

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

STAHL'S INC.,
Petitioner,

v.

JODI A. SCHWENDIMANN, f/k/a JODI A. DALVEY,
and NUCOAT, INC.,
Patent Owner.

IPR2020-00635
Patent 7,754,042 B2

Before JEFFREY W. ABRAHAM, MICHELLE N. ANKENBRAND, and
AVELYN M. ROSS, *Administrative Patent Judges*.

ABRAHAM, *Administrative Patent Judge*.

JUDGMENT
Final Written Decision
Determining All Challenged Claims Unpatentable
35 U.S.C. § 318(a)
Dismissing Petitioner's Motion to Exclude
37 C.F.R. § 42.64
Granting Petitioner's Motion to Seal
37 C.F.R. §§ 42.20, 42.54, 42.55

I. INTRODUCTION

Stahls' Inc. ("Petitioner") filed a Petition (Paper 1, "Pet.") requesting *inter partes* review of claims 16–22 of U.S. Patent No. 7,754,042 B2 (Ex. 1009, "the '042 patent"). Pet. 1. Jodi A. Schwendimann, formerly known as Jodi A. Dalvey, and NuCoat, Inc. (collectively "Patent Owner") filed a Preliminary Response (Paper 8).

On September 15, 2020, we instituted *inter partes* review of all of the challenged claims based on all of the grounds identified in the Petition. Paper 10 ("Inst. Dec."). Subsequently, Patent Owner filed a Response (Paper 14, "PO Resp."), Petitioner filed a Reply (Paper 28, "Reply"), and Patent Owner filed a Sur-reply (Paper 34, "Sur-reply").

Petitioner filed a Motion to Exclude Evidence (Paper 37) and Patent Owner filed an Opposition to Petitioner's Motion to Exclude (Paper 38).

Petitioner also filed a Motion to Seal Exhibit 1044 (Paper 27) and a stipulated proposed Protective Order (Paper 25).

We held a consolidated oral hearing for this proceeding and related proceedings IPR2020-00633, IPR2020-00641, and IPR2020-00644 on July 14, 2021, and have entered a transcript of the hearing into the record. Paper 45 ("Tr.").

We have jurisdiction under 35 U.S.C. § 6. This Final Written Decision is issued pursuant to 35 U.S.C. § 318(a). For the reasons that follow, we determine that Petitioner has shown by a preponderance of the evidence that claims 16–22 of the '042 patent are unpatentable. We also dismiss Petitioner's Motion to Exclude as moot and grant Petitioner's Motion to Seal.

II. BACKGROUND

A. *Related Proceedings*

The parties identify the following lawsuits involving the '042 patent: *Jodi A. Schwendimann v. Stahls', Inc.*, Case No. 2:19-cv-10525-LVP-RSW (E.D. Mich.) ("Michigan Lawsuit"); *Jodi A. Schwendimann v. Siser North America, Inc.*, Case No. 1:19-cv-00362-LPS (D. Del.); *Jodi A. Schwendimann v. Neenah, Inc.*, Case No. 1:19-cv-00361-LPS (D. Del.) ("Delaware Lawsuit"); and *Jodi A. Schwendimann v. Arkwright Advanced Coating, Inc.*, Case No. 0:11-cv-00820-JRT-HB (D. Minn.) ("Arkwright Lawsuit"); Pet. 4; Paper 9, 2.

Petitioner also identifies related U.S. Patent No. RE 41,623 ("the RE '623 patent"), U.S. Patent No. 7,749,581 ("the '581 patent"), U.S. Patent No. 7,771,554 ("the '554 patent"), and U.S. Patent No. 7,766,475 ("the '475 patent"). Pet. 4.

Patent Owner notes that the '042 patent is at issue in IPR2020-00629, and the related patents are at issue in the following co-pending proceedings: IPR2020-00628 (RE '623 patent), IPR2020-00633 (RE '623 patent), IPR2020-00634 ('581 patent), IPR2020-00641 (RE '623 patent), IPR2020-00644 ('581 patent), IPR2020-00915 ('475 patent), IPR2020-01121 ('554 patent), and IPR2020-01122 ('475 patent). Paper 9, 2

B. *The '042 Patent (Ex. 1009)*

The '042 patent, titled "Method of Image Transfer on a Colored Base," issued on July 13, 2010. Ex. 1009, codes (45), (54). The '042 patent is directed to "transferring an image onto a colored base and to an article comprising a dark base and an image with a light background on the base." Ex. 1009, 1:18–20.

The '042 patent explains that conventional image transfer processes involving the transfer of an image to a dark base such as a black t-shirt used two-steps: applying a white or light background polymeric material to the colored base with heat and then using another sheet to impart an image to the substantially white polymeric material. Ex. 1009, 3:39–52. According to the '042 patent, the conventional two-step process required careful alignment of an image with the white background, was “exceedingly time-consuming,” and produced significant waste of base and image transfer materials. Ex. 1009, 3:53–59.

