

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

MULTI-COLOR CORPORATION
Petitioner

v.

BROOK & WHITTLE LIMITED
Patent Owner

PGR2025-00025
Patent No. 11,961,422

PATENT OWNER'S RESPONSE

TABLE OF CONTENTS

I.	Introduction And Summary of Argument	1
II.	Background	4
A.	Technology Overview and the '422 Patent	4
B.	Prosecution History of the '422 Patent	7
III.	Person of Ordinary Skill in the Art	10
IV.	Claim Construction	11
A.	“recyclable” (claims 1-19)	11
V.	Petitioner Cannot Show by a Preponderance of the Evidence that Claims of the '422 Patent Are Unpatentable	15
A.	Ground 1: The Gatorade Label does not anticipate under 35 U.S.C. §102	15
1.	Claim 1	16
a.	“a heat shrink film comprising polyethylene terephthalate (PET) and having a first surface and a second surface opposite of the first surface”	16
b.	“a light blocking layer disposed adjacent the first surface and comprising a light blocking component”	17
c.	“the light blocking layer being constructed for the recyclable shrink label to block at least 80% of incident light having wavelengths in a range of 200nm to 900nm”	18
d.	“wherein the light blocking component comprises a particulate having a particle size of 0.1µm to 100µm”	21
e.	“wherein the recyclable shrink label is recyclable with a PET container”	22

2.	Claims 2-3 and 5-18.....	44
3.	Claim 2.....	44
4.	Claims 3 and 10.....	45
5.	Claim 5.....	46
6.	Claim 11.....	47
7.	Claim 12.....	47
8.	Claim 13.....	48
9.	Claims 14 and 15.....	49
10.	Claim 16.....	51
11.	Claim 19.....	52
a.	“having a first surface and a second surface opposite of the first surface”.....	52
b.	“a light blocking layer disposed adjacent the first surface and comprising a light blocking component, the light blocking layer being constructed for the recyclable shrink label to block at least 80% of incident light having wavelengths in a range of 200 nm to 900 nm”.....	52
c.	“a high opacity layer comprising a white pigment,”.....	52
d.	“wherein the recyclable shrink label is recyclable with a PET container”.....	52
B.	Ground 2: The Gatorade Label in combination with Mitchell do not render obvious the claims of the '422 Patent under 35 U.S.C. § 103	53
1.	Claim 4: “wherein the recyclable shrink label comprises an indicia layer and wherein the high opacity layer is disposed between the indicia layer and the light blocking layer”	53

a.	Petitioner fails to show any motivation to combine	55
b.	Petitioner fails to show a reasonable expectation of success	60
c.	Objective Indicia Undercut Petitioner's Obviousness Arguments	63
C.	Ground 3: The Gatorade Label and Febreze Label do not render obvious the claims of the '422 Patent under 35 U.S.C. §103	68
1.	Claim 4: "wherein the recyclable shrink label comprises an indicia layer and wherein the high opacity layer is disposed between the indicia layer and the light blocking layer"	68
a.	The Febreze label does not teach or disclose the limitations of claim 4	68
b.	Petitioner fails to show any motivation to combine	71
c.	Petitioner fails to show a reasonable expectation of success	74
d.	Objective Indicia Undercut Petitioner's Obviousness Arguments	74
D.	Ground 4: The Claims of the '422 Patent are Definite under 35 U.S.C. §112	75
1.	Claim Construction	76
2.	Prosecution History Confirms the Scope of the Claims	77
3.	The '422 Patent Specification Consistently Defines the Scope of the Claims	78
4.	APR Guidance Documents and Testing Further Confirm the Scope of the Claims	85
a.	APR Critical Guidance	86
b.	Wash Test Guidance	89

c.	Plaque Inspection Testing.....	91
d.	Sortation Guidance	94
5.	PO Has Already Overcome Similar Indefiniteness Argument During Prosecution	96
6.	Summary	97
VI.	Conclusion	98

All emphasis added unless otherwise noted

LISTING OF EXHIBITS

EX	DESCRIPTION
2001	"Going for Gold," Multi-Color Corporation, available at https://www.mcclabel.com/en/resources/going-for-gold
2002	"NESCAFÉ® Debuts Gold Espresso and Ice Roast Instant Coffee in the U.S., Offering Rich Variety for Every Occasion," Nestle, April 3, 2024, available at https://www.nestleusa.com/media/pressreleases/gold-espresso-ice-instant-coffee
2003	recycLABEL™ Shrink Sleeve brochure, Multi-Color Corporation
2004	"Labeled with Care – Sustainability Update," Multi-Color Corporation, available at https://issuu.com/mcclabel/docs/mcc_2024_sustainability_update?fr=sOTFjMjY0MTE4OTQ
2005	"Nestlé to use recyclable, light-blocking shrink sleeves on some beverage products," Packaging Dive, April 17, 2024, available at https://www.packagingdive.com/news/nestle-recyclable-shrink-sleeve-label-light-blocking/713427/
2006	<i>Brook + Whittle LTD v. Nestle USA, Inc. et al.</i> , 2:24-cv-00735-JRG-RSP, Docket Report, generated May 13, 2025
2007	<i>Brook + Whittle LTD v. Nestle USA, Inc. et al.</i> , 2:24-cv-00735-JRG-RSP, D.I. 16 (Docket Control Order)
2008	<i>Brook + Whittle LTD v. Nestle USA, Inc. et al.</i> , 2:24-cv-00735-JRG-RSP, D.I. 50 (Defendants' Unopposed Motion for Leave to Supplement Invalidity Contentions Under P.R. 3-6(b))
2009	<i>Brook + Whittle LTD v. Nestle USA, Inc. et al.</i> , 2:24-cv-00735-JRG-RSP, D.I. 51 (Order granting D.I. 50)
2010	Deposition Transcript of Mr. Craig Bushman
2011	Deposition Transcript of Dr. Michael Deible
2012	Declaration of Dr. Maureen Reitman
2013	Declaration of Dr. Scott Phillips
2014	"Gatorade and Cheetos are Among the Pepsi Products Getting a Natural Dye Makeover," NY Post
2015	"Can I Drink Gatorade Past the Best Before Date on the Bottle," PepsiCo
2016	US Patent Application No. 2025/0273094
2017	"Nesquik Makes Bottles Easier to Recycle for Consumers," Nestle
2018	Email from A. Leonard (Nestle) to S. Figueroa (B+W)

2019	PACKAGING EUROPE, <i>Winners of the Sustainability Awards 2024 Announced!</i> , (Nov. 14, 2024).
2020	PACKAGING EUROPE, <i>Sustainability Awards 2024 Finalist Interview: Brook+Whittle's Recyclable, Light-Blocking Shrink Sleeve</i> , (Sept. 24, 2024).
2021	<i>AWA Sleeve Label Awards 2024 - Winners</i> (October 28, 2024)
2022	US Plastics Pact 2023 LinkedIn Post
2023	US Plastics Pact 2024 LinkedIn Post
2024	<i>Brook + Whittle LTD v. Nestle USA, Inc. et al.</i> , 2:24-cv-00735-JRG-RSP, Dkt. 1 (Complaint)
2025	<i>Brook + Whittle LTD v. Nestle USA, Inc. et al.</i> , 2:24-cv-00735-JRG-RSP, Dkt. 1, Ex B (Claim Chart)
2026	PET-S-09, Evaluation of PET Plaques for Color, Haze and Inclusions
2027	US Patent Application No. 18/667,677 September 3 Remarks
2028	US Patent Application No. 18/667,677 October 24 Final Rejection
2029	"Heat Treatment Impacts on Film Morphology in Biaxially Oriented Polypropylene Films," Kivilcim, Fadime Nulufer, <i>Food Sci. & Nut.</i>
2030	"The Amazing Shrink Inks," Packaging Impressions
2031	"Wrinkling-to-delamination Transition in Thin Polymer Films on Compliant Substrates," Nolte, Adam J., <i>Soft Matter</i> , 2017
2032	"Review Article: Stress in Thin Films and Coatings: Current Status, Challenges, and Prospects," Abadias, Gregory, <i>J. Vac. Sci. Technol.</i> 2018
2033	"Product Decoration Technologies: Sleeving," Finishing & Embellishment
2034	"Brook + Whittle's GreenLabel BlockOut Receives Important Recyclability Recognition and Prequalification," Brook + Whittle
2035	"MCC Receives APR Recognition for recycLabel Roll-Fed Label on PET Bottles," MultiColor Corp
2036	"Trap (printing)," Grokipedia
2037	<i>Brook + Whittle LTD v. Nestle USA, Inc. et al.</i> , 2:24-cv-00735-JRG-RSP, Dkt. 112, Claim Construction Order
2038	Plastics Forming Enterprises LLC, Laboratory Report #2467 APR PET Benchmark

Brook + Whittle Limited (“PO”) submits this Response to Multi-Color Corporation’s (“Petitioner”) Petition for post-grant review (“PGR”) regarding U.S. Patent No. 11,961,422 (“the ’422 Patent”).

I. INTRODUCTION AND SUMMARY OF ARGUMENT

The ’422 Patent solved an unmet need for a *both* recyclable and light-protective shrink label. EX1001, 1:26-28. According to the ’422 Patent, “[t]he dairy, food, nutraceutical, and other markets [which] also require light protective packaging to block ingredient harmful light waves from impacting the shelf life and performance of those products.” EX1001, 1:16-20. Although the “[t]he consumer packaged-goods markets globally aspire to utilize recyclable packaging for most products,” such light protective packaging was not recyclable. EX1001, 1:14-15. For light-blocking, industry players traditionally relied on “color impregnated bottles or containers” or “white shrink films” “to block the harmful light waves.” EX1001, 1:20-23. But “[t]he market for recycling color impregnated PET is very small and most of those bottles and containers are not recycled.” EX1001, 1:23-25. Thus, “there remain[ed] a need for recyclable, light protective packaging options.” EX1001, 1:26-28.

Unlike existing labels, the ’422 Patent’s label *itself* is recyclable along with the container to which it is attached. The ’422 Patent states inks used “in the labels...including the light blocking inks, are designed to wash off the film during a

reclaiming process allowing the labels **and** containers they cover to be recycled.” EX1001, 7:9-13. This feature, among others, set the '422 Patent apart from the prior art. Unsurprisingly, PO's innovative label design has garnered significant industry praise for its recyclability. EX2019. Indeed, even its competitors—who were actively trying and failing to develop the same product—praised B+W for “com[ing] up with novel solutions” in the label printing industry. EX2018, 1.

Petitioner challenges the '422 Patent on four meritless grounds. Ground 1 presents an anticipation analysis using a Gatorade label that is neither recyclable nor light-blocking, outright ignoring claim limitations and improperly attempting to backfill limitations with expert testimony. Ground 1 is fatally undermined by Petitioner's own expert's tests (and confirmed by PO's experts) which confirm the label is not recyclable. Despite acknowledging a label is recyclable if the inks wash off, Petitioner's expert agrees inks were retained on the label after his wash test. EX2011, 208:13-17 (“Q:...you would agree with me that not all inks and pigments are removed from that [pictured] portion of the label, correct? A: Correct.”). Instead, Petitioner attempts a sleight of hand, showing images consisting mainly of clear PET **control** pieces to imply the inks washed off, failing to acknowledge those control pieces **never contained any ink**. Thus, even setting aside the myriad other deficiencies for claims 1 and 19, Petitioner fails to demonstrate the Gatorade label

is recyclable as claimed and fails to establish any claim of the '422 Patent is anticipated by Petitioner's Gatorade label.

Second, Grounds 2 and 3 fail because claim 4 is not obvious. Claim 4 depends from independent claim 1 and Petitioner does not present *any* distinct arguments in Grounds 2 or 3 to overcome the deficiencies of Ground 1. In addition, Petitioner fails to explain any specific motivation to modify Petitioner's allegedly successful (and still sold) Gatorade label beyond vague industry desires. If anything, Petitioner merely highlights objective indicia of a previously unmet need for a light-blocking, recyclable label. Nor can Petitioner show a reasonable expectation of success in combining the Gatorade label with other non-recyclable prior art labels.

Finally, Ground 4 fails because the claims of the '422 Patent are definite. Petitioner's indefiniteness arguments reflects a fundamental misunderstanding of how a POSITA would have understood the term "recyclable" in light of the specification and prosecution history. Petitioner cites various allegedly "disparate" descriptions of the term "recyclable" but fails to identify any inconsistencies between the descriptions and its own declarants acknowledge an ability to understand the claim scope. Moreover, the Eastern District of Texas ("EDTex") has already construed "recyclable" and its related elements in a manner similar to the construction proffered here, EX2037, and PO has already overcome a similar indefiniteness challenge during prosecution of a child application. EX2028.

PO respectfully requests the Board confirm claims 1-19 of the '422 Patent.

II. BACKGROUND

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

A. Technology Overview and the '422 Patent

The '422 Patent claims a recyclable shrink label with a heat shrink film and a light-blocking layer to block at least 80% of incident light with wavelengths between 200nm and 900nm, in which the label is recyclable with a container. EX1001, cls.1, 19.

Each claim of the '422 Patent requires labels are recyclable along with the containers to which the label is fixed. In some embodiments, the article or container may be made of the same or similar polymer as the label (*e.g.*, PET) such that both container and label can be recycled together. EX1001, 18:25-30. Alternatively, "[i]n other cases, the article and label may include or be made of another resin and be directed to a corresponding recycling stream." EX1001, 20:8-11. The '422 Patent explains what is meant by the "shrink label is recyclable with a PET container." EX1001, cl.1. For example, the '422 Patent states "the inks utilized in

the labels of the present disclosure, including the light blocking inks, are designed to wash off the film during a reclaiming process allowing the labels and containers they cover to be recycled.” EX1001, 7:9-13.

The labels claimed by the '422 Patent also “serve to block light from reaching a product inside the package.” EX1001, 6:23-29, Fig.2.

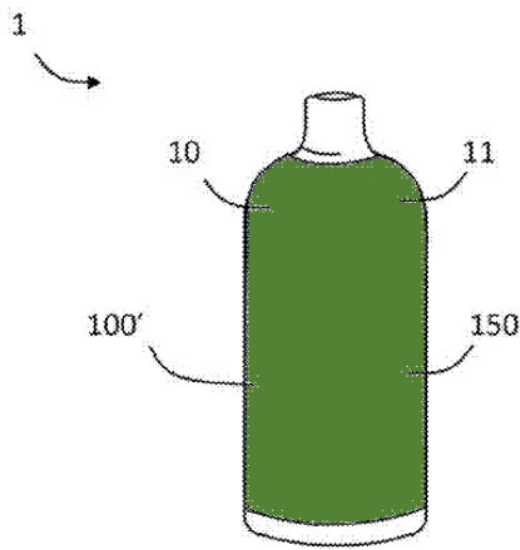


Fig. 2

EX1001, Fig.2 (annotated)

The '422 Patent discloses exemplary embodiments aimed at providing recyclable, light-blocking shrink labels. Each claim requires a heat shrink film, which can be composed of a polyester heat shrink film as is used in the packaging industry. EX1001, 7:38-43. 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, 9:50-53.

All claims also require a light-blocking layer. The '422 Patent describes the use of a light-blocking layer to prevent light from interacting with the contents of the container. The light-blocking layer may include one or more light-blocking components including one or more metals such as aluminum, and can be a particulate material, characterized by a particle size diameter between 0.1 μ m to 100 μ m. EX1001, 13:48-63.

The '422 Patent describes multiple layers can be added to the label, such as an indicia layer that may be applied “on a layer applied to a shrink label, including the high opacity 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) or to include graphics. EX1001, 1:36-3:3, 5:25-43, 15:54-59, 16:49-53.

The '422 Patent describes an optional high opacity layer, formed from a high opacity coating composition, useful where clear shrink films are used. EX1001, 1:36-3:3, 5:4-24, 11:55-64. High opacity layers may contain white pigments such as titanium dioxide and are more than 50% opaque to hide an object placed behind the substrate. EX1001, 5:4-8, 11:65-12:5.

Figures 1A-1E illustrate embodiments in which the layers of the heat shrink label can be employed in different configurations. In Figure 1A, the heat shrink label includes a heat shrink film 120, where indicia layer 125 (*e.g.*, graphics) is disposed on one surface and an opposing surface includes a high opacity layer 110

and a light blocking layer 115 on the high opacity layer 110, so light blocking layer 115 is closest to the article the heat shrink label 100 is applied.

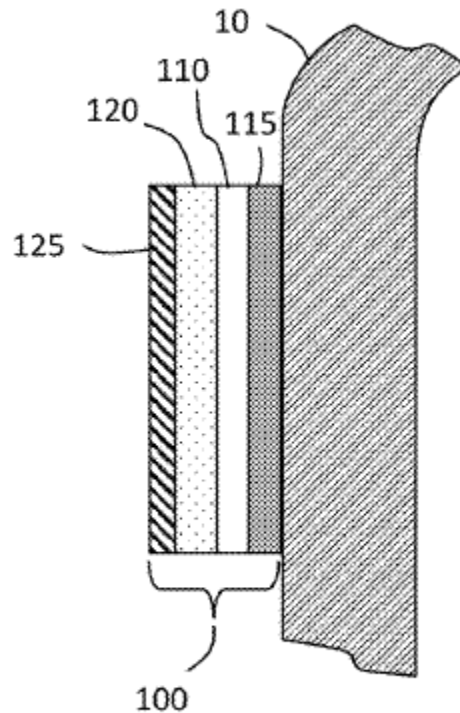


FIG. 1A

EX1001, Fig.1A

B. Prosecution History of the '422 Patent

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, 12-13. Concurrently with the application, Applicant submitted an Information Disclosure Statement (“IDS”) listing guidance documents from the Association of

Plastic Recyclers (“APR”). EX1002, 92-93. Following a Requirement for Restriction/Election, Applicant elected Group 1 (claims 1-19), drawn to a recyclable shrink label (and article comprising the recyclable shrink label). EX1002, 213.

