schurr and the state of the art" because "Schurr's layered construction, with pigments in discrete plies…is fundamentally different from integrally pigmented films and is ***more amenable*** to separation or management during recycling." Pet. at 41 (emphasis in original). Petitioner's argument fails for three reasons: (1) it misstates Applicant's prosecution arguments, (2) ignores that Mitchell's disclosure also teaches layered deposition of pigmented films, and (3) confirms that Schurr is intended to provide a label that is ***separated*** from the object prior to recycling and contains pigments that cannot be removed from the label without contaminating the PET flake.

First, Petitioner's characterization of Applicant's prosecution arguments as limited to films "including light blocking materials *embedded* in PET film[s]" is misplaced. Pet. at 41. In prosecution, Applicant noted that certain embedded materials can render PET films non-recyclable but further noted that "[w]hen titanium dioxide or other similar pigments are incorporated into the polymer layer,

which in Mitchell '879 are additionally ***sandwiched*** between the skin layers, the label becomes unrecyclable." EX1003, 90 (emphasis added). ***Second***, Petitioner's arguments ignore that Mitchell—which was not invalidating prior art—also discloses a "label arrangement compris[ing] at least one label component including: a shrinkable film and at least one metal deposition layer on a surface of the shrinkable film." EX2024, [0004]. Thus, Mitchell (like Schurr) discloses a layered construction—a disclosure which the Examiner found not to render the '422 Patent unpatentable. Rather than being limited to labels with pigments embedded in the polymer, as Petitioner argues, Mitchell disclosed layered films—and as the examiner credited, "[n]ot all combinations of shrink films and light blocking materials are capable of being recycled" and "removing the label before or during the recycling process is not evidence of the recyclability of the label." EX1003 at 88. ***Third***, Petitioner's argument that "layered construction, with pigments in discrete plies…is ***more amenable*** to ***separation***" (Pet. at 41), only highlights the problem in the prior art that the '422 Patent solves, that separation of the label "is not equivalent to actually recycling the label." EX1003 at 88. It is irrelevant to the "recyclab[ility]" of the label (as the term is used in the '422 Patent) how easily a label separates from the bottle. To the extent Petitioner asserts that Schurr's label can be separated and recycled alongside the container, this too is misplaced. Petitioner relies on Schurr's disclosure of carbon black as the light-blocking component, which Petitioner

acknowledges cannot be recycled without contaminating the PET flake. Pet., 41 (challenging additives like carbon black); EX1013 at 12 ("***carbon black is one of the biggest bottlenecks*** during recycling due to its insolubility in an aqueous medium") (emphasis added).

Recognizing this deficiency, Petitioner alternatively alleges that it would be obvious for a POSITA to modify Schurr's disclosure to ensure that Schurr's label could be recycled with an underlying bottle without removal. Pet. at 40. As with Petitioner's other arguments, this conclusory assertion finds no support and is instead overwrought with hindsight and speculation. Petitioner fails to provide any motivation to modify or reasonable expectation of success beyond the generic assertion of a POSITA's knowledge explained above. *See* § IV.A.1, *supra*. Instead, Petitioner relies on one reference, Ügdüler (EX1013), to assert that "recycling PET even with challenging additives like carbon black **was** workable." Pet. at 41 (emphasis in original). At best, this disclosure discusses recycling modified PET by itself—and says nothing of recycling PET with an underlying container. Petitioner does not even attempt to explain how Ügdüler teaches that films with carbon black can be recycled ***along with PET containers***. Petitioner appears to rely on its expert, Dr. Storey, to bridge this gap. Dr. Storey explains that with knowledge of Ügdüler, "a POSITA would be motivated to ensure Schurr's layered PET film with its PET-compatible pigments (like carbon black) could be processed in standard PET

recycling streams." EX1004 ¶ 114. Yet, Petitioner's arguments suffer a fatal flaw—Ügdüler does not describe recycling films with carbon black (whether or not in a "standard PET recycling stream") in order to recycle the label ***with*** the PET container. Rather, Ügdüler explicitly acknowledges that "different additives such as colours ***impede*** closed-loop recycling of PET plastic waste" and that "[e]specially ***carbon black is one of the biggest bottlenecks*** during recycling due to its insolubility in an aqueous medium." EX1013 at 12 (emphasis added). To the extent Ügdüler then articulates a method by which carbon black additives can be isolated from the PET label, Petitioner fails to explain whether or how such a process could be used with Schurr's label such that it could be recycled together with a PET container.