The '042 patent purports to provide a significant improvement over the conventional two-step image transfer process by transferring an image and background to a colored base in a single step. Ex. 1009, 3:21–23. An exemplary image transfer process of the '042 patent is depicted below in Figure 1.

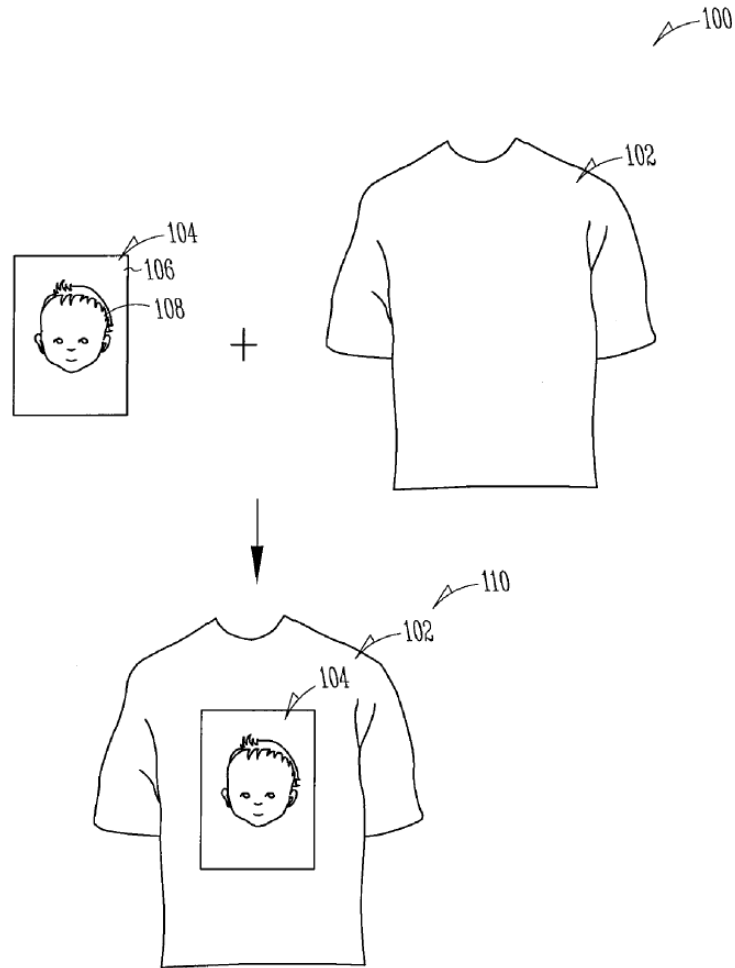


Fig. 1

Figure 1 “illustrates a schematic view of one process of image transfer onto a colored product.” Ex. 1009, 2:33–34. Figure 1 depicts colored base material 102 (e.g., a colored textile) and image 104 including substantially white background 106 and indicia 108 disposed on substantially white background 106. Ex. 1009, 3:12–23. The ’042 patent states that image 104 is applied to colored base material 102 with heat to make article 110 in a single step. Ex. 1009, 3:12–23

An embodiment of an image transfer device is depicted below in Figure 5.

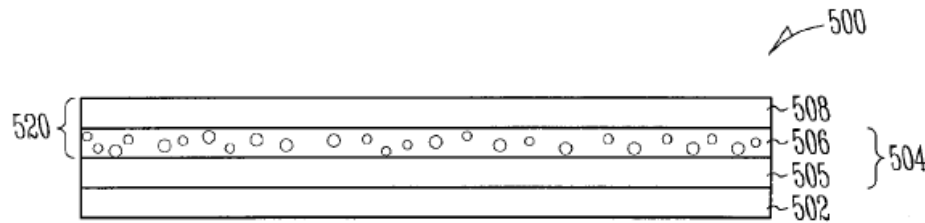


Fig. 5

Figure 5 illustrates “a cross-sectional view of one other embodiment of the image transfer device of the present invention.” Ex. 1009, 2:43–44. The ’042 patent explains that image transfer sheet 500 is comprised of substrate layer 502 and release layer 504 that comprises silicone coating 505 and white layer 506. Ex. 1009, 8:45–47. Figure 5 also depicts white layer 506 and receiving layer 508 as part of peel layer 520. Ex. 1009, 8:54–57, 9:1–3.