On August 9, 2023, the Examiner rejected the claims under 35 U.S.C. §112(b) and §103 over prior art references, including U.S. Application 2017/0223879 (“Mitchell”). EX1002, 224-228. The Examiner noted Mitchell teaches an “electromagnetic radiation blocking label arrangement and a container comprising the radiation blocking label arrangement thereon.” EX1002, 228. The Examiner noted 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, 229. The Examiner explained 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 *[sic]* during recycling processes.” EX1002, 229. The Examiner signed the January 30, 2023 IDS listing the APR Guidance Documents, noting “ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH.” EX1002, 218-219 (none struck through).

On October 16, 2023, Applicant amended both 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.”

EX1002, 316. Applicant amended several claims in order to traverse §112 rejections. EX1002, 334. Applicant explained it disagreed with Examiner's assertions related to the recyclable term being functional language that does not further limit the structure. EX1002, 335 (emphasis in original). Applicant explained, "[t]he term 'recyclable' does further limit the claim in that the claimed label **must be capable of being recycled**" and cautioned "[n]ot all combinations of shrink films and light blocking materials are capable of being recycled." EX1002, 335 (emphasis in original). Applicant 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.*" EX1002, 335.

Thus, Applicant distinguished the claimed invention over Mitchell, which teaches "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.*" EX1002, 335 (emphasis in original).

On November 13, 2023, the Examiner issued a final rejection under §§102 and 103 over Japanese Patent 2009-214535A ("Sasaki"). In response to Applicant's amendments, Examiner noted Applicant's arguments "have been considered but are moot because the new ground of rejection does not rely on any reference applied in the prior rejection..." EX1002, 357.

On January 10, 2024, Applicant amended the claims to include the limitation “wherein the light blocking component comprises a particulate having a particle size of 0.1μm to 100μm, wherein the particulate comprises metal, metal oxide, a reflective pigment, carbon black, mica, or a combination thereof.” EX1002, 409. According to Applicant, the claim amendment included the subject matter of claim 12, which was not rejected under §102 over Sasaki and was therefore patentable. EX1002, 417.

On February 6, 2024, the Examiner issued a Notice of Allowance for all claims, noting Applicant's arguments have been fully considered and are persuasive. EX1002, 435. The '422 Patent issued on April 16, 2024. EX1001, Cover.

III. PERSON OF ORDINARY SKILL IN THE ART

Petitioner and Dr. Deible contend a POSITA would possess at least: “(1) a Bachelor's degree in chemistry or a related field, with (2) 5 years of experience in material identification and characterization using multiple analytical methods and field sampling, or equivalent research or professional experience.” Pet., 12 (citing EX1014, ¶24).

However, the '422 Patent relates to the recyclability of packaging films or containers. Although a person with experience in material identification and characterization may have experience with recyclability of packaging films or containers, nothing in Petitioner's definition requires it. Instead, a POSITA would

have had at least a bachelor's degree in one of chemical engineering, chemistry, or polymer chemistry, as well as experience related to packaging films or containers, but different experiences and education could cure a deficit. EX2013, ¶24.

Petitioner's expert, Dr. Deible, has no experience in either film or container packaging or recyclability. EX2011, 23:13-16, 24:13-21, 26:16-18. In contrast, PO's expert, Dr. Phillips, has extensive experience with recyclability of packaging films or containers. EX2013, ¶¶24-25. For example, since 2018, Dr. Phillips has worked in collaboration with Avery Denison to develop new pressure-sensitive adhesives for recyclable labels, specifically focusing on meeting APR guidelines for caustic washes in bottle and label recycling processes. EX2013, ¶11. Moreover, from 2022-2025, Dr. Phillips was the founder and owner of Remix Materials, a company aimed at converting mixed, hard-to-recycle plastic waste into lumber. *Id.*

IV. CLAIM CONSTRUCTION

A. “recyclable” (claims 1-19)

Claim Term	Petitioner Construction	Patent Owner Construction
recyclable	none	capable of being recycled without removing the label from a container before or during the recycling process

In its Institution Decision, the Board offered a “preliminary” construction of “wherein the recyclable shrink label is recyclable with a PET label” and invited further briefing. Paper 14, 11. **First**, the Board read the prosecution history as

suggesting negative requirements: “a label is *not* recyclable ... if (1) the label must be removed...for the PET container to be recycled ... or (2) the label contains inks or pigments that could not be removed during recycling” and so “would contaminate the PET polymer flake...” Paper 14, 11 (emphasis in original). ***Second***, the Board deemed it “still necessary to determine when a label is ‘recyclable.’” Paper 14, 12. The Board recited “various descriptions or standards” from the ’422 Patent and concluded “any of these standards can be used to determine if a shrink label is ‘recyclable.’” Paper 14, 12-13.

The Board’s preliminary construction is consistent with PO’s proposed construction and the intrinsic record. PO’s proposed construction “capable of being recycled without removing the label from a container before or during the recycling process” ***does*** identify both the positive and negative aspects of the definition when read in light of the specification and prosecution history. As the Board correctly found, the prosecution history clearly identifies the ’422 Patent claims labels that can be recycled with the containers without being removed from the recycling stream either before or during the recycling process. Prior to the ’422 Patent invention, light-blocking shrink labels were generally not recyclable and would be contaminants in the recycling stream if not removed during the recycling process. Applicant noted during prosecution that the Mitchell reference teaches “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.*” EX1002, 335 (emphasis in original). As Applicant noted, “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.” EX1002, 335. Thus, Applicant explained the ’422 Patent claims a label that can be recycled along with a container such that both can be processed in the recycling stream to reclaim reusable resin. EX1002, 335.

Second, although the Board indicated PO’s proposed construction did not adequately identify when a label is recyclable, the Board’s preliminary construction correctly found “a label is *not* recyclable ... if (2) the label contains inks or pigments that could not be removed during recycling” and so “would contaminate the PET polymer flake....” Paper 14, 11 (emphasis in original). Said another way, a label *is* recyclable if it contains inks or pigments that wash off during the recycling process, consistent with specification’s explanation of how a label is recyclable with a container. *See, e.g.*, EX1001, 20:16-20 (“during the recycling process, the inks and coating layers cleanly separate from the heat shrink film, allowing pure resin to be recovered and processed into reusable resin.”). Thus, a POSITA would understand that a label recyclable under the claims of the ’422 Patent is “capable of being recycled without removing the label from a container before or during the recycling process,” which would naturally include requiring the label includes inks that wash

off the label such that the reusable resin can be reclaimed when the label and container are recycled together. EX1001, 20:16-20. PO's proposed construction is also consistent with the construction entered in the EDTex litigation. EX2037.

In its institution decision, the Board recited “various descriptions or standards” from the '422 Patent and concluded “any of these standards can be used to determine if a shrink label is ‘recyclable.’” Paper 14, 12-13. As explained in §V.D below, each of these descriptions of recyclability are consistent with PO's proposed construction. PO respectfully disagrees with the Board's finding that “*any of these standards* can be used to determine if a shrink label is recyclable,” Paper 14, 12-13, because there is only one standard—a label is recyclable if it includes inks that wash off the label such that the reusable resin can be reclaimed when the label and container are recycled together. The specification provides multiple characterizations of this standard to identify the metes and bounds of the invention but each characterization is consistent with this standard.

PO respectfully requests the Board construe “recyclable” to mean “capable of being recycled without removing the label from a container before or during the recycling process.”

V. PETITIONER CANNOT SHOW BY A PREPONDERANCE OF THE EVIDENCE THAT CLAIMS OF THE '422 PATENT ARE UNPATENTABLE

Petitioner includes four grounds of unpatentability in its Petition, as shown in the table below. None have merit.

Ground	Claims	Basis
1	1-3, 5-19	§ 102 – Gatorade Label
2	4	§ 103 – Gatorade Label and Knowledge of a POSITA, including Mitchell et al. (US 2017/0223879)
3	4	§ 103 – Gatorade Label in view of the Febreze Label
4	1-19	§ 112 – Indefinite re “wherein the recyclable shrink label is recyclable.”

Petitioner has the burden of proving unpatentability by a preponderance of the evidence. 35 U.S.C. § 326(e). That burden never shifts. *Dynamic Drinkware, LLC v. Nat'l Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015). Petitioner cannot meet this burden of proof for any asserted grounds.

A. Ground 1: The Gatorade Label does not anticipate under 35 U.S.C. §102

Petitioner fails to carry its burden of proving the Gatorade label anticipates any claim of the '422 Patent.¹

¹ PO notes Ground 1 of the Petition contains several references to sample 3191115, which the Board agreed appears to be from a Febreze label. Pet., 17 (Fig.4), Paper

1. Claim 1

Claim 1 is not anticipated by the Gatorade label. Accordingly, all dependent claims depending from claim 1 are also not anticipated.

- a. “a heat shrink film comprising polyethylene terephthalate (PET) and having a first surface and a second surface opposite of the first surface”

Neither Petitioner nor Dr. Deible identify a “first surface” or “second surface opposite of the first surface.” Pet., 17-21 (only showing “layer thickness”); EX1014, ¶¶62-64; EX2011, 169:5-16 (confirming he did not identify a first or second surface).

Petitioner only presents cross sections of the Gatorade label. Pet., 19-20. To the extent Petitioner attempts to backfill by implying one can visually determine the heat shrink film has two surfaces, not only is that “do it yourself” approach insufficient to carry Petitioner’s burden, but it also fails to distinguish the distinct surfaces. *See ATEN Int’l Co. v. Uniclass Tech. Co.*, 932 F.3d 1364, 1368 (Fed. Cir. 2019) (“Testimony concerning anticipation must typically ‘explain in detail how each claim element is disclosed in the prior art reference. The testimony is

14, 13-14, n.5. Any references to samples collected from the **Febreze** Label do not show how the **Gatorade** Label anticipates any claims of the ’422 Patent, and should not be considered under Ground 1.

insufficient if it is merely conclusory.”) (quoting *Schumer v. Lab. Comput. Sys., Inc.*, 308 F.3d 1304, 1315–16 (Fed. Cir. 2002)). The identification of the “first surface” is necessary as other limitations require certain layers be oriented with respect to the “first surface.” EX1001, 28:26-27 (“light blocking layer ***disposed adjacent the first surface***”), 29:16-18 (“***first surface*** of the heat shrink film ***faces the external surface*** of the container”), 29:19-20 (“indicia layer is ***disposed on the first surface***”); EX2013, ¶¶63-64. Thus, Petitioner has not met its burden to demonstrate this limitation is met. EX2013, ¶65.

- b. “a light blocking layer disposed adjacent the first surface and comprising a light blocking component”

The Petition offers no argument or explanation that the Gatorade label contains “a light blocking layer ***disposed adjacent the first surface.***” Pet., 21-29. Petitioner does not identify the “first surface” at all, let alone the arrangement of the light blocking layer compared to the “first surface.” Pet., 21-29; EX2011, 169:5-16.

Petitioner cites broadly to Dr. Deible’s declaration and FIG6. Pet., 21-29. But Dr. Deible cites his ***entire appendix*** rather than a specific figure to support his analysis of the configuration of layers. EX1014, ¶66. Dr. Deible even confirmed he never specifically identified a first surface, second surface, or whether the light-blocking layer is disposed adjacent to the first surface. EX2011, 169:5-16, 181:16-22. Even read charitably, the descriptions of FIGS. 6b-d state the “[i]mage is oriented such that the PET film is on the bottom of the image, and the surface at the

top of the image is the surface that would contact the substrate,” but “substrate” does not appear in the claims and neither Petitioner nor Dr. Deible define “the substrate” or how it relates to any “surface.” Pet., 23-27; EX1014, ¶¶28-29; EX2013, ¶66. As explained in §V.A.3, Petitioner also fails to identify any distinct layers or explain how any alleged layers are arranged with respect to one another.

- c. “the light blocking layer being constructed for the recyclable shrink label to block at least 80% of incident light having wavelengths in a range of 200nm to 900nm”

The Gatorade label does not provide a light blocking layer constructed for the recyclable shrink label to block at least 80% of incident light. The claims require that the light blocking layer must allow the claimed recyclable shrink *label* to block 80% of incident light across the 200-900nm range. EX1001, cl.1. Petitioner points to the entire label as the claimed “recyclable shrink label” and relies on a transmittance graph but never indicates which regions of the label were tested. EX1014, ¶¶67-68; EX2013, ¶67. Even assuming Petitioner points to only the silver portions of the label as the alleged light-blocking layer, Petitioner cannot show these silver portions are constructed to allow the recyclable shrink *label* to block 80% of incident light. *Id.*, ¶71.

Dr. Deible's transmittance tests show the silver portions of the label only block approximately 85% of light near 900nm. EX1014, FIG.7. Dr. Deible's analysis assumes the silver portion of the label covers the entire label (EX2011,

183:1-12, 187:17-21), but that is incorrect: the label also contains clear, white, and orange regions. EX1003. As Dr. Reitman demonstrates, these regions contain no aluminum and transmit far greater amounts of light across the 200-900nm range. EX2012, ¶¶75-79. Indeed, Dr. Reitman concluded the silver portion of the label only covers approximately 52-68% of the label, leaving 32%-48% either uncovered or covered by non-silver ink. EX2012, ¶¶79-80.

Even assuming 68% silver coverage, the Gatorade label still leaves 32% of the label exposed to much higher quantities of light. Therefore, under Dr. Deible's analysis, the Gatorade label, as a whole, blocks at most 57% of incident light. EX2013, ¶73 (applying weighted average of 85% blocking across 68% of label).

Although Dr. Deible does not purport to determine the transmittance of the non-silver portions of the label, Dr. Reitman conducted transmittance tests and concluded the white and orange regions block approximately 50% of light or less for large portions of the 200-900nm range while the clear regions block less than 10%. EX2012, ¶78-79, FIGS. C25-29. Even accounting for any light-blocking that may occur in those regions the Gatorade label, as a whole, would block at most 65% of light near the 900nm range. EX2013, ¶¶74-77 (applying weighted average of 85% blocking for 68% silver coverage, 10% blocking for 23% clear coverage, and 50% blocking for 9% of the label).

This makes sense: Gatorade was not intended to be a light-blocking label because its contents are nonperishable. EX2015, 1 (“Gatorade is a shelf stable product, not a perishable product like milk or juice.”). The label serves an aesthetic rather than functional purpose; as seen in the image below, the label allows customers to see the color of the Gatorade in the bottle. EX2014, 6 (“Getting the hue right is critical, since many consumers know products like Gatorade by their color and not necessarily their name”); EX2013, ¶78.



EX1003, 1

At base, Petitioner would need to distinctly identify any allegedly light-blocking portions of the label separate from any other non-light-blocking region of the label to identify whether the “light blocking layer” is constructed for the shrink

label to block the incident light as opposed to a different ink layer or region. EX2013, ¶79. Yet, Petitioner fails to identify any layers at all as explained further in §V.A.3.

Thus, Petitioner fails to show the Gatorade label meets this limitation.

- d. “wherein the light blocking component comprises a particulate having a particle size of 0.1µm to 100µm”

Petitioner and Dr. Deible claim that Figure 5 depicts the requisite particle size. Not so. To show “particle size,” Petitioner refers to “aluminum flakes” in the ink as the “light blocking component” and appears to record a thickness measurement. Pet., 30, Fig.5; EX2013, ¶82. That analysis is flawed in several respects.

First, Dr. Deible reads Fig.5 as showing the flakes are greater than 0.1 microns and less than 100 microns. EX1014, ¶70. But Fig.5 is not high enough resolution to show individual particle sizes. EX2013, ¶82. Dr. Deible instead improperly measures the thickness of all the allegedly light-blocking components together, despite acknowledging that the thickness does not necessarily correlate to a single particle. *Id.*; EX2011, 189:24-9 (“you could have flakes pile on top of each other in the layer”). Dr. Deible cites Fig.6 as allegedly showing the light-blocking component, but Dr. Deible does not identify or provide any measurement of any individual particle. *Id.*

Second, the specification provides that “particle size” refers to an “*average* particle size diameter” which can be “measured by laser diffraction.” EX1001, 14:8-

10. There is no evidence that Dr. Deible measured the size of any particles, let alone calculated the average of those measurements using laser diffraction or any other technique. EX1014, ¶70, Fig.6. Indeed, the word “average” does not appear a single time in Dr. Deible’s analysis. EX1014. Dr. Deible relies on one single measurement at one single point on the label. EX1014, ¶70. Even viewed in the most favorable light, Dr. Deible’s analysis appears to ask the Board to “just eyeball it.” This handwaving is insufficient to carry Petitioner’s burden. *See ATEN Int’l*, 932 F.3d at 1368. Accordingly, Petitioner fails to show the Gatorade Label meets this limitation. EX2013, ¶¶83-85.