For these reasons, Petitioner fails to demonstrate a reasonable likelihood of success in showing that Schurr combined with the knowledge of a POSITA discloses or renders obvious the claim "wherein the recyclable shrink label is recyclable with a PET container" as required by claims 1 and 19 of the '422 Patent under any of the proposed constructions discussed in § III above. For example, under Petitioner's proposed construction, Schurr's label would not be "capable of entering a PET recycling stream simultaneously with a PET container and can undergo the recycling process alongside the container" because Schurr, like Mitchell that was previously overcome during prosecution, discloses that its label is separated from the container prior to or during the recycling process and Petitioner fails to show any motivation

or reasonable expectation of success in modifying Schurr such that its label could be recycled with an underlying container. Similarly, under the Board's preliminary construction, Petitioner fails to demonstrate a reasonable likelihood of success for Ground 1 because Schurr discloses a label that is removed prior to or during the recycling process and contains carbon black that cannot be recycled along with a container without contaminating the PET flake. Petitioner additionally fails to provide any reasoned basis that Schurr could be modified such that its label could be made recyclable along with a container. Likewise, Petitioner fails under Patent Owner's proposed construction for the same reason it fails under the Board's preliminary construction. Schurr's label is not capable of being recycled without removing the label from a container before or during the recycling process because it teaches removing the label prior to or during the recycling process and because its pigment layers are not amenable to recycling along with a container without contaminating the PET flake.

Thus, the claim construction dispute discussed in § III above is moot for the purposes of the Board's institution decision and Petitioner fails to demonstrate a reasonable likelihood of success under any of the proposed constructions. Accordingly, the Board should deny institution.

b. **"to block at least 80% of incident light having wavelengths in a range of 200 nm to 900 nm"**

Petitioner alleges that Schurr meets the limitation "to block at least 80% of incident light having wavelengths in a range of 200nm to 900nm" because Schurr teaches using carbon black, which blocks ≥88% of light in the range of 360nm-750nm. Pet. at 37. Petitioner further asserts that "[c]arbon black is known by a POSITA as a strong broadband absorber across the UV, visible, and near-infrared spectrum (200-900nm)." Pet. at 37. Therefore, according to Petitioner, "[a] Schurr film using carbon black … would inherently exhibit strong blocking (well above 80%) across the entire recited 200-900nm range due to carbon black's fundamental optical properties." Pet. at 37-38. Yet, Schurr does not disclose any transmittance values for the 200-360nm wavelength range or the 750-900nm wavelength range, which is expressly required by the claims (as opposed to "strong blocking," which is not required and thus irrelevant). Nor does Petitioner or its expert cite any evidence whatsoever to support its broad assertion that "carbon black is known by a POSITA as a strong broadband absorber across the … [200-900nm] spectrum" such that using carbon black with a film disclosed by Schurr "would inherently exhibit [at least 80%] blocking…across the ***entire*** recited 200-900 nm range." Pet. at 37-38. Petitioner's bald speculation is little more than guesswork and its expert provides no analysis to substantiate its claims.

Recognizing this error, Petitioner also asserts that "achieving the claimed [80% light blocking in the 200-900 nm range] is obvious." Pet. at 38. To support this assertion, however, Petitioner simply reiterates that "[u]sing Schurr's taught pigments (carbon black, metal particles) known for broad absorption, a POSITA could readily achieve ≥80% blocking across 200-900nm via routine optimization of pigment concentration and/or layer thickness." Pet. at 38. Despite Petitioner's contentions that light blocking characteristics are "governed by well-established principles like the Beer-Lambert law" (Pet. at 38), Petitioner makes no effort to quantify how much carbon black or how thick the light blocking layer would need to be in order to achieve the claimed 80% light blocking, or indeed, if it is even possible to achieve the claimed light blocking properties, specifically for claimed wavelengths lower than 360 nm and greater than 750 nm. *See* cl. 1 (reciting "the light blocking layer being constructed…to block at least 80% of incident light having wavelengths in a range of 200 nm to 900 nm."). Moreover, Petitioner does not even acknowledge that the '422 Patent claims require a thickness between 15 μm to 100 μm. Thus, Petitioner's assertion that a POSITA could simply apply "routine optimization of … layer thickness" to achieve the claimed at least 80% light blocking in the claimed 200-900nm range, without any analysis as to how thick the layer would need to be, falls short of the mark. Petitioner does not, and indeed cannot,

show that it would have been obvious to modify Schurr to block at least 80% of light in the 200-900 nm range.