The ’042 patent describes white layer 506 as imparting “a white background on a dark substrate.” Ex. 1009, 3:37–38. In one embodiment, “the white layer 506 of the image transfer sheet 500 is impregnated with titanium oxide or other white or luminescent pigment.” Ex. 1009, 8:51–54. In another embodiment, “the white layer 506 and a receiving layer 508, contacting the white layer 506[,] are impregnated with titanium oxide or other white or luminescent pigment.” Ex. 1009, 8:54–57. According to the ’042 patent:

[f]or some embodiments, a white layer 506, 606, such as is shown in FIGS. 5-6, includes ethylene/methacrylic acid (E/MAA), with an acid content of 0-30%, and a melt index from 10 to 3500 with a melt index range of 20 to 2300 for some embodiments. A low density polyethylene with a melt index higher than 200 is also suitable for use. Other embodiments of the white layer include ethylene vinyl acetate copolymer resin, EVA, with vinyl acetate percentages up to 50%/EVA are modifiable with an additive such as DuPont Elvax, manufactured by DuPont de Nemours of Wilmington, Del. These resins have

a Vicat softening point of about 40 degrees to 220 degrees C., with a range of 40 degrees to 149 degrees C. usable for some embodiments.

Ex. 1009, 6:8–20.

Referring once again to the embodiment of Figure 5, the '042 patent describes an image transfer process in more detail. Specifically, the '042 patent discloses “an image is imparted to the polymer component of the peel layer 520 utilizing a top coat image-imparting material such as ink or toner.” Ex. 1009, 9:1–3. The '042 patent states that “[t]he image transfer sheet 500 is applied to the colored base material so that the polymeric component of the peel layer 520 contacts the colored base” and a source of heat is applied to the image transfer sheet 500. Ex. 1009, 9:11–19. The '042 patent further states that “[t]he peel layer 520 transfers the image” and “[t]he application of heat to the transfer sheet 500 results in ink or other image-imparting media within the polymeric component of the peel layer being changed in form to particles encapsulated by the polymeric substrate.” Ex. 1009, 9:19–25. As a result, “[t]he encapsulated ink particles or encapsulated toner particles and encapsulated titanium oxide particles are then transferred to the colored base in a mirror image to the ink image or toner image on the polymeric component of the peel layer 520.” Ex. 1009, 9:28–32. The '042 patent explains as follows:

Because the polymeric component of the peel layer 520 generally has a high melting point, the application of heat, such as from an iron, does not result in melting of this layer or in a significant change in viscosity of the overall peel layer 520. The change in viscosity is confined to the polymeric component that actually contacts the ink or toner or is immediately adjacent to the ink or toner. As a consequence, a mixture of the polymeric component, titanium oxide or other white or luminescent pigment, and ink or toner is transferred to the colored base as an

encapsulate whereby the polymeric component encapsulates the ink or toner or titanium oxide or other white pigment. It is believed that the image transfer sheet, with the white titanium oxide or other white or luminescent pigment background is uniquely capable of both cold peel and hot peel with a very good performance for both types of peels.

Ex. 1009, 9:33–48.

C. Illustrative Claim

Petitioner challenges claims 16–22 of the '042 patent. Claim 16 is the only independent claimed challenged, and is reproduced below.

16. A method of transferring an image to a dark-colored or black base, the method comprising:

obtaining an image transfer article, comprising

an image-imparting member, including at least one surface configured to receive and carry indicia to be transferred and including at least one portion comprising a pigment concentration or configuration sufficient to provide an opaque, non-transparent background for received indicia, when transferred to the dark-colored or black base; and

a removable substrate disposed adjacent the image-imparting member;

peeling the removable substrate away from the image-imparting member;

contacting the image-imparting member, after being separated from the removable substrate, to the dark-colored or black base such that the opaque background is closer to the dark-colored or black base than the received indicia; and

applying heat to at least the image-imparting member so that received indicia and the opaque background having the degree of non-transparency are transferred to the dark-colored or black base at substantially the same time.

Ex. 1009, 12:52–13:8.

D. Reviewed Unpatentability Challenges

We instituted an *inter partes* review to determine whether claims 16–22 of the '042 patent are unpatentable based on the following challenges:

Claims Challenged	35 USC §¹	Reference(s)/Basis
16–22	103	Asajima, ² Oez ³
16–19 ⁴	103	DeVries, ⁵ Oez,
16–22	103	Keino, ⁶ Oez
16–19, 21	102	Oez
16, 18–22	102	Williams ⁷

E. Testimonial Evidence

Petitioner filed a Declaration of Christopher E. Scott, Ph.D. (Ex. 1001, “Scott Declaration”) with its Petition. Petitioner also filed a Rebuttal Declaration of Christopher E. Scott, Ph.D. in Support of Petitioner’s Reply (Ex. 1039, “Scott Rebuttal Declaration”).

¹ The Leahy-Smith America Invents Act (“AIA”), Pub. L. No. 112-29, 125 Stat. 284, 287–88 (2011), amended 35 U.S.C. § 103, effective March 16, 2013. Because the application from which the '042 patent issued was filed before this date, the pre-AIA version of § 103 applies.

² US 5,418,207, issued May 23, 1995 (Ex. 1018).