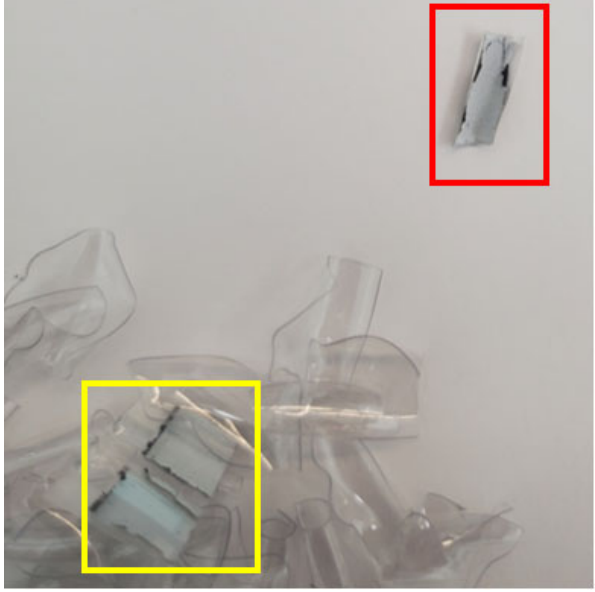
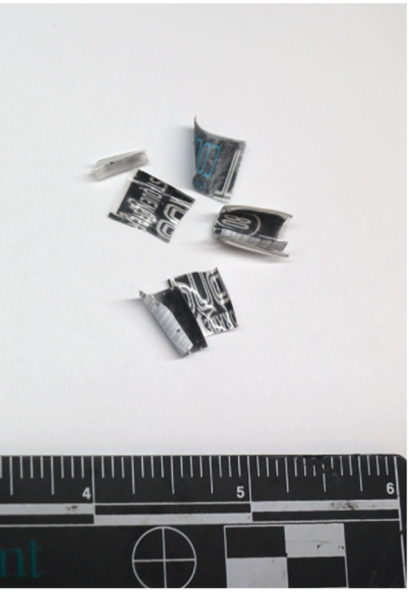
- e. “wherein the recyclable shrink label is recyclable with a PET container”

Petitioner fails to show the Gatorade label is “recyclable with a PET container.” **First**, caustic wash testing by both parties’ experts confirm that the Gatorade label is not recyclable. **Second**, Dr. Deible’s testing results are vague, incomplete, and attempt to mislead the Board by implying that the presence of clear control flakes demonstrate inks that have been entirely washed off the label when in reality the control flakes never contained any inks. **Third**, Mr. Bushman’s conclusory assertions that the Gatorade label uses an SKC Ecolabel and Fort Dearborn’s washable ink system along with Watson Standard’s silver ink should be ignored without any evidence tying the label to these documents.

- i. Caustic wash testing by *both parties' experts* confirm the Gatorade label is not recyclable.

The Petition states “laboratory tests were conducted” to determine whether the Gatorade label is recyclable with a PET container, but the Petition makes no conclusion regarding the purported recyclability of the Gatorade label based on the caustic wash test performed. Pet., 30-31.

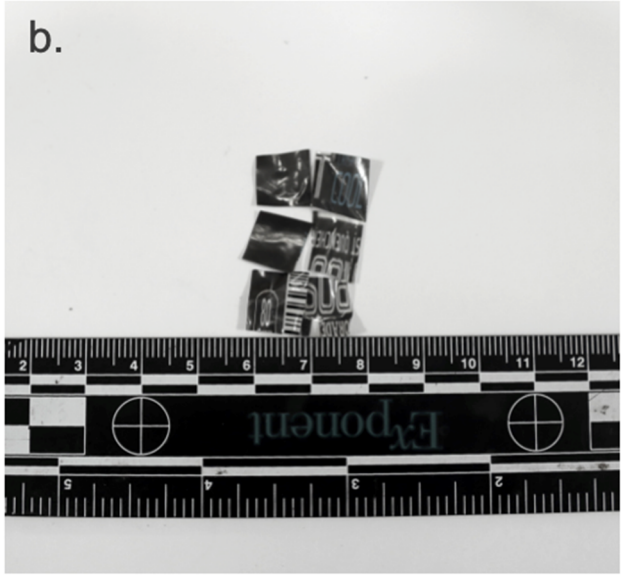
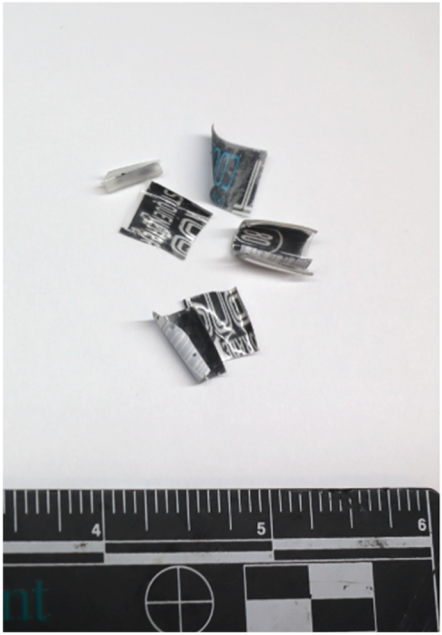
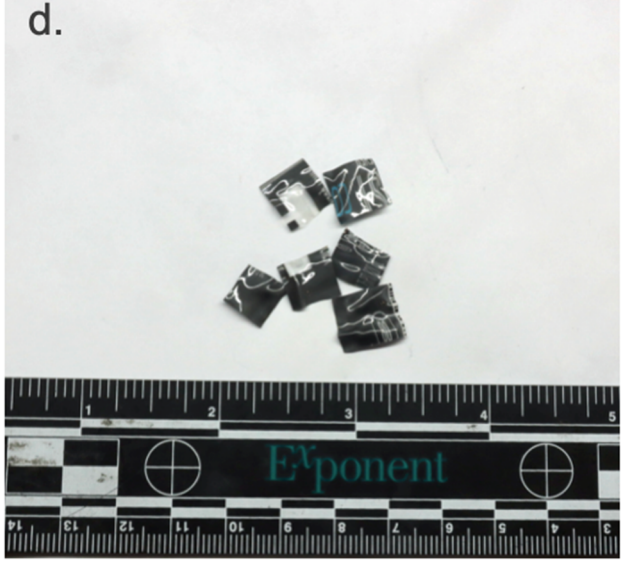
This is unsurprising, as the testing performed by both parties' experts—Dr. Reitman and Dr. Deible—confirm the Gatorade label contains significant amounts of ink that do not wash off the label as seen below:

Dr. Deible's Post-Wash Results	Dr. Reitman's Post-Wash Results
 <p data-bbox="276 1543 722 1581">EX1014, FIG 11b (annotated)</p>	 <p data-bbox="974 1543 1266 1581">EX2012, FIG C11a</p>

Despite Petitioner's attempt to imply that the clear PET control pieces in its test results show that ink washes off the film, these pieces never contained any ink. EX1014, ¶74 (0.15g of label mixed with 5g clear PET control). Instead, the images

from both parties' experts show that labels retain significant amounts of ink after caustic washing. Consistent with PO's proposed construction, and as the Board recognized in its preliminary construction, "a label is not recyclable ... if ... the *label contains inks or pigments* that could not be removed during recycling" and so "would contaminate the PET polymer flake...." Paper 14, 11(emphasis in original).

Dr. Deible provided little documentation of his caustic wash test protocol or results and even less analysis, much of which is based on the *Febreze label*. EX1014, ¶¶71-79, FIGS. 8-12. PO's expert, Dr. Reitman, performed a similar experiment to provide adequate documentation of the test procedure and results. EX2012, ¶¶63-80. Attempting to follow the test protocol described by Dr. Deible in his declaration (EX1014, ¶¶71-76), Dr. Reitman's testing protocol is described in EX2012, Appendix D. The results of Dr. Reitman's testing, shown below demonstrate significant amounts of ink remained on the label post-caustic wash. EX2012, ¶¶69-70.

Before Dr. Reitman's Caustic Wash	After Dr. Reitman's Caustic Wash
<p data-bbox="235 304 267 346">b.</p>  <p data-bbox="207 898 824 982">EX2012, FIG. C2b (water bath preshrunk Gatorade label)</p>	 <p data-bbox="901 934 1372 1018">EX2012, FIG. C11a (water bath preshrunk Gatorade label)</p>
<p data-bbox="235 1060 267 1102">d.</p>  <p data-bbox="207 1659 824 1743">EX2012, FIG. C2d (hot air gun preshrunk Gatorade label)</p>	 <p data-bbox="901 1753 1372 1837">EX2012, FIG. C11b (hot air gun preshrunk Gatorade label)</p>

As PO's expert, Dr. Phillips, explains, "[a] POSITA would have understood that significant ink retention on the Gatorade label after caustic washing would introduce contaminants into the recycling stream and therefore render the label non-recyclable." EX2013, ¶92. A POSITA would have been familiar with APR guidance explaining that inks retained on a PET film after a caustic wash become contaminants to the recycling stream. *Id.*; EX1009, 2 ("An important consideration for inks on shrink sleeve labels is that the ink not contaminate or discolor PET flake"); EX1027, 6 (recommending label manufacturers perform an evaluation of molded plaques (melt-extruded resin, post caustic wash) to determine the amount of speck inclusions, and listing preferred values); EX1028, 19 (providing "plaques should be transparent and contain no haze from crystallinity[]").

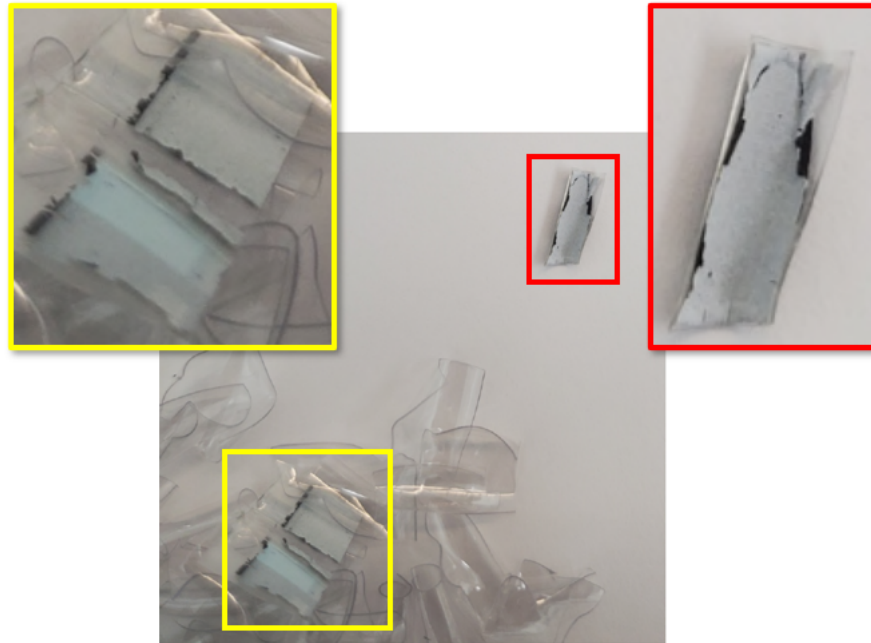
A POSITA would have understood the Gatorade label would not be recyclable because labels are recyclable along with a container when the inks wash off such that the underlying resin can be reclaimed as reusable resin. EX1001, 20:16-20. The inks of the Gatorade label, on the other hand, "do not wash off the label in any meaningful way." EX2013, ¶94. As an example, the below images compare the amount of Gatorade label ink retention to results obtained by a third-party independent lab testing a generic shrink label from PO, which was unsuccessful in part in part because "the label ink only partially removed." EX2038, 5, EX2013, ¶93.

B+W Unsuccessful Wash Test Performed by PFE	Gatorade Label Results from Dr. Reitman	Gatorade Label Results from Dr. Deible
 <p data-bbox="305 674 495 709">EX2038, 13</p>	 <p data-bbox="662 674 995 800">EX2012, FIG. C11a (water bath preshrunk Gatorade label)</p>	 <p data-bbox="1105 674 1377 758">EX1014, FIG 11d (zoomed in)</p>

Moreover, Petitioner's *own testing* also confirms the Gatorade label is not recyclable. Petitioner appears to acknowledge that labels are understood to be recyclable when the inks wash off such that the underlying resin can be reclaimed. Pet., 30 (citing EX1001, 6:61). Yet, Petitioner instead claims that the Gatorade label is recyclable simply because Figures 11 and 12 allegedly demonstrate “ink is *being removed* during the caustic wash cycle.” Pet., 30 (citing EX1014, ¶77, FIGS. 11, 12²). But they do not. Indeed, Dr. Deible concedes ink is retained on the labels but did not consider whether it would contaminate the PET flake. EX2011, 208:13-17 (“Q: you would agree with me that not all inks and pigments are removed from that

² Notably, Figures 8, 9, 10, and 11a relate only to the Febreze label and are thus irrelevant.

portion of the [Gatorade] label correct? A: Correct.”), 254:23-255:1 (Q: Do you have any opinions on what amount of ink or pigment would contaminate the PET polymer flake during the recycling process? A: No.”).



EX1014, FIG.11d with blowup of label flakes used in Petitioner's caustic wash testing

Any attempt by Petitioner to imply the clear pieces in Dr. Deible's images show ink being removed is misleading—Petitioner's caustic wash testing included a significant amount of control PET flake (*i.e.*, clear PET flake that never included ink). EX1014, ¶72-74 (0.15 grams of preshrunk label flakes were mixed with 5 grams of PET flakes). As documented in Dr. Reitman's testing, (EX2012, FIG.C11)

the flake pieces that do not contain any retained ink are consistent with the control flake and should not be regarded as showing ink washing off the label.

Recognizing this hole in his analysis, Dr. Deible argued in his deposition that the results showed at least **some** ink came off the label and that obtaining results where all the ink was washed off would merely be “process optimization.” EX2011, 249:5-21 (“The completeness question is a process optimization question.”). Dr. Deible’s Hail-Mary cannot save Petitioner’s case: (1) Dr. Deible provides no evidence that changing any parameters would alter the results; (2) Dr. Deible fails to acknowledge the ’422 Patent specification identifies that caustic wash parameters should be consistent with industrial recycling processes, EX1001, 6:62-65 (describing inks washing off after “a caustic wash cycle ***typically used***”), and Dr. Deible provides no evidence that industrial facilities would or could change the caustic wash parameters to accommodate any alleged “optimization” parameters; and (3) Dr. Deible’s analysis improperly attempts to inject obviousness grounds (changing caustic wash parameters) within the framework of an anticipation analysis, and should therefore be rejected. *LG Elecs. Inc. v. Q-Lity Comput. Inc.*, 211 F.R.D. 360, 367 (N.D. Cal. 2002) (documenting disfavored practice where

litigants would rely on a “shifting sands” approach and “vexatious shuffling of positions”).

Instead, both Dr. Reitman and Dr. Deible’s testing confirm the Gatorade Label is not recyclable. EX2013, ¶¶88-99.

ii. Dr. Deible’s Flawed Testing is Misleading at Best and Should Not Be Credited

Some of Dr. Deible’s caustic wash testing is based on flawed methodology that could significantly bias the results. More alarmingly, however, other decisions regarding test parameters and the presentation of test results appear an attempt to mislead the Board.

First, Dr. Deible presents his test results in a misleading manner; the images Dr. Deible includes in his declaration are purportedly only taken after the testing was completed. EX1014, Fig.11b (“after caustic wash, warm water wash, float test, and drying); 11c (same); 11d (same) and 12 (“warm water wash after sieving). Dr. Deible suggests in his deposition that the clear flakes shown in his results could show inks being fully removed. EX2011, 204:11-17 (Q: Do you have any way to determine where the flakes on the bottom of Figure 11A are from the [control] water bottle or from the label? A: Not that was done here, because the ink was removed during the wash, and they had just become clear PET flakes.”). Yet, a before-and-after image would easily demonstrate whether any label flakes were washed completely clean, as shown by Dr. Reitman’s results. EX2012, Fig.C11 (identifying

all the label pieces before and after caustic wash testing). Dr. Deible's attempts to mislead the Board should therefore be discredited.

In addition, Dr. Deible never identifies which portions of the Gatorade label he used to prepare the samples tested. EX1014, ¶72. This is important because the Gatorade label contains multiple regions with varying amounts and types of ink on the label:



EX1003, 1 annotated to show region with no ink (orange is the liquid within the container)



EX1003, 1 annotated to show region with white and black ink but no silver ink



EX1003, 1 annotated to show region with silver ink



EX1003, 1 annotated to show interface regions with no ink, white ink, black ink, and silver ink

As Dr. Phillips explains, it is unclear “whether Dr. Deible’s results are representative of the entire Gatorade label or merely reflect a small subset of the ink regions.” EX2013, ¶114. Dr. Deible could not even definitively say whether the samples used contained *any* silver ink. EX2011, 197:13-21 (“Q: It is possible that

you could have also arbitrarily selected a sample of the Gatorade label in which there was no silver ink? A: I – I think that you would have to do that purposely. Q: But we don't know because we don't have an image of it, correct? A: Not in the document there's not an image of that."), 196:24-197:21 ("if you were selecting arbitrarily pieces, just pulling pieces, one would presume that you would get predominantly silver, but I don't recall the specific distribution of which portions of the label were pulled."). Dr. Deible's results should therefore be accorded less weight than Dr. Reitman who documented which regions of the Gatorade label were selected and showed images of the label flake both pre- and post-caustic wash. EX2012, FIGS.C2, C11.