B. Ground 2: Kitano and Lee do not render obvious the claims of the '422 Patent under 35 U.S.C. §103

Petitioner also fails to establish a reasonable likelihood of success in showing that Kitano combined with Lee disclose or render obvious any claims of the '422 Patent.

1. Petitioner fails to establish a generalized motivation to combine or reasonable likelihood of success in combining the teachings of Kitano and Lee

As with its first ground, Petitioner offers only generic and unsubstantiated arguments regarding the motivation to combine Kitano and Lee and the reasonable expectation of success in doing so. Pet. at 54-56. For example, Petitioner again cites to the "European Green Deal" and "waste management challenges" as evidencing the motivation for a POSITA to combine Kitano and Lee. Pet. at 54. But, as explained above, these merely provide context for the long-felt but unresolved need for recyclable, light-blocking shrink labels that can be recycled with the container, which bolsters rather than detracts from the patentability of the claims at issue. *See* EX2029 at 6-7; EX2030 at 2-4; EX2031; EX2032; EX2033.

Moreover, Dr. Storey disclaimed this broad, generalized motivation in his deposition. When asked whether he would "agree that a POSITA would have understood that the goals of achieving light shielding for product integrity as well as

compatibility for PET recycling were driven by prominent market forces and central design goals for packaging solutions for PET-designed containers[,]" Dr. Storey responded, "I don't know." EX2023, 107:22-108:4.

Petitioner's specific arguments regarding a POSITA's motivation for combining Kitano and Lee rely solely only the generic and conclusory proposition that a POSITA would have been motivated "to create a single shrink label incorporating both [shrink] and [light blocking] functionalities by replacing Kitano's generic substrate with Lee's specialized, recycling-compatible PET film, while retaining Kitano's light-shielding layers." Pet. at 55. Even more problematic, Petitioner then makes the entirely conclusory assertion that "[a] POSITA would also have had a reasonable expectation of success" because "[a]pplying ink or coating layers onto polymer films (i.e., Kitano's layers onto Lee's film) is a fundamental and routine practice." Pet. at 56. As explained in detail above, however, Petitioner's argument boils down to an assertion that because others recognized a desire to make a never-before-done solution, it was obvious for a POSITA to do so. This logical fallacy is belied by the principle that long-felt but unresolved needs are, in fact, evidence of ***non-obviousness***. *See Graham*, 383 U.S. at 17-18. Had Petitioner attempted to cite actual evidence, it would have discovered that the state of the art is replete with evidence of combination light-blocking shrink labels that cannot be

recycled with the underlying container. *See* EX2024, [0002]; *see also* EX2029 at 6-7; EX2030 at 2-4.

Moreover, as explained in more detail below, Lee praises the ability to maintain ***high transparency*** and therefore teaches away from using its shrink film with a light blocking layer. Petitioner fails to address why a POSITA, in view of these teachings, would have combined Lee with Kitano, a reference allegedly disclosing a label with light blocking features. Moreover, at his deposition in the parallel district court proceeding, Petitioner's expert Dr. Storey explicitly disclaimed his opinion that Lee discloses a label that is recyclable ***with*** a PET container. EX2023, 174:13-24, 175:3-8. These fatal flaws illustrate why Petitioner fails to demonstrate a reasonable likelihood of success in its second ground.

2. **Claim 1 and 19**

a. **"wherein the recyclable shrink label is recyclable with a PET container"**

As Petitioner acknowledges, Kitano does not disclose a recyclable shrink label that is recyclable with a PET container. Pet. at 60.[2] Instead, Petitioner relies on the combination of Kitano with Lee as allegedly rendering obvious the claim limitation

[2] To the extent Petitioner argues that Kitano somehow *does* teach or disclose a label that could be recyclable with a PET container, for all the reasons cited in § IV.A.2.a, *supra*, Petitioners arguments fail.

"wherein the recyclable shrink label is recyclable with a PET container." Pet. at 60. However, Kitano explicitly teaches that ***separation*** of the label from the container is ***advantageous*** because it promotes effective recycling of the container itself. EX1007, [0009]. Thus, while Petitioner attempts to downplay this disclosure, Kitano's disclosure of a separable label explicitly teaches away from a label that is recyclable with the container. EX1007, [0009]. Petitioner provides no explanation for why a POSITA would have been motivated to modify Kitano to include a recyclable shrink label that is recyclable with a PET container in view of Kitano's explicit teaching away of this exact concept. That omission alone dooms Petitioner's obviousness arguments. *See Depuy Spine, Inc. v. Medtronic Sofamor Danek, Inc.*, 567 F.3d 1314, 1326 (Fed. Cir. 2009).

Even setting aside Petitioner's failure to grapple with Kitano's teaching away, Petitioner's obviousness arguments fail for two additional, independent reasons.

First, as Petitioner's own expert, Dr. Storey admits, Lee does not actually teach or disclose a label that is recyclable with a PET container as required by the '422 claims. Petitioner asserts that "Lee's *core teaching* is a PET-based shrink film specifically formulated such that the label "can be reused while attached to a PET container… and successfully processed within standard PET recycling streams." Pet. at 60. In support of this assertion, Petitioner cites to Dr. Storey's declaration, which states that "Lee's central teaching is the provision of a PET-based shrink film

specifically engineered (through careful control of blend composition and resulting crystallizability) so that the label 'can be reused while attached to a PET container.'" EX1004 ¶ 215. Yet, when pressed in his deposition in the parallel district court litigation, Dr. Storey entirely abandoned this opinion. Specifically, Dr. Storey testified that for a label to be recyclable it ***must*** be pure PET and he "[could not] think of any blend or combination of PET and something else that would be recyclable." EX2023, 170:21-23. When confronted with the fact that in his IPR declaration, Dr. Storey opines that "Lee discloses a polyester resin ***blend*** comprising PET, which can be virgin or recycled PET, ***and a specific copolyester resin***," Dr. Storey disclaimed his opinion that Lee is, in fact, recyclable. Specifically, Dr. Storey testified:

> Q. So it is, in fact, your opinion that Lee teaches a heat shrink film that comprises PET and something that is not PET, that it can be successfully processed within a standard PET recycling stream?
>
> A. That is – that is Lee's teaching.
>
> Q. And do you agree?
>
> A. I think it – I have no opinion because it's contradicted by other sources that I've read.
>
> ***
>
> Q. You are essentially telling the PTAB that the '422 patent is invalid, in part, based on what Lee teaches; correct? …
>
> THE WITNESS: In part, yes. …

> Q. And now you're telling me in this deposition that, you know what, we should ignore what Lee teaches because it's contradicted by something else. Is that right? …
>
> THE WITNESS: I'm just saying I don't have an opinion.

EX2023, 175:3-176:11. That Dr. Storey entirely abandoned his opinion undermines Petitioner's assertion that Kitano in combination with Lee renders obvious the claims of the '422 Patent.

Second*,** Petitioner asserts that "[c]ombining Kitano's printed light-shielding layers with Lee's recyclable film technology, therefore, directly teaches or renders obvious a label that is "recyclable with a PET container." Pet. at 61. However, Petitioner fails to acknowledge that Lee explicitly teaches away from modifying its label to include any light-blocking functionality, including because Lee strongly teaches a transparent film free from any light-blocking particles. For example, Lee teaches that "haze," defined as "a percentage of the diffuse transmittance to the transmittance," is "most preferably 0%." EX1010, [0051]. Moreover, Lee discloses techniques to "prevent***[] an increase in haze due to precipitation of oligomers during stretching at a high temperature, ***maintaining high transparency*** even after stretching." EX1010, [0051]. Thus, Lee's explicit disclosure lauds the advantages of a transparent film (*i.e.*, one that allows light to pass rather than blocking light) and provides reasons not to increase opacity or light-blocking properties of its film. Contrary to Petitioner's assertion, a POSITA would not have been motivated to

combine teachings from Kitano and Lee, which each teach away from using the other.