Second, Dr. Deible fails to explain whether the amount of label selected for testing comports with the APR and internal MCC methodology. Both the MCC internal protocol and the APR test methods instruct "test intended labels on PET containers and blend with unlabeled control bottles (50:50). EX1012, 2; EX1028, 6 (similar). Dr. Deible used 0.15g of Gatorade label and 5g of control flake but fails to explain how he chose those amounts and how they comport with the APR and MCC guidance. While the APR and MCC protocols contemplate the ratio for "generic label[s]" should be "3 wt% of all test containers," this ratio is unique to the testing protocol for *generic* labels. EX1012, 2. Dr. Deible (1) never claims that the Gatorade label is a "generic label" (nor can he—generic labels require specific ink

patterns that the Gatorade label does not have, EX1028, 7); and (2) never specifies which test procedure he invokes or why.

Third, Dr. Deible states he used “preshrunk” portions of samples for his caustic wash testing. EX1014, ¶72. Dr. Deible confirmed the Gatorade label was shrunk around a one-inch PVC pipe, rather than around the container the label was intended to be used, and used a hot air gun rather than a water bath as prescribed by the '422 Patent. EX1014, Fig 8; EX2011, 192:20-193:1; EX2013, ¶¶104-09. Dr. Deible did not document the Gatorade preshrinking, however, he included images of the Febreze label pre- and post-shrinking. As can be seen in Figure 8 below, Dr. Deible's preshrinking procedure led to significant wrinkling of the labels prior to testing. EX2013, ¶¶108-10; EX2031; EX2032.



Figure 8. Representative images of 3191115 being shrunk around a 1" pipe.

EX1014, FIG.8

The larger Gatorade label would have experienced similar wrinkling, as confirmed by Dr. Reitman who performed a similar pre-shrinking of the Gatorade label using a 1-inch pipe. EX2012, ¶¶64, FigC1e. Over-shrinking could cause the ink to delaminate from the underlying label polymer—a process distinct from washing and unrepresentative of industrial recycling resulting—and could account for any ink removed during Dr. Deible's caustic wash test. EX2013, ¶¶108-10. Even if Petitioner were able to show *any* inks being washed off the label—it cannot—Petitioner fails to show a POSITA would have understood the inks used on the Gatorade Label can be sufficiently washed off such that the underlying resin can be reclaimed. EX1001, 12:49-51; EX2013, ¶¶99.

Even despite dubious test conditions and misleading presentation, Dr. Deible's test results ultimately still reflect that the Gatorade label retains significant amounts of inks after a caustic wash and are therefore not recyclable according to the '422 Patent claims.

- iii. Petitioner's reliance on evidence divorced from the Gatorade label itself should be given little weight.

In addition to testing evidence showing significant amounts of ink retained on the Gatorade label, Petitioner relies on conclusory assertions from Mr. Bushman that “[t]he Gatorade Label is an SKC Ecolabel™ sleeve label,” using Fort Dearborn's washable ink system and silver ink “supplied by Watson Standard” as evidence of recyclability. Pet., 31 (citing EX1013, ¶¶47-48). Yet as Mr. Bushman concedes,

none of these documents make any mention of the Gatorade label. Pet., 31 (citing EX1018, EX1019). Aside from Mr. Bushman's word, there is no evidence to suggest the Gatorade label even *is* an SKC Ecolabel, consistent with the Fort Dearborn washable ink system, or uses Watson Standard silver ink. EX2010, 112:7-15, 271:23-272:7.

First, even taking Mr. Bushman's assertions at face value, Petitioner's reliance on the APR letter in EX1018 is misplaced. Mr. Bushman concedes the APR letter is based on testing of a generic label (EX2010, 89:17-90:5) and the APR letter expressly provides the "recognition *applies only* to the Fort Dearborn Recycle Friendly *washable inking system and not necessarily to labeled bottles as those packages would need to be tested themselves* to demonstrate the system of resin, adjuvants, labels, and closures conformed to the APR Critical Guidance Document and APR Design Guide." EX1018; EX2013, ¶123. There is no evidence (1) any testing of the sort was performed on the Gatorade label; or (2) the Gatorade label would perform the same under similar testing. EX2010, 90:6-11. ("Q...a commercial label product may differ from the label that was provided to the APR for testing ... to receive a letter like this? A. Yes."); EX2011, 59:2-7 ("Q...the Fort Dearborn recycle friendly washable ink system that's being discussed in this letter can be printed on an SKC [Ecolabel], but that's not actually the subject of this approval letter, right? A. Yes."). After PO sought to file a motion to compel

following Mr. Bushman's deposition, Petitioner produced the 2019 data submission underlying the APR certification in EX1018. EX1038. This data submission confirms Petitioner's reliance on the APR certification letter is misplaced. For example, Fort Dearborn submitted data collected on a label containing just white, yellow, cyan, and black inks, as can be seen in the image below.

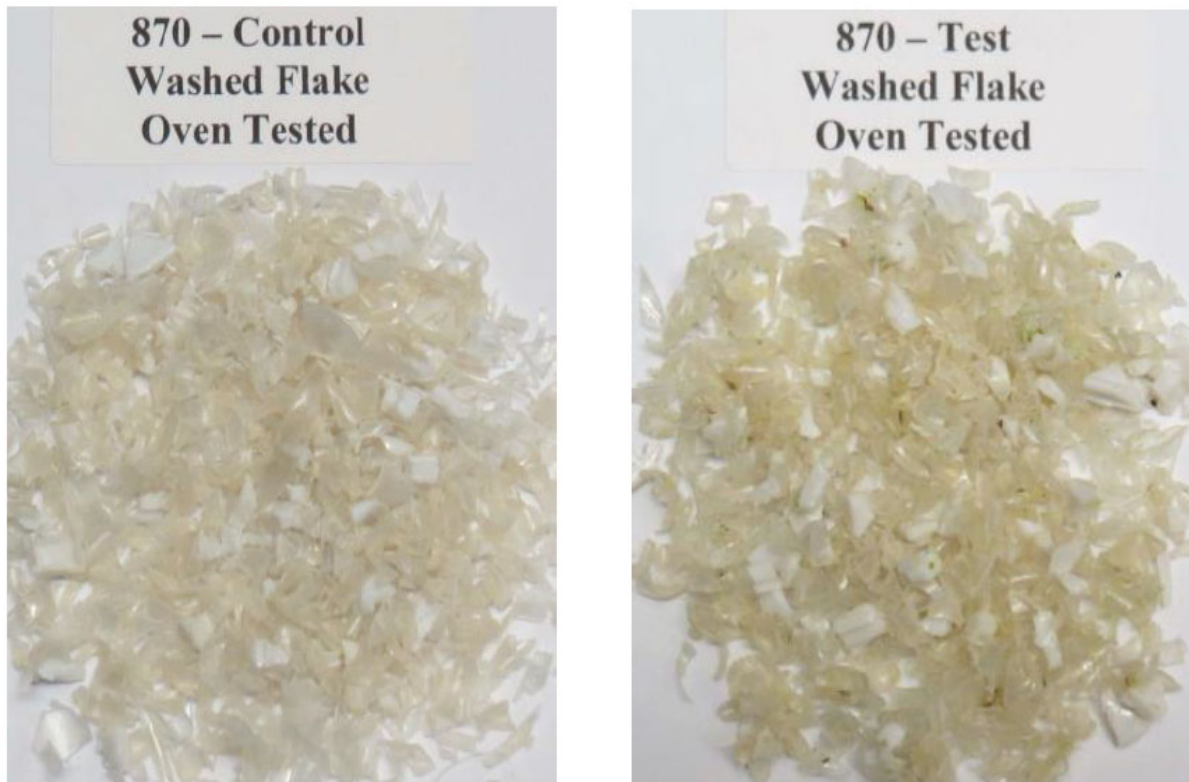
Material Information:

The label was produced with SKC recyclable material (recognized by APR) and Fort Dearborn's WISS washable inking system. It was 305% printed with the following colors; white, yellow, cyan, and black. A picture of the label is shown below, it is a brand design therefore the image has been blurred.



EX1038, 2

The results obtained by the third-party independent lab on Fort Dearborn's washable ink system bear little resemblance to the testing Dr. Deible (or Dr. Reitman) performed on the Gatorade Label. EX2013, ¶120. For example, Fort Dearborn presented the following results comparing control flake to the washed test flake:



EX1038, 7

Unlike Dr. Deible, Fort Dearborn calculated and presented Black Speck and Plaque Color Data, quantitatively analyzing the impact of inks retained on the label, to the extent there were any, on the final extruded reclaimed resin pellets.

Black Specks

Plaque samples were examined for the presence of black specs over 0.015 in. Total area in the plaques is 3879 sq. mm per plaque with a total of 50 plaques examined for each test variable. The test variables all pass the specification.

870 – Control	870 – Test
1	1

EX1038, 8

Plaque Color Data									
Plastics Forming Enterprises, LLC									
Client: Fort Dearborn Company									
Project: SS CDG									
Experiment: Plaque Colors									
Type of Material:	Flake		Amorph Pellets		Bottle		Plaque	X	
Project #: 855 Operator: BT									
Equipment: Konica Minolta CM-3600d									
Conditions: CIE Lab, 10 degrees, D65									
Run #	L* Values	a* Values	b* Values	L* Average	a* Average	b* Average	Haze	Haze Average	
870 – Control	90.25	-0.72	6.60	90.26	-0.75	6.65	4.07	4.07	
	90.29	-0.76	6.58				4.04		
	90.26	-0.74	6.61				4.03		
	90.24	-0.77	6.76				4.12		
	90.24	-0.78	6.72				4.10		
870 – Test	84.91	-2.25	7.61	84.88	-2.25	7.67	18.45	18.46	
	84.86	-2.27	7.69				18.54		
	84.93	-2.31	7.71				18.45		
	84.92	-2.24	7.53				18.38		
	84.77	-2.20	7.80				18.47		

*The color data for each label material represents randomly selected plaque samples from the same population of material.

The APR specifies that plaque sample meet the following parameters in comparison to the control in order to be acceptable:

- A. L* >82 for all Blends
- B. Δa^* and b^* <1.5, (no problem)
- C. Control Haze <9.5%, Test Haze not to exceed 20% (no problem)

EX10138, 9-10

Accordingly, the 2019 data provided to APR for certification of the recyclability of Fort Dearborn's washable ink system—which Petitioner has not even shown relates to Gatorade Label—demonstrates the Gatorade Label is not recyclable. EX2013, ¶¶120-22.

Second, Petitioner's reliance on EX1019—a technical data sheet for the silver ink purportedly used in the Gatorade label—is equally unconvincing. Petitioner asserts the Gatorade label's "silver ink" is "confirm[ed]" to "pass[] recyclability/bleed testing" set forth in an undisclosed APR protocol. Pet., 31 (citing EX1019). Petitioner relies solely on Mr. Bushman's conclusory assertion with no actual proof "the silver ink used in connection with the Gatorade Label is supplied by ... Watson Standard." EX1013, ¶57. Even taking Mr. Bushman at his word, neither Petitioner nor EX1019 identify which protocol the silver ink purportedly passed or what the "recyclability/bleed testing" entailed. Pet., 31; EX2013, ¶125. Even Mr. Bushman conceded he has no idea. EX2010, 103:12-104:6.

Regardless, EX1019 further undermines Petitioner's argument. The technical data sheet for the silver ink provides "[d]ifferent results might be obtained in commercial use of this product under factory or field conditions." EX1019; EX2013, ¶125. And, it is difficult to reconcile Petitioner's position with its *own* images showing retention of silver ink post-caustic wash. EX1014, Figs. 11b-d. EX2013, ¶126; EX2012, FIG.C11. EX1019 offers no suggestion that *non*-silver inks used in the Gatorade label pass the same testing. EX2013, ¶126; EX1003 (label visibly features black, orange, red, and white colors); EX2010, 100:6-13 (confirming silver ink is not the only ink used for the Gatorade label or the entirety of the Fort Dearborn washable ink system); EX2011, 63:7-64:9 (confirming EX1019 does not discuss

black, orange or white ink). Regardless, even if an ink passes a bleed test, it says nothing about whether the inks wash off the label such that the underlying resin can be reclaimed with the container. EX2013, ¶126. As Dr. Deible confirmed, EX1019 says nothing about the washability of inks. EX2011, 64:8-11.³

2. Claims 2-3 and 5-18

For the reasons explained for independent claim 1, dependent claims 2-3 and 5-18 are also not anticipated by the Gatorade label.

3. Claim 2

Petitioner fails to show the Gatorade label anticipates claim 2. In a single sentence, Petitioner asserts dependent claim 2's required indicia layer is anticipated by "[e]ach label ... as can be seen in Figure 1" and cites to Dr. Deible's expert report reciting the same. Pet., 32 (citing EX1014, ¶80). Yet, Petitioner entirely fails to show the Gatorade label consists of discrete ink "layers." Rather, evidence of ink trapping on the Gatorade label, as explained by Dr. Phillips, appears to be consistent with a printing process where different ink combinations are deposited in adjacent

³ To the extent Petitioner intends to rely on EX1044, which was untimely produced over four months after institution (37 C.F.R. § 42.123), Petitioner provides no context or explanation for its relevance and PO reserves the right to move to strike any belated argument related this exhibit.

regions on the label, as opposed to ink layers deposited on top of one another as described in the '422 Patent. EX2013, ¶¶131-35; EX1001, 13:6-8.

Petitioner similarly fails to explain how the indicia layer limitation is met, or to indicate what aspect of the Figure purportedly meets this limitation. EX2011, 212:4-13 (“Q. You state each label contains an indicia layer as can be seen in Figure 1, but you don’t identify what parts of figure [1] comprise the indicia layer, correct? A. Correct.”); EX2013, ¶¶131-35. Petitioner fails to explain how the indicia layer is distinct from any other layer of the recyclable shrink label. *See Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236 (Fed. Cir. 1989) (“The identical invention must be shown in as complete detail as is contained in the[] claim.”); *Verdegaal Bros., Inc. v. Union Oil Co. of Calif.*, 814 F.2d 628, 631 (Fed. Cir. 1987) (“A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference.”).

4. Claims 3 and 10

For the reasons stated in §V.A.3 above, Petitioner fails to show there are distinct “layers” separate from any other layer (*e.g.*, light-blocking layer). Accordingly, Petitioner fails to show the Gatorade label anticipates claims 3 and 10. EX2013, ¶¶129-37.

In addition, even if the Gatorade label consists of ink “layers,” Petitioner fails to show the Gatorade label anticipates claims 3 or 10. Petitioner asserts “[t]he high

opacity layer incorporates a white pigment, as can be seen in Figures 6 and 14.” Pet., 40. Yet, Figures 6 and 14 do not show the Gatorade label anticipates this limitation. Figure 6 does not show or provide any explanation that the high opacity layer incorporates a white pigment. Although Figure 14 appears to show white ink, Petitioner provides no analysis that the white pigment is part of a high opacity layer. Even as Petitioner seeks to improperly fill gaps in its Petition by citing to Dr. Deible, the cited paragraph does not make any reference to the required “white pigment.” EX1014, ¶81; EX2013, ¶¶138, 140.

5. Claim 5

Claim 5 requires the “heat shrink film **consists** of polyethylene terephthalate (PET).” EX1001, cl. 5. Claim 5 is distinct from claim 1 in that the label must **consist** of, rather than be **comprised** of, PET. Compare EX1001, 3:15-20 (“[t]he term ‘comprises’...will be understood to imply the inclusion of a stated ...element...but not the exclusion of any other...element”), with EX1001, 3:21-24 (“[b]y ‘consisting of’ is meant including, **and limited to**, whatever follows the phrase ‘consisting of’”). Petitioner and Dr. Deible erroneously quote the claim limitation as “heat shrink film is comprised of polyethylene terephthalate (PET).” Pet., 32; EX1014, ¶82. Not only does Petitioner state the wrong claim language, but neither Petitioner nor Dr. Deible perform any analysis or reach any conclusion that PET is the only compound present

in the shrink film, to the exclusion of other compounds. Petitioner thus fails to meet its burden to show the Gatorade label anticipates claim 5. EX2013, ¶139.

6. Claim 11

For the reasons stated in §V.A.3, Petitioner fails to show there are any distinct “layers” separate from any other ink layer. Accordingly, Petitioner fails to show the Gatorade label anticipates claim 11. EX2013, ¶141.

7. Claim 12

Claim 12 requires “the light blocking layer is present in an amount of 0.5ppr to 25ppr relative to the recyclable shrink label.” EX1001, cl. 12. To calculate the relative ppr, or “pounds per ream,” EX1001, 5:44, Petitioner makes conclusory assertions about the weight of the light-blocking layer. EX2013, ¶¶142-44. For example, Dr. Deible’s calculations incorrectly assume the entire Gatorade label is covered in aluminum. EX2013, ¶142. Moreover, Dr. Deible baselessly assumes “[t]he light blocking layer comprises other solid components along with the aluminum flakes,” estimated to amount to an additional 10%. EX1014, ¶93 (“To compensate for the additional solids, an estimate of 10% of the mass of aluminum was included in the calculation of ppr for the light blocking layer.”). Dr. Deible claimed this 10% figure was a “conservative estimate,” EX2011, 216:4-10, but provides no reasoned basis for choosing 10% and concedes that if a smaller figure was used, his calculations would be smaller. EX2011, 218:13-15; EX2013, ¶143.

His conclusory assertions should be given little weight. 37 C.F.R. § 42.65(a); *Upjohn Co. v. Mova Pharm. Corp.*, 225 F.3d 1306, 1311 (Fed. Cir. 2000).