For these reasons, Petitioner fails to demonstrate a reasonable likelihood of success in showing that Kitano and Lee alone or in combination with the knowledge of a POSITA discloses or renders obvious the claim "wherein the recyclable shrink label is recyclable with a PET container" as required by claims 1 and 19 of the '422 Patent under any of the proposed constructions discussed in § III above. For example, under Petitioner's proposed construction, Kitano discloses and encourages a label that is removed prior to recycling the container therefore does not disclose a label that is capable of entering a PET recycling stream simultaneously with a PET container and can undergo the recycling process alongside the container. Neither can Petitioner show a reasonable likelihood of success in showing that Kitano combined with Lee meets Petitioner's proposed construction as Dr. Storey explicitly disclaimed any opinion that Lee discloses a label that can be recycled alongside the container. Similarly, under the Board's preliminary construction and Patent Owner's proposed construction, Petitioner fails because Kitano and Lee disclose labels that cannot be recycled without removing the label prior to or during the recycling process.

Accordingly, the claim construction dispute discussed in § III above is moot for the purposes of the Board's institution decision and Petitioner fails to

demonstrate a reasonable likelihood of success under any of the proposed construction. Petitioner's unexplained reliance on such disparate art dooms any reasonable likelihood of success and the Board should deny institution.

b. **"to block at least 80% of incident light having wavelengths in a range of 200 nm to 900 nm"**

Petitioner alleges that Kitano meets the limitation "to block at least 80% of incident light having wavelengths in a range of 200nm to 900nm" because Kitano teaches "using materials (Al particles, TiO_2/Carbon Black) … known by a POSITA to provide UV-Vis-NIR attenuation (200-900nm). Yet, Dr. Storey acknowledges that Kitano only discloses "'excellent light shielding properties' and aims for low light transmittance (e.g., ≤10% or even ≤3% in the ***500-600 nm visible light range***." EX1004 ¶ 201. To fill this gap, Petitioner asserts that "[a]chieving the specific ≥80% blocking over 200nm-900nm was obvious." Pet. at 59. Petitioner further asserts that "a POSITA would recognize that blocking percentage is a predictable function of known variables: choice, concentration, and thickness of Kitano's light-blocking component." Pet. at 59. Even taken as true, Petitioner fails to analyze whether and to what extent changing these "known variables" would affect light transmittance in the 200nm-500nm or 600-900 nm range, whether the changes would affect other aspects of the claims including the thickness of the label (required by the claims to be within 15 μm to 100 μm), and whether such changes would affect the recyclability of the label with the PET container. Nor does Dr. Storey's declaration fill in these

critical details. Instead, Dr. Storey simply parrots the Petition, providing zero additional analysis or expert opinion. *Compare* EX1004 ¶¶ 203-204 (explaining modifications to light blocking particle concentration, layer thickness, or formulation adjustments were within the skill of a POSITA), *with* Pet. at 58-59 (same); *Xerox*, IPR2022-00624, Paper 12 at 5 ("[T]he Board was correct in giving little weight to Petitioner's expert because the expert declaration merely offered conclusory assertions without underlying factual support and repeated, verbatim, Petitioner's conclusory arguments."); *TQ Delta*, 942 F.3d at 1359 ("This court's opinions have repeatedly recognized that conclusory expert testimony is inadequate to support an obviousness determination").

C. Grounds 1 and 2 Impermissibly Rely on Routine Optimization Without a Reasoned Explanation

The Petition repeatedly asserts that a POSITA would have arrived at the claimed invention through "routine optimization." However, the Petition fails to articulate a reasoned explanation as to why a POSITA would have been specifically motivated to undertake the particular optimizations required by the claims, or why a POSITA would have reasonably expected success in doing so. Instead, the Petition relies on conclusory statements and generalized assertions about the state of the art, which is insufficient under established legal standards for obviousness. *See In re Stepan Co.*, 868 F.3d 1342, 1346 (Fed. Cir. 2017).