PO's expert, Dr. Reitman, using cross-section SEM and quantitative color thresholding, determined the percentage of the Gatorade Label incorporating aluminum to be between 52-68%, far less than the 100% Dr. Deible assumed. EX2012, ¶¶78-80. Dr. Reitman then compared her calculations to Dr. Deible's and determined that even using Dr. Deible's unsupported "conservative estimate" of 10% other solids, the amount of aluminum present in the Gatorade label is 0.3ppr, below the claimed 0.5 to 25ppr relative to the recyclable shrink label as required by claim 12. EX2012, ¶84; EX2013, ¶145.

8. Claim 13

Claim 13 requires "the light blocking layer comprises from 0.1ppr to 10ppr of the light blocking component." EX1001, cl.13. Petitioner provides just one unsupported sentence concluding "the values calculated fall into this range." Pet., 38. To the extent Petitioner attempts to incorporate its analysis with respect to claim 12, Petitioner ignores the differences between those claims' limitations. Claim 12 requires "the light blocking layer is present in an amount of 0.5 ppr to 25 ppr **relative to the recyclable shrink label**" while claim 13 requires "the light blocking layer comprises from 0.1 ppr to 10 ppr **of the light blocking component**." EX1001, 29:4-9. For claim 13, Petitioner does not explain the ICP test performed or how the values

fall into the claimed range in its Petition, deferring instead to Dr. Deible's declaration. EX2013, ¶¶147-148. As the PTAB has recognized, the practice of wholly incorporating expert opinion is disfavored. Consolidated Trial Practice Guide (Nov. 2019), 35-36 (“[P]arties that incorporate expert testimony by reference in their petitions...without providing explanation of such testimony risk having the testimony not considered by the Board.”); 37 C.F.R. § 42.6(a)(3) (“Arguments must not be incorporated by reference from one document into another document.”).

Furthermore, Petitioner's arguments fail for the same reasons identified above for claim 12.

9. Claims 14 and 15

Petitioner fails to show the Gatorade label anticipates claim 14. Because claim 15 depends from claim 14, Petitioner also fails to show the Gatorade label anticipates claim 15. EX1001, cl. 15.

Claim 14 requires a “*container* comprising” PET. EX1001, cl.14. Yet, Petitioner presents no evidence the Gatorade label was used with a PET container as of the priority date of the '422 Patent. For example, the Petition's claim-by-claim analysis is silent on what composition of container is used with the Gatorade label. Pet., 30-31. In the background section, the Petition merely states “[t]he Gatorade Label is a shrink sleeve label that is recyclable with a PET container” and cites to Mr. Bushman's declaration. Pet., 6-7 (citing EX1013, ¶¶53-60). Similarly, in Dr.

Deible's declaration, the claim-by-claim analysis is silent as to whether the Gatorade product used a PET container, and the Overview of the Gatorade Label Section simply states: "[t]he Gatorade Label is a shrink sleeve label that is recyclable with a PET container." EX1014, ¶57 (citing Ex. 1013, ¶44); EX2011, 74:22-75:10 (Dr. Deible conceding he never received any bottle samples to analyze), 220:2-5; EX2013, ¶150. Mr. Bushman states, "[t]he containers to which the Gatorade Labels were attached are found in th[is] image." EX1013, ¶58.



EX1003, 1

However, this image appears to be a different product compared to the prior art cited by Mr. Bushman, Dr. Deible, and Petitioner (Orange flavor as opposed to the Frost or Passionfruit flavors relied upon) and nothing indicates the container itself is made of PET. EX2013, ¶151. Petitioner has therefore failed to show the Gatorade label was used with a PET container as of the priority date of the '422 Patent.

Dr. Deible's analysis with respect to claim 15 is additionally flawed as claim 15 requires "the first surface ... faces the external surface of the container." EX1001, cl. 15. To prove this layer configuration, Dr. Deible's broadly cites his *entire appendix*. EX1014, ¶99; EX2011, 221:14-19 (confirming he did "not identify the first surface in Paragraph 99"); EX2013, ¶¶152-154. That is facially insufficient to carry Petitioner's burden, and nowhere in Appendix B does Dr. Deible identify the specific layer configuration, as explained in §V.A.3.

10. Claim 16

Petitioner fails to show the Gatorade label anticipates claim 16. As explained in §V.A.1.a, Petitioner does not identify what constitutes "the first surface," nor does Dr. Deible's declaration. Pet., 38 (citing EX1014, ¶100). Yet again, Dr. Deible cites to his *entire appendix* rather than a specific figure. EX1014, ¶100; EX2013, ¶¶155-156. The sole sentence of Dr. Deible's analysis merely asserts a layer configuration exists without explanation or analysis. *Id.*

In addition, for the reasons stated in §V.A.3 above, Petitioner fails to show there are any distinct “layers” separate from any other ink layer (*e.g.*, light-blocking layer).

11. Claim 19

- a. “having a first surface and a second surface opposite of the first surface”

Petitioner fails to demonstrate the Gatorade Label discloses this limitation for the same reasons as described in §V.A.1.a.

- b. “a light blocking layer disposed adjacent the first surface and comprising a light blocking component, the light blocking layer being constructed for the recyclable shrink label to block at least 80% of incident light having wavelengths in a range of 200 nm to 900 nm”

Petitioner fails to demonstrate the Gatorade Label practices this limitation for the same reasons as described in §V.A.1.b-c.

- c. “a high opacity layer comprising a white pigment,”

Petitioner fails to demonstrate the Gatorade Label practices this limitation for the same reasons as described in §V.A.4.

- d. “wherein the recyclable shrink label is recyclable with a PET container”

Petitioner fails to demonstrate the Gatorade Label practices this limitation for the same reasons as described in §V.A.1.d.

B. Ground 2: The Gatorade Label in combination with Mitchell do not render obvious the claims of the '422 Patent under 35 U.S.C. § 103

1. Claim 4: “wherein the recyclable shrink label comprises an indicia layer and wherein the high opacity layer is disposed between the indicia layer and the light blocking layer”

Petitioner has failed to carry its burden of showing claim 4 is obvious over the Gatorade label based on the knowledge of a POSITA, including Mitchell. Because Petitioner fails to meet its burden in showing anticipation for claims 1 and 3, from which claim 4 depends, Ground 2 also fails. EX2011, 224:11-20 (confirming Grounds 2 and 3 do not discuss claim 1). For all the reasons explained in §V.A.1, above, Petitioner fails to show claim 4 is obvious.

Ground 2 also fails because as explained in §V.A.3 above, Petitioner fails to identify any discrete “layers.” Instead, the Gatorade label appears to have a single ink layer with various regions corresponding to different ink applied (*e.g.*, orange, white, clear, silver). EX2013, ¶131. Petitioner therefore fails to show how a POSITA could “change the order of the layers.” Pet., 41.

Even assuming Petitioner is able to show the Gatorade label meets all the limitations of claims 1 or 3, and that the Gatorade label has “layers,” Ground 2 still fails for another reason: Petitioner has neither shown a motivation to modify the Gatorade label based on the knowledge of a POSITA (including Mitchell) nor a

reasonable expectation of success in doing so.⁴ See *Intelligent Bio-Sys., Inc. v. Illumina Cambridge Ltd.*, 821 F.3d 1359, 1367-68 (Fed. Cir. 2016); *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 418 (2007) (“[A] patent composed of several elements is not proved obvious merely by demonstrating that each of its elements was, independently, known in the prior art.”). Dr. Deible, confirmed he ***never even reviewed Mitchell***. EX2011, 118:3-9. Petitioner cannot rely on its expert to explain how a POSITA would apply knowledge of the art to modify the Gatorade label without having ever even read the art. Cf. *Diagnostics v. Univ.*, No. IPR2013-00308, 2014 WL 6617697, at *11 (P.T.A.B. Nov. 19, 2014) (noting Board has discretion to discredit expert opinion where expert had not read the entire patent). Dr. Deible fails to articulate any credible reason to modify the Gatorade Label when it has allegedly been a commercially available and successful product for years and continues to be sold. EX2013, ¶¶177, 186. Dr. Deible provides no analysis of how the order of “layers” impacts the other limitations required and the performance of the label.

⁴ Any reference to “layer” is solely for the purposes of responding to Petitioner’s obviousness assertions and is not intended to be construed as an admission that Petitioner has adequately shown the Gatorade label consists of “layers.” See §V.A.3.

a. Petitioner fails to show any motivation to combine

Petitioner fails to show a POSITA would have been motivated to modify the Gatorade Label for any reason, let alone to combine with the specific teachings of Mitchell. According to Mr. Bushman, label design is driven by the brand and market needs. EX2010, 136:14-22; EX2013, ¶176. The Gatorade Label has allegedly been sold in substantial quantities since 2020 and is still on the market today with only changes to certain suppliers. EX1013, ¶54; EX2010, 84:17-19. A POSITA evaluating the Gatorade Label would have had no motivation to change the order of the layers on the Gatorade Label. EX2013, ¶177. Indeed, Dr. Deible admitted he did not even look for any prior art—all references were provided to him by counsel—and the only reason the prior art was selected was to try to meet the claim limitation in claim 4. EX2011, 236:13-237:1 (“In this hypothetical label that I didn’t analyze but we’re saying was printed a different way, would still meet the claims—the limitations of claim 4, because it would have...the layers—in the order specified by claim 4.”), 225:19-226:5 (Dr. Deible conceding he did not analyze whether the Gatorade label as designed had any benefits). That is textbook hindsight. *See KSR*, 550 U.S. at 421 (“A factfinder should be aware, of course, of the distortion caused by hindsight bias and must be cautious of arguments reliant upon ex post reasoning.”); *Orexo AB v. Actavis Elizabeth LLC*, 903 F.3d 1265, 1271 (Fed. Cir.

2018) (“It is inappropriate to use the template provided by the inventor, to render the inventor’s contribution obvious.”).

The bulk of Petitioner’s motivation evidence merely evinces a *general* recitation of concepts relating to recyclable packaging and light-blocking layers, and a *general* desire to “promot[e] visibility”—both insufficient to carry Petitioner’s burden of showing a motivation to combine. Pet., 44-45; EX2013, ¶¶180-192. These statements merely confirm the ’422 Patent solved an unmet need for a shrink label that was *both* light-protective and recyclable with a container. EX1001, 1:26-28; EX2013, ¶¶170-74, 201-207.

If anything, prior art taught *away* from the ’422 Patent’s arrangement of layers. Petitioner touts the Gatorade label’s commercial success, indicating there was little—if any—market pressure to rearrange any alleged layers. Pet., 6 (“The Gatorade label was produced and sold publicly in 2020, in *substantial quantities*.”); EX 1013, ¶54. Dr. Deible confirmed he never considered whether the Gatorade or Febreze labels were commercially successful products, suggesting Dr. Deible performed no analysis of whether there were any identified drawbacks with the Gatorade label such that a POSITA would have sought to modify it. EX2011, 226:16-19.

Petitioner posits the Gatorade label and Mitchell are “similar in purpose, composition, and structure.” Pet., 46. Both block light, the argument continues, and

a POSITA “would know that they serve similar purposes.” Pet., 44-46. But this ignores material differences between Mitchell and the Gatorade label. Mitchell’s label is not itself “recyclable”; Mitchell expressly teaches removing the label from its container before recycling. EX3002, [0002], [0003], [0240] (“At the time of recycling the PET bottle, a label attached to the PET bottle, is separated and removed.”); EX2013, ¶¶181-82. Recyclability *of the label* is core to the ’422 Patent. It can hardly be said, then, that Mitchell and the Gatorade label are “similar in purpose” and “composition” where Mitchell is indisputably not recyclable. EX2013, ¶¶187-90.

As explained in §V.A.1.b, the Gatorade label’s design belies Petitioner’s claim that one of the label’s purposes is to block light. Upon visual inspection, the Gatorade label covers only a portion of the container, and boasts clear, see-through sections. EX1003; EX2013, ¶182. It appears the label has been designed precisely so an outside observer could see the color of the beverage within. EX2013, ¶182; EX2014, 6 (“Getting the hue right is critical, since many consumers know products like Gatorade by their color and not necessarily their name”). It appears the Gatorade label was designed for aesthetics as opposed to ensuring light is blocked from interfering with the beverage within the container. EX2013, ¶182; EX2015, 1 (“Gatorade is a shelf stable product, not a perishable product like milk or juice.”). Dr. Reitman performed transmittance testing on various color regions of the label

and determined the white, clear, and orange regions block less than 20% of light in the 200-900 nm range. EX2012, ¶¶78-79. Dr. Reitman quantified that the silver portion of the Gatorade label only accounts for 52-68% of the total label. EX2012, ¶80. And, the Gatorade label does not cover the entire container. EX1003. Thus, a POSITA would not have considered the Gatorade label to be light-blocking and would not have been motivated to make changes to its light-blocking functionalities. EX2013, ¶¶180-182.

Petitioner's remaining arguments that its proposed combination "was the application of known techniques...to a known device...for improvement to yield predictable results" are equally unconvincing. Pet., 46. Petitioner fails to identify any *improvement* the proposed modification would have made to the Gatorade label. EX2013, ¶¶183-192. Petitioner argues "a POSITA would have recognized" the proposed combination "promot[es] light-blocking and recyclability." Pet., 45. But Petitioner does not explain *why* rearranging layers would *promote* light-blocking or recyclability. Worse still, Petitioner's theories are inconsistent. EX2013, ¶¶191-192. In Petitioner's (incorrect) view, both the Gatorade label and Mitchell are *already* light-blocking, and the Gatorade label is purportedly light-blocking *and* recyclable. Pet., 30, 44-45. Petitioner fails to identify why a POSITA would have had any motivation to "promot[e]" features the Gatorade label allegedly already had. EX2013, ¶192.

Other arguments are beside the point. Layer “proximity” (Pet., 46) says nothing about why claim 4’s **particular arrangement** of layers is obvious. *In re Armodafinil Pat. Litig. Inc.*, 939 F. Supp. 2d 456, 501 (D. Del. 2013) (“‘Obvious to try’ is not equivalent to obviousness[.]”); EX2013, ¶190. Nor does Petitioner explain how rearranging the layers would “promot[e] visibility of the label” (Pet., 45), or what portion of the Gatorade label requires more visibility. Pet., 6-7; EX2013, ¶191-92.

Petitioner’s appeals to the prosecution history also fall flat. Petitioner cites the Examiner’s comments that the proposed arrangement of layers would be obvious. Pet., 43; EX1002, 236-237. But, Applicant successfully traversed this rejection on other grounds by showing Mitchell was not recyclable, and the Examiner agreed. Paper 14, 11. The Examiner’s prosecution comments are also not applicable here. Petitioner initially argued the proposed combination—*i.e.*, reordering the layers—would **enhance** visibility of the label and cited statements by the Examiner as support. Pet., 45 (“[A] POSITA would have recognized such construction as **promoting** visibility of the label.”) (citing EX1002, 239 (stating reordering the layers would “**ensure** the printing is visible[.]”)). But during his deposition, Dr. Deible disavowed that motivation argument. EX2011, 239:24-241:2 (Q. I’m simply trying to understand your opinion in paragraph 119. A. So if you flip the layers, the label’s **still visible**. Q. Okay. it is not **more** visible? A. **It doesn’t say**

that.”). Instead, Dr. Deible asserted reordering the layers would not *detract* from the visibility. EX2011, 240:22-25 (“[The Gatorade] label’s *still visible*”). That is a different argument than the one presented in the Petition and Petitioner cannot show how *maintaining* visibility would have motivated a POSITA to change the Gatorade label. EX2013, ¶191-92.

b. Petitioner fails to show a reasonable expectation of success

Petitioner also fails to show a reasonable expectation of success. *See Elekta Ltd. v. ZAP Surgical Sys., Inc.*, 81 F.4th 1368, 1375-76 (Fed. Cir. 2023). Petitioner characterizes the Mitchell and Gatorade combination as requiring “a very minor modification” where “no additional structures need to be added or removed.” Pet., 43-47. Petitioner asserts its proposed combination “was the application of known techniques ... to a known device ... for improvement to yield predictable results” Pet., 46. Setting aside that Petitioner has identified no “layers” or “*improvement*” achieved by changing the order of any alleged layers, Petitioner’s unsupported assertion is at odds with the teachings of the prior art. EX2013, ¶194. Mitchell is not recyclable, and so its label design—including its arrangement of layers—is not designed with recyclability in mind. EX2013, ¶195. Reordering the layers, particularly as taught by a non-recyclable label, could impact aesthetics and the brand image of the Gatorade label. EX2013, ¶196. EX2010, 136:14-22 (“Q. So the order of the layers is dictated by the brand needs, fair? A. Yes.”).

Moreover, Petitioner's analysis conflates reasonable expectation of success with generic manufacturing capabilities. Pet., 41-42 (describing "changing the order of the layers" as "simply ... changing the ink printed within each printing station on the press" and "a simple change to the manufacturing process"); EX2013, ¶194. Dr. Deible did not even analyze whether a POSITA would be able to do so. EX2011, 233:15-21 (conceding he obtained information about whether the layers of the Gatorade label could be switched from counsel). Even if a POSITA could change the ink ordering on a printing station, Petitioner fails to address the question of whether changing the layer order could impact other claimed features such as light-blocking or recyclability such that the modified label no longer meets all the claim limitations or no longer functions as intended; EX2013, ¶194; *In re Armodafinil*, 939 F. Supp. 2d at 501 ("Obvious to try" is not equivalent to obviousness"). Dr. Deible conceded he never considered whether reordering the layers would have any impact on any other claim limitation required by claim 4, including whether doing so would undermine the washability of inks. EX2011, 132:1-10, 229:12-17. Dr. Deible also confirmed he never considered whether reordering the layers would change the optics of the Gatorade label, despite that the Gatorade label design is driven by brand requirements. EX2011, 227:15-24; EX2010, 136:14-137:8.

As Petitioner itself apparently recognizes, layer order can dramatically alter the functionality of the labels, including transmittance for light-blocking purposes.

Petitioner's own Patent Application US2025/0273094 ("the '094 Application), analyzes seven different example labels compared to a control label to determine the effects of using different types of white and metallic inks, as well as the effect of changing the ordering of the layers. EX2016, [0137], [0155-0157]. Petitioner states "sample 8 can be compared to any of samples 1-7 to determine the effects of changing the positional relationships between types of layers." EX2016, [0157]. And "[t]o make comparisons between labels that are *identical in terms of materials used*, sample 8 can be compared directly to sample 7." EX2016, [0157]. Petitioner stated changing the order of the layers "showed an improvement in a lower max transmittance," which "was more pronounced at 900 nm." EX2016, [0162]. Figures 15G-15H highlight the significant difference changing the layer order can have on other claimed functionalities (*i.e.*, light-blocking characteristics). Yet, Petitioner and Dr. Deible fail to even acknowledge this possibility, despite that the '094 Application was filed contemporaneously with the filing of the present Petition. EX2016 ('094 Application filed February 24, 2025, and claiming priority back to February 24, 2024); Pet., 64 (filed on January 16, 2025); EX2013, ¶¶198-199.

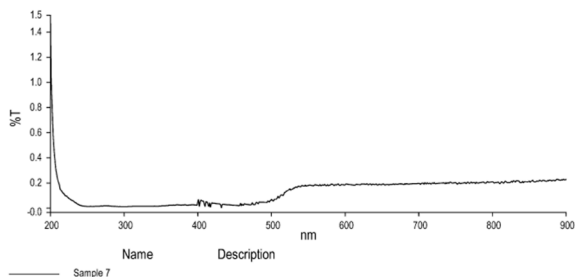


FIG. 15G

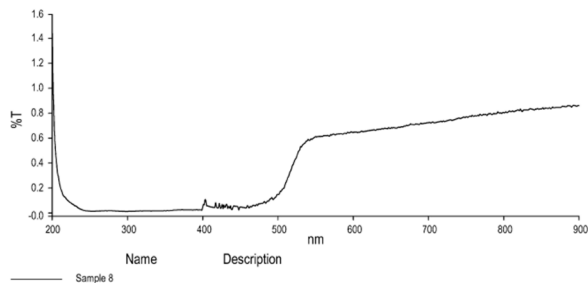


FIG. 15H

EX2016, Figs.15G, 15H

c. Objective Indicia Undercut Petitioner's Obviousness Arguments

Despite recognizing the relevance of objective indicia to the obviousness analysis (EX1013, ¶17), neither Petitioner nor Dr. Deible provide any such analysis. EX2011, 140:15-141:20 (confirming Dr. Deible had no opinions on secondary considerations in his Ground 2 obviousness analysis). As noted above, Petitioner's motivation to combine evidence serves to illustrate objective indicia such as a long-felt but unmet need in the recyclable packaging industry for a recyclable light-blocking shrink label. PO's numerous industry awards for its game-changing recyclable light-blocking shrink labels along with competitor copying demonstrate the value the industry placed on PO's inventions. EX2013, ¶¶201-216.

i. Long Felt but Unmet Need

The '422 Patent delivered a long-felt but previously unmet need for a light-blocking label that could be recycled with its container without removing the label from the recycling stream. EX1001, 1:26-28; EX2013, ¶¶202-207. The '422 Patent

describes the lack of a prior comparable solution. Players in the industry traditionally used “color impregnated bottles or containers” or “white shrink films.” EX1001, 1:20-23; EX2013, ¶204. But, because “[t]he market for recycling color impregnated PET [was] very small,” “most of those bottles and containers [were] not recycled.” EX1001, 1:23-25; EX2013, ¶204. And sometimes, white shrink films would be printed “without functional light blocking layers.” EX1001, 1:20-23; EX2013, ¶204.

Contemporaneous evidence from the industry confirms the lack of a comprehensive solution. An April 2024 press release from Nestlé announced its plans to “[m]ake[] [b]ottles [e]asier to [r]ecycle for [c]onsumers.” EX2017, 2. The press release discusses Nestlé’s efforts to develop the light-blocking shrink sleeve label for its products, stating “[w]hen Nestlé first set out to transition its Nesquik bottles to a recyclable sleeve in 2019, there was no recyclable solution available in market yet that also leveraged the light-blocking features required for the product.” EX2017, 3. The article further describes that it “took nearly five years” to bring a light-blocking recyclable label to market. EX2017, 4. Therefore, as of 2019, there was a longstanding problem for which there was no existing solution. EX2013, ¶205.

Similarly, an article from PackagingDive in 2024 discussing Nestle’s plan to use recyclable, light-blocking shrink sleeves on some beverage products states

“[s]hrink sleeves, when they use certain materials, inks, and adhesives, can be a common barrier to proper bottle recycling. Problematic label constructions landed on the U.S. Plastics Pact’s list of problematic and unnecessary materials.” EX2005, 2; EX2013, ¶206.

ii. Industry Praise

PO has also received substantial industry praise and recognition for its GreenLabel® BlockOut™ product—a recyclable, light-blocking shrink sleeve. EX2013, ¶¶208-212. In 2024, PO was awarded the Recycling Packaging category of Packaging Europe’s Sustainability Awards in recognition of PO’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. EX2019, 6-7; EX2020, 2-4 (interview with PO as a finalist in the Sustainability Awards 2024); EX2021, 1 (PO 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.”); EX2022 (US Plastics Pact announcing PO’s GreenLabel BlockOut among the finalists for 2023 Sustainable Packaging Innovation Award-Recycling); EX2023 (US Plastics Pact announcing PO’s GreenLabel BlockOut – Recyclable Light-Blocking Shrink Sleeves among the

finalists for 2024 Sustainable Packaging Innovation Award-Recycling); EX2013, ¶208-09.

Other industry players have given PO first-hand praise for its novel label design. EX2013, ¶210. Nestle, previously a customer of B+W's GreenLabel® BlockOut™ embodying technology, repeatedly praised this technology in correspondence to PO. *Id.* After being asked about his experience with PO's "packaging and labels that do not pollute the recycling stream," a Nestle employee closely involved in testing PO's GreenLabel® BlockOut™ embodying technology commended PO for "really excel[ing] in being experts in the printing process and com[ing] up with novel solutions there" and stating "I have certainly learned a lot in this journey from Andy and appreciate the education element." EX2018.

iii. Copying By Others

In addition, evidence of competitor copying further demonstrates the nonobviousness of the '422 Patent's claims. For example, MCC recently sought a patent application, the '094 Patent, covering a similar solution. EX2016. The '094 Patent Application claims:

1. A light-blocking label, comprising:

a label substrate having a first side and a second side, wherein the first side is configured to be proximate to an article when attached thereto, and wherein the second side is configured to be distal from the article when attached thereto; and

a light blocking layer positioned below the label substrate, wherein the light-blocking layer comprises a plurality of metallic flake pigment particles.

EX2016, cl.1. The '094 Application states “[i]n some embodiments, the label substrate and article comprise PET and are configured to be collected as recycled PET (*i.e.*, a recyclable light blocking label).” EX2016, Abstract. The '094 Application states, “[g]enerally speaking, including a light blocking ink layer will decrease the maximum transmission of light having a wavelength greater than or equal to 200nm and less than or equal to 900nm.”). EX2016, [0093].

In the concurrent litigation in EDTex, PO alleges Nestle and its supplier Fuji have copied PO's patented light-blocking recyclable shrink labels. EX2024. PO alleges Nestle is infringing certain claims of the '422 Patent by marketing products featuring a recyclable, light-blocking shrink sleeve label. EX2024; EX2025.

There is a nexus between PO's product and the '422 Patent. PO's product has received industry praise and recognition for and competitors have sought to copy the “unique characteristic[s]” of PO's recyclable, light-blocking labels. *Compare* EX2019 (sustainability award for recyclable light-blocking shrink label that blocks up to 99% of light); EX2021 (similar), *with* EX1001, cl.1 (claiming “heat shrink film,” “light blocking layer...to block at least 80% of incident light,” “recyclable with a PET container”); EX2013, ¶212. Accordingly, the objective indicia of at least

long-felt unmet needs, industry praise, and copying further demonstrate the non-obviousness of the '422 Patent's claimed invention.

C. Ground 3: The Gatorade Label and Febreze Label do not render obvious the claims of the '422 Patent under 35 U.S.C. §103

1. Claim 4: “wherein the recyclable shrink label comprises an indicia layer and wherein the high opacity layer is disposed between the indicia layer and the light blocking layer”

Ground 3 fails because Petitioner has failed to show the Gatorade label anticipates claim 1, EX2011, 224:11-20 (confirming Grounds 2 and 3 do not discuss claim 1), or that the Febreze label meet all the limitations of claim 4. Furthermore, Petitioner has failed to show a motivation to combine or a reasonable expectation of success.

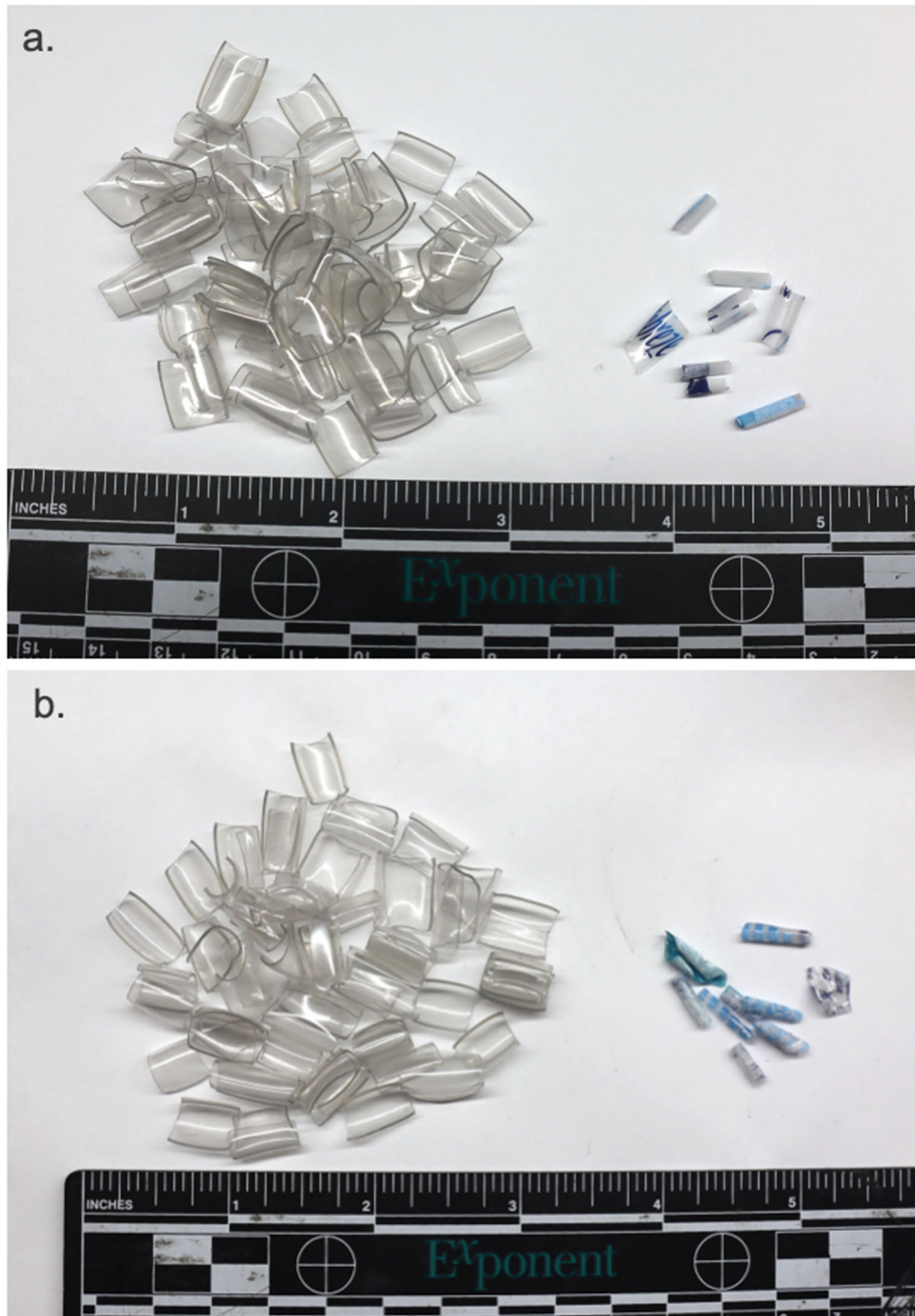
- a. The Febreze label does not teach or disclose the limitations of claim 4

In Ground 1, Petitioner relies on Figures depicting a *Febreze* label before and after a caustic wash and states these figures show “the ink is being removed during the caustic wash cycle.”⁵ Pet., 30. To be clear, the Febreze label is irrelevant for

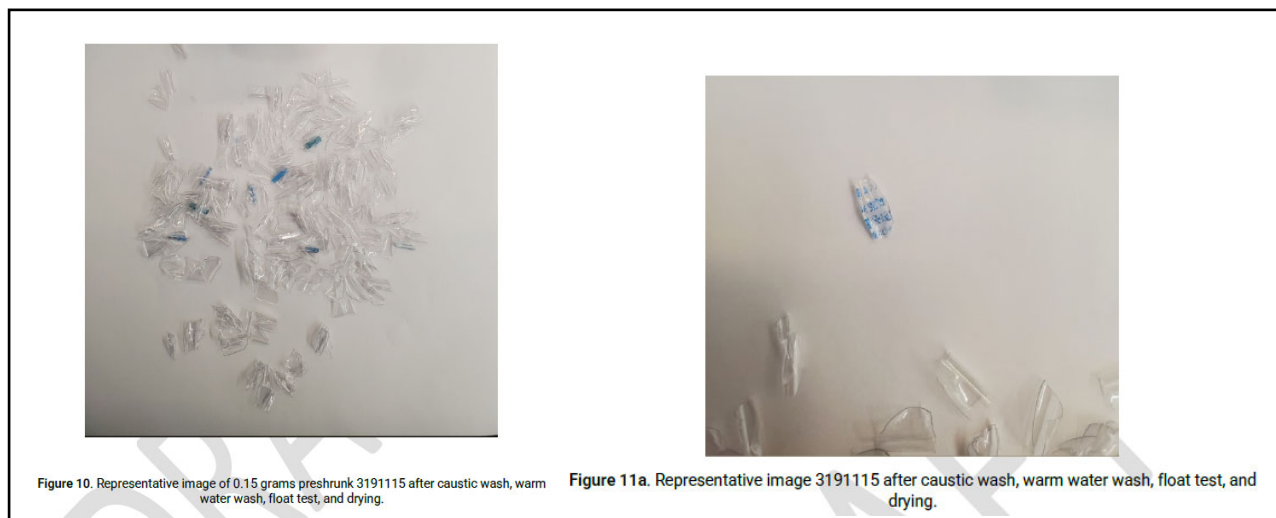
⁵ With respect to the independent claims 1 and 19, Petitioner relies solely on the Gatorade Label under §102. While Grounds 2 and 3 rely on the Gatorade Label combined with the Febreze Label, none of Petitioner's grounds rely on the Febreze label as teaching or disclosing the requirement “the recyclable shrink label is recyclable with a PET container” as required by claims 1 and 19.

Ground 1. Paper 14, 17-18. Petitioner waived any argument to the contrary by not raising them in its Petition.

In any event, the Febreze label does not anticipate—or render obvious—claim 1, upon which claim 4 depends. As Mr. Bushman concedes, the Febreze label is not “recyclable.” EX2010, 111:7-11 (“Q. And the label itself was not meant to be washed off in a recycling process, correct? A. The aerosol container does not go through the recycling stream.”). Petitioner’s images show significant amounts of ink retained on the Febreze label following the caustic wash, as further confirmed by Dr. Reitman’s testing. EX1014 Figs.10, 11a (showing ink retained on film after caustic wash); EX2011, 202:21-24 (confirming “there are pieces in Figure 10 that still have blue ink” post-caustic wash); EX2012, ¶¶71-73, FIG.C20; EX2013, ¶¶225-230.



EX2012, FIG C20.



EX1014 Figs.10, 11a.

b. Petitioner fails to show any motivation to combine

Ground 3 recites similar arguments as Ground 2. §V.B.1. Yet again, Petitioner merely describes general motivation to combine embodiments of recyclable packaging (Pet., 50), light-blocking layers (Pet., 50-51), and the general goal of “promoting visibility” (Pet., 45). For the same reasons explained in §V.B.1, Petitioner has not shown that a POSITA would have been motivated to modify the Gatorade label at all let alone to combine it with the Febreze label for the *specific* arrangement of layers. EX2013, ¶¶231-247.

Petitioner also contends a POSITA would have been motivated to combine the Gatorade and Febreze labels because it would have “recognized such construction as promoting light blocking and recyclability.” Pet., 50-51; EX1014 ¶136. Not so. Again, under Petitioner’s theory, the Gatorade label is allegedly already both light-blocking and recyclable. For the same reasons explained in

§V.B.1 above, a POSITA would have had no motivation to modify the order of layers in the Gatorade label and Petitioner's arguments are entirely based on hindsight. EX2013, ¶234-36.