The Petition asserts the following entirely conclusory assertions (highlighted in red below):

- "Using Schurr's taught pigments (carbon black, metal particles) known for broad absorption, a POSITA **could** readily achieve ≥80% blocking across 200-900nm via routine optimization of pigment concentration and/or layer thickness—predictable variations of Schurr's effective system, governed by well-established principles like the Beer-Lambert law." Pet. at 38; EX-1004 ¶ 104.
- "Achieving the specific ≥80% blocking over 200nm–900nm was obvious. (EX-1004 ¶ 200). Motivated to combine Kitano's light blocking with Lee's recyclability, a POSITA would recognize that blocking percentage is a predictable function of known variables: choice, concentration, and thickness of Kitano's light-blocking component. Optimizing these standard parameters via routine experimentation or calculation to meet a quantitative target (≥80% over 200-900nm) is within ordinary skill and would not yield unexpected results." Pet. at 59; EX-1004 ¶¶ 203-204.

The first statement merely contends that a POSITA "could" achieve the claimed results by adjusting known variables and the second statement is a conclusory argument parroted by Petitioner's expert (EX-1004 ¶ 204). Notably, neither statement explains why a POSITA would have been motivated to do so, or why a POSITA would have reasonably expected that such optimization would succeed in meeting all the claim limitations, including the specific light blocking performance, recyclability, and other interrelated properties.

Petitioner's unsubstantiated assertion that "a POSITA's motivations to make necessary modifications or confirmations arise from, for example routine optimization, addressing known principles and techniques" provides no basis or

evidence to show that the changes necessary to meet the claims could be categorized as "routine optimization," ***what*** "principles and techniques" would actually be used, whether those "principles and techniques" are in fact routine, or what the knowledge of a POSITA would actually contribute to these "principles and techniques." This failure to provide any evidence and analysis is fatal to Petitioner's argument. *See, e.g.*, *Eton Pharms., Inc. v. Exela Pharma Sci., LLC*, 2020 WL 6785755, at *6 (P.T.A.B. Nov. 18, 2020) ("Petition suffers from a lack of particularity because it is not clear what aspects of the numerous references cited in the body of the petition but not listed in the grounds of unpatentability, Petitioner relies on to establish a basis for 'routine optimization.'"); *see also In re Stepan*, 868 F.3d at 1346. ("[m]issing from [Petitioner's] analysis is an explanation as to *why* it would have been routine optimization to arrive at the claimed invention.") (emphasis in original).

Petitioner's approach is to invoke routine optimization as a catch-all, without addressing the technical challenges or trade-offs that might be involved. For example, the Petition asserts that a "POSITA, performing routine optimization of Kitano's taught materials to achieve the ≥80% blocking, would predictably arrive at a coating weight for the light blocking layer within the broad 0.5-25 ppr range, which encompasses typical functional layer weights." Pet. at 69; EX-1004 ¶¶ 264-265. This passages merely states that a POSITA "would predictably arrive" at the claimed parameters but does not provide any analysis of the technical considerations,

potential obstacles, or reasons why a POSITA would have been motivated to pursue these specific optimizations in the first place. Petitioner does not address whether modifying pigment concentration or layer thickness to achieve the claimed light blocking would affect other properties, such as recyclability or film integrity, nor does it explain why a POSITA would have expected to achieve all the claimed results simultaneously.

The Petition's failure to articulate a specific motivation or reasonable expectation of success, beyond generic references to routine optimization, renders its obviousness arguments legally insufficient. *See, e.g., In re Stepan*, 868 F.3d at 1346 ("Similar to cases in which the Board found claimed inventions would have been 'intuitive' or 'common sense,' [Petitioner] must provide some rational underpinning explaining why a person of ordinary skill in the art would have arrived at the claimed invention through routine optimization.")

V. CONCLUSION

In conclusion, Petitioner has failed to meet the burden of establishing that any of the challenged claims of the '422 Patent is unpatentable as obvious over the cited prior art. Thus, Patent Owner respectfully requests that that the Board deny institution of *inter partes* review of claims 1-19 of the '422 Patent.

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Respectfully submitted,

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CERTIFICATE OF SERVICE

The undersigned hereby certifies that a copy of the foregoing Patent Owner's Preliminary Response was served on the 16th day of October, 2025, via electronic mail directed to counsel of record for the Petitioners:

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CERTIFICATE OF COMPLIANCE

This Patent Owner's Preliminary Response complies with the type-volume limitations as mandated in 37 C.F.R. § 42.24. According to the word processing system used to prepare this document, the brief contains 11,946 (14,000 limit) words.

/s/ W. Todd Baker
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