Petitioner also asserts the Gatorade label and Febreze labels are “similar in purpose, composition, and structure.” Pet., 52. Not so. The Gatorade and Febreze labels are neither compositionally nor structurally similar. There is no evidence in the record, for instance, that the Febreze label is PET. EX2013, ¶¶237-239. The two labels serve demonstrably different purposes. Petitioner provides no explanation for why a *food product* such as Gatorade would have a label with the same “purpose, composition, and structure” as an *air freshener* such as Febreze. *Id.* Out of the “many markets” with “a need for recyclable, light protective packaging options,” the '422 Patent specifically highlights the food market because light waves can impact the shelf life of food products. EX1001, 1:26-28 (“[T]here remains a need for recyclable, light protective packaging options for many markets, including the *food and nutraceutical markets*.”). The underlying containers to which these labels are affixed are also distinct: the Gatorade bottle is purportedly PET (though unsupported by test evidence), while the Febreze container is an aerosol can, which Petitioner concedes is not recyclable. EX2010, 110:12-17, 111:7-11; EX2013, ¶237-39.

None of Petitioner's other arguments are convincing. Petitioner asserts the labels were "manufactured and sold publicly by the same entity." Pet., 50. Petitioner fails to explain why simply being manufactured by the same entity would provide a POSITA with any motivation to change the Gatorade label to incorporate the layer ordering from the Febreze label when Petitioner has not identified any deficiencies in the Gatorade label or improvements from the modification. EX2013, ¶239. Petitioner cannot bootstrap a motivation to combine merely by pointing to a common manufacturer. *Cf. Securus Techs., Inc. v. Glob. Tel*Link Corp.*, 701 Fed.Appx. 971, 977 (Fed. Cir. 2017) (affirming finding that "broad characterization" of the prior art "as both falling within the same alleged field ... without more, is not enough for [the appellant] to meet its burden of presenting a sufficient rationale to support an obviousness conclusion").

Similarly, Petitioner's argument that the Febreze label was a "well-known, publicly sold, product" has no bearing on a POSITA's motivation to modify the Gatorade label or combine it with the Febreze label. EX2013, ¶241. To the extent Petitioner argues the Febreze label's commercial availability would have spurred a POSITA "to rely upon the teachings" of the Febreze label, that argument fails too. Pet., 51; EX1014 ¶137. A POSITA would have recognized the Febreze label's commercial availability or success was indexed to an entirely different product market, and that the Febreze label was not recyclable. Those distinctions would

have taught away from relying on the Febreze label to teach layer organization. EX2013, ¶241.

c. Petitioner fails to show a reasonable expectation of success

Petitioner's reasonable expectation of success argument spans a single line. According to Petitioner, a POSITA would have had a reasonable expectation of success because "no additional layers are required and only a minor adjustment to label layers is required." Pet., 52. This conclusory argument fails for the same reasons the similar argument in Ground 2 fails. §V.C.1.c; EX2013, ¶¶248-255.

The Febreze label is not recyclable, as Petitioner itself concedes. EX2010, 111:7-11. Petitioner has provided no evidence to show the Febreze label is PET. Accordingly, a POSITA would not have had a reasonable expectation of success in combining the Gatorade label with the Febreze label to arrive at a recyclable, light-blocking PET label with a specific layer arrangement. EX2013, ¶¶248-255.

d. Objective Indicia Undercut Petitioner's Obviousness Arguments

As explained in §V.B.1.c, objective indicia, including evidence of long-felt but unmet need, industry praise, and copying further undercut Petitioner's obviousness arguments. EX2013, ¶256.

D. Ground 4: The Claims of the '422 Patent are Definite under 35 U.S.C. §112

Petitioner contends claims 1-19 are indefinite because the term “wherein the recyclable shrink label is recyclable” fails to inform a POSITA of the claim scope with reasonable certainty. Pet., 53-54. Not so. The claims, “viewed in light of the specification and prosecution history, inform[s] those skilled in the art about the scope of the invention with reasonable certainty.” *Nautilus, Inc. v. Biosig Instruments, Inc.*, 572 U.S. 898, 910 (2014).

The '422 Patent informs a POSITA that, as described in §§II.B and IV, the claims cover labels recycled along with the container to which the label is attached without removing the label from the recycling stream prior to or during the recycling process. A POSITA would therefore understand the '422 Patent explains that the scope of the claims covers a label capable of being recycled with the container (*i.e.*, a label that contains inks that wash off such that the label can be reclaimed as reusable resin along with the container). EX1001, 20:16-20 (“during the recycling process, the inks and coating layers cleanly separate from the heat shrink film, allowing pure resin to be recovered and processed into reusable resin.”).

Petitioner admits “the '422 patent defines what makes a shrink label recyclable,” identifying several statements in the specification of the '422 Patent, but characterizes the statements as “disparate.” Pet., 53-54. Yet, neither Petitioner nor its expert provide any analysis of how these statements create inconsistencies

that would lead a POSITA to conclude the '422 Patent claims are insufficiently defined. When read in light of the claims, specification, and prosecution history, the statements cited by Petitioner as allegedly “disparate” are entirely consistent with one another and a POSITA would reasonably be able to ascertain the scope of the claims. EX2013, ¶¶258-305.

1. Claim Construction

Petitioner does not advance any construction for the term “recyclable” or for the term “wherein the recyclable shrink label is recyclable with a PET container.” Pet., 12-13; EX1013, ¶¶21-22; EX1014, ¶¶21-22. Instead, Petitioner, Dr. Deible, and Mr. Bushman assert the terms of the patent are understood “in accordance with the ordinary and customary meaning of such claim as understood by a person of ordinary skill in the art.” EX1013, ¶21; EX1014, ¶21. While PO disagrees with Petitioner’s conclusion, Petitioner and its expert were able to (incorrectly) apply prior art to the claims under the plain and ordinary meaning to arrive at an opinion on whether the prior art discloses a “recyclable shrink label that is recyclable with a PET container.” EX1014, ¶¶71-79; EX2013, ¶¶259-260. That alone dooms Petitioner’s indefiniteness challenge. *Sonix Tech. Co. v. Publ’ns Int’l, Ltd.*, 844 F.3d 1370, 1380 (Fed. Cir. 2017) (reversing district court’s finding that claim was indefinite where “[t]he parties’ experts also had no difficulty in applying” the allegedly indefinite term and noting “continued application by the experts in this case further supports

the conclusion that a skilled artisan did understand the term with reasonable certainty”).

2. Prosecution History Confirms the Scope of the Claims

The '422 Patent provides for recyclable light-blocking shrink labels. EX1001, cls.1, 19. According to the APR, for example, labels can be deemed recyclable if: (1) the label is removable from the recycling stream and does not otherwise impede the recycling stream (*e.g.*, by inks bleeding into the wash water), or (2) if the label remains in the recycling stream and is capable of being recovered as reusable resin at the end of the recycling stream. EX2013, ¶265.

As explained in §IV above, during the prosecution of the '422 Patent, PO distinguished the Mitchell reference as disclosing a label that is removed from the container prior to or during the recycling process and therefore not recycled with the container. EX1002, 335. PO explained “[t]he term ‘recyclable’ does further limit the claim in that the claimed label **must be capable of being recycled.**” EX1002, 335. PO further stated “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.” EX1002, 335.

Therefore, PO's statements distinguishing prior art that teaches removal of a label prior to or during the recycling stream, confirm the '422 Patent claims cover a

label is recycled *with* the container by using inks that wash off such that the underlying resin can be reclaimed. EX2013, ¶¶260-263.

3. The '422 Patent Specification Consistently Defines the Scope of the Claims

When viewed in light of the prosecution history, the statements in the specification describing the term “recyclable” are internally consistent with one another and with the goal of providing a label recyclable *with* a container. Contrary to Petitioner and its declarant's assertions, the specification consistently describes a label is recyclable if the inks are designed to wash off the underlying film substrate such that the label can remain in the recycling stream and ultimately be recovered with other resins in the recycling stream to form reusable resin. EX1001, 20:16-20 (“[D]uring the recycling process, the inks and coating layers cleanly separate from the heat shrink film, allowing pure resin to be recovered and processed into reusable resin.”); EX2013, ¶¶264-276.

Petitioner admits the '422 Patent defines what makes a shrink label recyclable, but asserts it does so “in several disparate ways.” Pet., 54. Petitioner identifies several passages from the '422 Patent that Petitioner asserts are inconsistent (Pet., 54-56), including:

1. “Generally clear crystallizable heat shrink films (e.g., PET shrink films) are considered recyclable if no inks are retained on the film after a caustic wash cycle typically used in PET reclaiming processes.” EX1001, 6:61-65.

2. "According to an embodiment, the inks utilized in the labels of the present disclosure, including the light blocking inks, are designed to wash off the film during a reclaiming process allowing the labels and containers they cover to be recycled." EX1001, 7:9-13.
3. "According to an embodiment, the labels of the present disclosure can meet certain industry standards, including for example the Association for Plastic Recyclers (APR) Critical Guidance Protocol for Clear PET Articles with Labels and Closures (PET-CG-02), which can be considered as certifying that the film is fully recyclable with the container or bottle." EX1001, 11:29-53.
4. "In some embodiments, the labels of the present disclosure are recyclable according to Evaluation of the Near Infrared (NIR) Sorting Potential of a Whole Plastic Article (SORT-B-01), Evaluation of Sorting Potential for Plastic Articles Utilizing Metal, Metalized or Metallic Printed Components (SORT-B-03), or both." EX1001, 11:29-53.
5. "That is, according to an embodiment, the labels of the present disclosure are fully recyclable." EX1001, 11:29-53.
6. "For example, the labels may include inks that can be washed off in a typical PET recycling wash (caustic wash) and the polymers used in the labels are preferably clear (preferably clear PET)." EX1001, 11:29-53.
7. "According to an embodiment, the labels are free or substantially free of inks that cannot be washed off in a caustic wash." EX1001, 11:29-53.
8. "According to an embodiment, the labels are free or substantially free of colored plastics (including white plastics) that cannot be recycled." EX1001, 11:29-53.
9. "[I]n connection with the prosecution of the application that issued as the '422 patent, Applicant argued over the prior art 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...[i]n contrast, the present application teaches that the inks and pigments used in the recyclable shrink label may be removed by washing,

leaving behind a label that can be recycled with the article.” EX1002, 337.

Contrary to Petitioner's arguments, these statements are entirely consistent with one another and with the claims of the '422 Patent, which require a “recyclable shrink label is recyclable *with* a PET container.” EX1001, cls.1, 19. Petitioner fails to identify any inconsistencies between these statements and its own declarants agree a POSITA would understand what the statements refer to. *See, e.g.*, EX2010, 188:18-189:5. Indeed, these statements make **clear** the scope of the claims in light of the specification and prosecution history. EX2013, ¶¶264-276.

First, Petitioner cites the statement “[g]enerally clear crystallizable heat shrink films (e.g., PET shrink films) are considered recyclable if no inks are retained on the film after a caustic wash cycle typically used in PET reclaiming processes.” EX1001, 6:61-65. A POSITA would understand that, consistent with the goal of the '422 Patent to be able to recycle both the label and the container together, this embodiment from the specification explains that the term “recyclable” within the context of the '422 Patent means a label with inks that wash off during a caustic wash cycle, leaving behind plastic resin can be reclaimed at the end of the recycling process. EX2013, ¶267.

Second, Petitioner points to the statement “[a]ccording to an embodiment, the inks utilized in the labels of the present disclosure, including the light blocking inks, are designed to wash off the film during a reclaiming process allowing the labels and

container they cover to be recycled.” EX1001, 7:9-13. This statement is consistent with the goal of the '422 Patent to claim a label that can be recycled with a container. A POSITA would understand this statement refers to a label intended to enter the recycling stream with a container and where the inks wash off the label such that the resin can be reclaimed as reusable resin. EX2013, ¶268.

Third, Petitioner cites the statement “[a]ccording to an embodiment, the labels are free or substantially free of inks that cannot be washed off in a caustic wash.” EX1001, 11:29-53. This too is consistent with the understanding that, for a label to be recyclable with a container without being removed from the recycling stream, the label must be designed such that the inks wash off the label and the substrate underneath can be reclaimed into reusable resin. EX2013, ¶¶269-270. The '422 Patent explicitly defines the term “substantially” such that the term “can be understood to modify the term that follows by at least 90%, at least about 95%, or at least about 98%.” EX1001, 3:34-37. The specification's definition of “substantially,” therefore, provides clear guidance to a POSITA as to the extent of inks that can remain on the film while still being recoverable as reusable resin. EX2013, ¶¶269-270.

In his deposition, Mr. Bushman testified the term “substantially” is an ambiguous term and therefore renders the claim indefinite. EX2010, 195:2-11. However, Mr. Bushman was not aware of a definition for “substantially” and agreed

that if there were such a definition, it would change his opinions. EX2010, 195:18-196:1 (“Yes, I think that this – that would help with understanding what recyclable means”); EX2013, ¶¶270-271.

Fourth, Petitioner cites the statement “[f]or example, the labels may include inks that can be washed off in a typical PET recycling wash (caustic wash) and the polymers used in the labels are preferably clear (preferably clear PET).” EX1001, 11:29-53. As explained above, a POSITA would understand this statement is consistent with the other statements above that the labels are designed such that the inks wash off the label during the recycling process, which allows the label to remain in the recycling stream alongside the container to be reclaimed as reusable resin. EX2013, ¶271. Moreover, the reference in this statement to preferably clear plastics used in the label is consistent with the explanation in the specification that colored plastics are generally lower value and often not recyclable. EX1001, 1:23-25 (“The market for recycling color impregnated PET is very small and most of those bottles and containers are not recycled.”). Thus, a POSITA would understand this statement to be consistent with the goal of claiming a label that enters a recycling stream with a container and remains in the recycling stream to be reclaimed as reusable resin by using inks that wash off. EX2013, ¶271.

Fifth, Petitioner cites the statement “[a]ccording to an embodiment, the labels are free or substantially free of colored plastics (including white plastics) that cannot

be recycled.” EX1001, 11:29-53. As explained above, this is consistent with the specification's explanation that colored plastics are generally lower value and often not recyclable. EX1001, 1:23-25 (“[t]he market for recycling color impregnated PET is very small and most of these bottles and containers are not recycled.”). Thus, a POSITA would understand this statement to be consistent with the goal of claiming a label that enters a recycling stream with a container and remains in the recycling stream to be reclaimed as reusable resin. EX2013, ¶272.

Sixth, Petitioner points to the specification's statement “according to an embodiment, the labels of the present disclosure are fully recyclable.” EX1001, 11:29-53. Petitioner states this creates ambiguity because “it is undeterminable whether to fall within the scope of this claim term the labels need be recyclable or fully recyclable, or whether there is a difference between the two.” Pet., 58. Yet, Petitioner, Mr. Bushman, and Dr. Deible all rely on documents using the term “fully recyclable” as evidence of the Gatorade label meeting the claims of the '422 Patent without raising any issue as to the meaning of the term. Pet., 31 (citing EX1016 to show recyclability of Gatorade label); EX1013, ¶56 (same); EX1014, ¶78 (same). And, at his deposition, Mr. Bushman freely used the term “fully recyclable.” EX2010, 112:25-113:17 (Q. ...Therefore, it's certified fully recyclable, right? A. Yes. Q. What does that mean to you? A. Yes. Exactly what it says. Q: Well, can you explain? What does that mean? A. It means that they have completed testing under

the APR Critical Guidance method... Q. And so what does it mean that its certified fully recyclable? A. They are using the APR guidance as a statement of recyclability.”). Accordingly, a POSITA would find no confusion in the use of the terms “recyclable” or “fully recyclable” within this context. EX2013, ¶273.

Accordingly, each of these statements is entirely consistent with a POSITA's understanding of the scope of the claims in light of the specification and prosecution history, and the scope of the '422 Patent's claims are reasonably ascertainable. EX2013, ¶274. Petitioner identifies no colorable inconsistencies between these statements, and to the extent it attempts to manufacture any, “mathematical precision” is not required. *Guangdong Alison Hi-Tech Co. v. Int'l Trade Comm'n*, 936 F.3d 1353, 1360-61 (Fed. Cir. 2019).

Petitioner next cites statements in the specification relating recyclability to APR guidance documents. For example, Petitioner cites the statement, “[a]ccording to an embodiment, the labels of the present disclosure can meet certain industry standards, including for example the Association for Plastic Recyclers (APR) Critical Guidance Protocol for Clear PET Articles with Labels and Closures (PET-CG-02), which can be considered as certifying that the film is fully recyclable with the container or bottle.” EX1001, 11:29-53. In addition, Petitioner cites the statement, “[i]n some embodiments, the labels of the present disclosure are recyclable according to Evaluation of the Near Infrared (NIR) Sorting Potential of a

Whole Plastic Article (SORT-B-01), Evaluation of Sorting Potential for Plastic Articles Utilizing Metal, Metalized or Metallic Printed Components (SORT-B-03), or both.” EX1001, 11:29-53. As explained in more detail below, these too are entirely consistent with and inform a POSITA of the scope of the '422 Patent claims as requiring a label that is able to enter and remain in a recycling stream and be reclaimed as reusable resin. A POSITA would have known the APR provides guidance to industry members to facilitate laboratory testing to evaluate recyclability of materials. These guidance documents form a framework that label and container manufacturers can follow to develop data to certify the recyclability of a product from an objective third party organization. EX2013, ¶¶275-276. As Mr. Bushman acknowledged, POSITAs regularly rely on APR guidance and certification to design packaging and ensure a particular article is recyclable. EX2010, 156:13-157:3.

4. APR Guidance Documents and Testing Further Confirm the Scope of the Claims

Petitioner cites to several APR guidance documents referred to in the '422 Patent specification and argues the guidance documents provide “disparate” definitions of recyclability. Pet., 54-55. These guidance documents—APR Critical Guidance Protocol (PET-CG-02), the Evaluation of the Near Infrared (NIR) Sorting Potential (SORT-B-01), and the Evaluation of Sorting Potential for Plastic Articles Utilizing Metal, Metalized or Metallic Printed Components (SORT-B-03)—are complementary, and inform rather than obscure the scope of the '422 Patent claims.

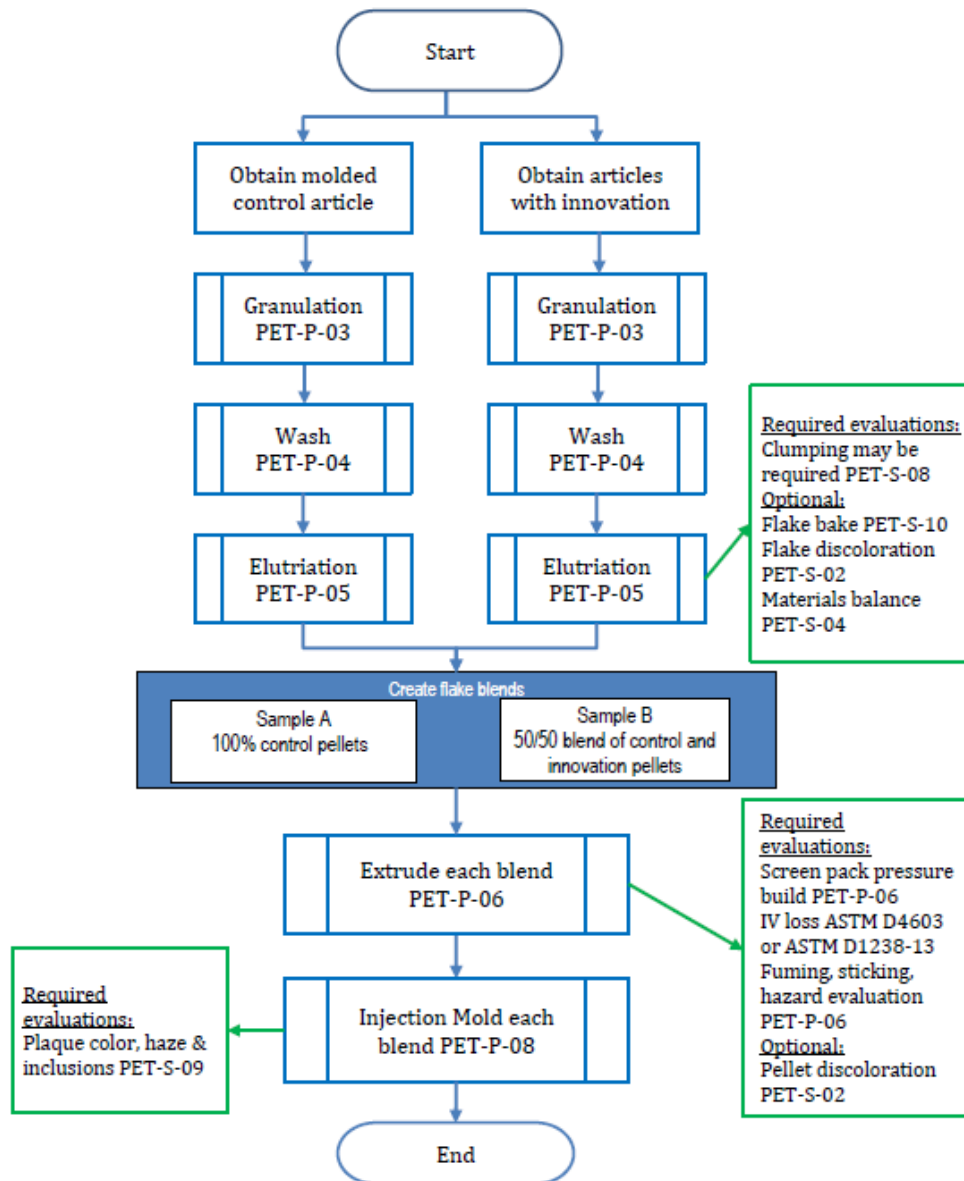
Further, the APR guidance documents are also entirely consistent with other statements in the specification, as well as the prosecution history, and provide an objective metric that a POSITA could follow to confirm whether a particular label is recyclable with a container. EX2013, ¶¶277-304.

a. APR Critical Guidance

Petitioner points to the specification's statement "[a]ccording to an embodiment, the labels of the present disclosure can meet certain industry standards, including for example the Association for Plastic Recyclers (APR) Critical Guidance Protocol for Clear PET Articles with Labels and Closures (PET-CG-02), which can be considered as certifying that the film is fully recyclable with the container or bottle." Ex. 1001, 11:29-53. Petitioner further states "it could be interpreted that, to fall within the scope of this claim term, no inks must remain on the film after a caustic wash cycle typically used in PET reclaiming processes, or it could be that to fall within the scope of this claim term, inks only need to be designed to wash off the film during a reclaiming process allowing the labels and containers they cover to be recycled, or it could be that to fall within the scope of this claim term, the Association for Plastic Recyclers (APR) Critical Guidance Protocol for Clear PET Articles with Labels and Closures (PET-CG-02) must be complied with." Pet., 57. In view of the specification and prosecution history, each of these statements are

consistent with one another and inform a POSITA as to the scope of the claims. EX2013, ¶¶278-285.

For example, the APR Critical Guidance Protocol states: “[t]his is a comprehensive laboratory scale evaluation that can be used to assess the compatibility of PET packaging design features such as labels, closures, dispensers and attachments with common commercial scale recycling processes.” EX1027, 1. The APR Critical Guidance further provides the following flow chart to help identify the testing to perform in order to determine whether a label meets APR certification standards. EX2013, ¶282.



EX1027, 7

The APR Critical Guidance Flow Chart provides several test steps relevant to a POSITA's understanding of whether a label is recyclable with a container, including the Wash test (PET-P-04), in which "PET flake" is washed in a hot

aqueous caustic, detergent solution, and the Plaque, color, haze, and inclusion test (PET-S-09), which provides an objective standard for determining whether the inks have sufficiently washed off to reclaim the underlying resin. EX2013, ¶¶282-285. Each of these tests is explained below.

b. Wash Test Guidance

The wash test performs two functions related to this analysis: (1) separation and removal from the recycling stream, based on density, of labels that are made of different material than the PET container, and (2) removal of inks from the label. EX1028, 9. Consistent with the PO's proposed construction that "recyclable" means "capable of being recycled *without removing* the label from a container before or during the recycling process," the APR Critical Guidance Protocol informs a POSITA the wash test is used to evaluate whether the inks on the label wash off the substrate, which is consistent with the definition of recyclable in the '422 Patent specification. EX1001, 20:16-20; EX2013, ¶¶293-295, 300. After an article is granulated into flake, the flake is added to a caustic wash bath "intended to remove contamination from PET and can contribute to liberating labels, adhesives, coatings and layers from PET flake." EX1028, 9. The Guidance provides two tests—the float/sink test and the caustic wash test—relevant to a POSITA's understanding of the claim scope.

i. Float/Sink Test

As part of the Wash test, some labels can be removed from the recycling stream in order to prevent contamination of the recycling stream for the container. For example, PET has a density greater than water and therefore sinks in the water bath. Some labels are made from different polymer resins with a density less than water and therefore float in the water bath. Since these labels containing other polymer resins may contaminate the recycling stream from the PET container, the floating labels can be removed from the top of the water bath to preserve the recyclability of the container. EX2013, ¶¶291-92.

During the prosecution of the '422 Patent, PO distinguished prior art that taught removing labels prior to or during the recycling process. EX1002, 335. Accordingly, the '422 Patent distinguishes labels that are designed to float—and are therefore removed—during the float/sink test. EX2013, ¶302. Therefore, labels within the scope of the claims would sink during this test and the relevant portion of the wash test is the caustic wash, described below.

ii. Caustic Wash Test Evaluation

In addition to the float/sink test, the wash test also includes a caustic wash test “intended to remove contamination from PET and can contribute to liberating labels, adhesives, coatings and layers from PET flake.” EX1028, 9. APR Critical Guidance notes “[i]nks and adhesives can impact the costs of managing a wash system and

waste disposal. Therefore, for innovations involving printing inks or labels with adhesives, it is recommended that the Wash Water Evaluation be conducted.” EX1027, 24. Accordingly, a caustic wash test is intended to remove any removable inks from the surface of the polymer flake and test whether any removed inks stain the wash water or polymer flake.

Therefore, the APR critical guidance is entirely consistent with the '422 Patent's specification description that a label is recyclable if inks on the film wash off and do not stain the wash water or polymer flake. EX2013, ¶¶293-295.

c. Plaque Inspection Testing

APR also provides an objective standard for determining whether the ink on a particular label sufficiently washes off to meet APR guidance. EX2013, ¶¶296-300. For example, the APR Critical Guidance Protocol provides “[r]equired evaluations” at the end of the testing process, which tests the injected molded plaques for “plaque color, haze, & inclusions.” EX1027, 7 (citing PET-S-09 guidance).

The cited PET-S-09 Guidance document states “[w]hen recycling clear PET, it is important that the PET resin, additives, and any other features employed such as labels or closures have the least possible impact on the color and transparency of the resin. Industry experience is that inks, adhesives, additives, layers and coatings, for example, can be sources of color formation and specks in recycled PET.”

EX2026, 1. Accordingly, “[t]his document presents a standard method to evaluate any contribution to color, haze or inclusions that might result from recycling PET articles” by “measur[ing] the color and haze values of transparent injection molded plaques,” which “is used to measure any impact of a design feature such as labels, inks, adhesives or additives on PET recycling.” EX2026, 1.

The protocol established in PET-S-09 states: (a) “Place the plaque between your eyes and the light source. The approximate distance between plaque and eyes is 30 cm”; (b) “Count any plaque with one or more black specks and/or inclusions greater than 0.1 mm²”; and provides a chart to document the results. EX2026, 3. The APR Critical Guidance further explains how to interpret the inclusion test results to determine whether a label meets APR guidance:

Evaluation of molded plaques

Property	Test method	APR Guidance Preferred values
<u>Required values</u>		
L value of plaques B	Evaluation of PET Plaques for Color, Haze and Inclusions, PET-S-09	>82
a* value of plaques A and B	PET-S-09	Less than 1.5 units difference between plaques A and B
b* value of plaques A and B	PET-S-09	Less than 1.5 units difference between A and B
% haze of plaques A and B	PET-S-09	Control not to exceed 9% value, and test not to exceed more than 10% units greater than control.
Inclusions and specks in plaques T5	PET-S-09	If A = 0; B is 2 or less If A = 1; B is 4 or less If A = 2; B is 6 or less
IV loss when pellets re molded to plaques	ASTM D 4603 solution IV with phenol/tetrachlorethane at 30°, or ASTM D1238 – 13 method B	The value of IV loss for sample B is no greater than 0.025 units when compared to sample A

EX1027, 6 (highlighted)

Therefore, the APR critical guidance provides an objective test to identify whether labels retained in the recycling stream (rather than being removed prior to or during the recycling process) are reclaimable as reusable polymer resin or whether inks retained on the film contaminate the recycling stream. EX2013, ¶300. This, again, is consistent with the '422 Patent's goal that claimed labels are capable of being recycled in a recycling stream without being removed prior to or during the recycling process because the labels contain inks that wash off and a POSITA would be able to reasonably ascertain the scope of the claims. *Id.*

d. Sortation Guidance

While the APR Critical Guidance provides objective testing parameters to determine whether a particular label is recyclable with a PET container, the guidance notes “[t]he test is not appropriate for package constructions that will not pass through sorting steps at a Materials Recovery Facility and be collected into PET bales for recycling, nor for packages that are not in alignment with the APR Design[®] Guide for Plastics Recycling text....If it is questionable that the test article doesn't meet these criteria, the appropriate APR sorting potential protocol...should be conducted prior to conducting this test.” EX1027, 1, 3.

Thus, as a starting point, the Critical Guidance document specifies articles must comply with the sorting requirements, including for articles containing metal or metalized inks or materials that could influence NIR sortation, which the APR provides additional guidance documents to evaluate. These guidance documents, provided as SORT-B-01 and SORT-B-03, “are intended to identify specific design features that may cause an entire package to be lost in the recycling process” the consequences of which “are more significant than in processes that follow size reduction, since the entire package is lost to the plastics recycling stream rather than a mere component of the package.” EX1010, 1. Therefore, the APR Critical Guidance explains that when evaluating whether a label is recyclable with a PET container, a preliminary step is to test whether the label includes features which

would render the entire article unrecyclable. EX2013, ¶¶286-289; EX2011, 88:19-24, 148:15-22.

The first guidance document, SORT-B-01 explains “single stream MRFs and PET reclaimers employ automated equipment that sort plastic packaging and other items by their NIR (near infrared) signature, either in transmission or reflection. For this equipment to operate effectively it must accurately identify the plastic article and direct it to the correct location. Otherwise, the article is either directed to the waste stream or becomes a contaminant in another recyclable stream where it is likely to not be recycled.” EX1010, 1. Accordingly, the SORT-B-01 guidance document “provides a means of evaluating whether a plastic article can be accurately identified and sorted on pilot scale NIR sortation equipment that performs similarly to that used in production facilities.” EX1010, 1; EX2013, ¶287.

Similarly, the second guidance document, SORT-B-03, explains “[m]etal separation before size reduction is conducted at the MRF and plastic reclaimer using three primary technologies,” including magnetism, eddy current, and metal detection. EX1011, 2. Accordingly, SORT-B-03 “provides a means for evaluating whether a metal containing plastic article will pass correctly through the MRF and plastic reclaimers metal separation process” to determine whether a “specific design feature...may cause an entire package to be lost in the recycling process.” EX1011, 1-2; EX2013, ¶288.

Accordingly, a POSITA would understand the Sorting Guidance documents cited in the specification provide a test protocol to ensure label designs do not inadvertently cause an entire article (label and container) to be missorted into a waste stream rather than a recycling stream, in which case the label cannot be recyclable with a container according to the claims. EX2013, ¶289. A POSITA would understand this is consistent with the scope of the claims in light of the specification and prosecution history.

5. PO Has Already Overcome Similar Indefiniteness Argument During Prosecution

As Petitioner noted in its Discretionary Denial Response, a similar claim limitation was included in a related application, Application No. 18/667,667 (“the ’677 Application”). EX1026, 6. For example, claim 38 of the ’677 Application claims “wherein the light blocking ink layer is removable in a caustic wash to preserve the recyclability of the container.” EX1026, 6. Although these claims were initially rejected by the examiner as indefinite, PO successfully overcame the rejection by amending claim 38 to require “wherein the light blocking ink layer is **configured to be** removable in a caustic wash to preserve the recyclability of the container.” EX2027, 2 (emphasis in original). PO further noted “the MPEP makes clear that ‘[t]here is nothing inherently wrong with defining some part of an invention in functional terms. Functional language does not, in and of itself, render a claim improper.” EX2027, 3 (citing MPEP § 2173.05(g)). As PO stated, “it has

long been established that a ‘functional limitation must be evaluated and considered, just like any other limitation of the claim, for what it fairly conveys to a person of ordinary skill in the pertinent art in the context in which it is used.’ EX2027, 11.

Examiner ultimately agreed with PO, withdrawing the previous §112 indefiniteness rejection. EX2028, 26-27. Examiner noted “the amendments recite the intended use and/or process of using the claimed label.” *Id.*

Therefore, Petitioner’s assertion that the initial rejection by the examiner supports its indefiniteness arguments is unfounded and should be rejected. Paper 9, 25. Instead, the prosecution history only bolsters the validity of the ’422 Patent. EX2013, ¶¶301-303.

In addition, a District Court has already construed “recyclable” and its related elements in a manner similar to the construction proffered here by PO and the Board, to which the accused infringer stipulated, thereby rejecting any indefiniteness argument. EX2037. There can be no doubt, therefore, a POSITA understands the meaning of a “recyclable” label. EX2013, ¶304.

6. Summary

Contrary to Petitioner, Dr. Deible, and Mr. Bushman’s analysis, the scope of the ’422 Patent claims is clear to a POSITA and confirmed by each of the consistent statements made in the specification and prosecution history. In view of the prosecution history disclaiming labels removed prior to or during the recycling

process, the '422 Patent claims labels capable of being recycled without removing the label prior to or during the recycling process. This is accomplished through the use of inks that can be washed off during recycling. EX1001, 20:16-20. A POSITA would have understood in view of the specification how to test whether a label could be recycled with a PET container, including for example through reference to objective industry guidance documents. EX2013, ¶¶258-305. The '422 Patent claims are therefore sufficiently definite.

VI. CONCLUSION

Petitioner has failed to prove unpatentability beyond a preponderance of the evidence. Thus, PO respectfully requests the Board confirm 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 4th day of February, 2026, 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 18,689 (18,700 limit) words.

/s/ W. Todd Baker

W. Todd Baker