³ US 5,665,476, issued Sep. 9, 1997 (Ex. 1020).

⁴ Although Petitioner lists claims 16–21 as being challenged in its summary table on page 5 of the Petition and in the title of the section addressing this challenge on page 37, Petitioner only provides an analysis for claims 16–19. *See* Pet. 37–45.

⁵ US 4,058,644, issued Nov. 15, 1977 (Ex. 1016).

⁶ US 4,515,849, issued May 7, 1985 (Ex. 1017).

⁷ US 6,875,487 B1, issued Apr. 5, 2005 (Ex. 1024). Williams claims priority to provisional application No. 60/148,562, filed Aug. 13, 1999 (Ex. 1025).

Patent Owner filed a Declaration of Christopher Ellison, Ph.D. (Ex. 2011) with its Patent Owner Response. Petitioner deposed Dr. Ellison, and filed transcripts of the deposition as Exhibits 1040 and 1041 in this proceeding.

Patent Owner also filed a Declaration of Jodi A. Schwendimann executed on January 31, 2013 (Ex. 2003, “2013 Schwendimann Declaration”), a Declaration of Jodi A. Schwendimann executed on January 11, 2021 (Ex. 2014, “January 2021 Schwendimann Declaration”), and a Declaration of Jodi A. Schwendimann executed on February 2, 2021 (Ex. 2028, “February 2021 Schwendimann Declaration”). Petitioner deposed Ms. Schwendimann, and filed the transcript of the deposition as Exhibit 1042 in this proceeding.

III. ANALYSIS

A. *Legal Standards*

“In an [*inter partes* review], the petitioner has the burden from the onset to show with particularity why the patent it challenges is unpatentable.” *Harmonic Inc. v. Avid Tech., Inc.*, 815 F.3d 1356, 1363 (Fed. Cir. 2016) (citing 35 U.S.C. § 312(a)(3) (requiring *inter partes* review petitions to identify “with particularity . . . the evidence that supports the grounds for the challenge to each claim”)). This burden of persuasion never shifts to the patent owner. *See Dynamic Drinkware, LLC v. Nat’l Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015) (discussing the burden of proof in *inter partes* review).

A claim is unpatentable under 35 U.S.C. § 103(a) if “the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said

subject matter pertains.” *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 406 (2007). The question of obviousness is resolved on the basis of underlying factual determinations including: (1) the scope and content of the prior art; (2) any differences between the claimed subject matter and the prior art; (3) the level of ordinary skill in the art; and (4) objective evidence of nonobviousness.⁸ *Graham v. John Deere Co.*, 383 U.S. 1, 17–18 (1966).

To show obviousness, it is not enough to merely show that the prior art includes separate references covering each separate limitation in a challenged claim. *Unigene Labs., Inc. v. Apotex, Inc.*, 655 F.3d 1352, 1360 (Fed. Cir. 2011). “This is so because inventions in most, if not all, instances rely upon building blocks long since uncovered, and claimed discoveries almost of necessity will be combinations of what, in some sense, is already known.” *KSR*, 550 U.S. at 418–419.

On the other hand, an obviousness analysis “need not seek out precise teachings directed to the specific subject matter of the challenged claim, for a court can take account of the inferences and creative steps that a person of ordinary skill in the art would employ.” *KSR*, 550 U.S. at 418; *accord In re Translogic Tech., Inc.*, 504 F.3d 1249, 1259 (Fed. Cir. 2007). However, a petitioner cannot satisfy its burden of proving obviousness by employing “mere conclusory statements.” *In re Magnum Oil Tools Int’l, Ltd.*, 829 F.3d 1364, 1380 (Fed. Cir. 2016). Instead, Petitioner must articulate a reason why a person of ordinary skill in the art would have combined or modified the prior art references. *In re NuVasive, Inc.*, 842 F.3d 1376, 1382 (Fed. Cir. 2016); *see also Metalcraft of Mayville, Inc. v. The Toro Co.*, 848 F.3d 1358,

⁸ The parties have not asserted or otherwise directed our attention to any objective evidence of nonobviousness.

1366 (Fed. Cir. 2017) (“In determining whether there would have been a motivation to combine prior art references to arrive at the claimed invention, it is insufficient to simply conclude the combination would have been obvious without identifying any reason why a person of skill in the art would have made the combination.”); *Belden Inc. v. Berk-Tek LLC*, 805 F.3d 1064, 1073 (Fed. Cir. 2015) (“[O]bviousness concerns whether a skilled artisan not only *could have made* but *would have been motivated to make* the combinations or modifications of prior art to arrive at the claimed invention.”) (citing *InTouch Techs., Inc. v. VGO Commc’ns, Inc.*, 751 F.3d 1327, 1352 (Fed. Cir. 2014)).

We analyze the challenges presented in the Petition in accordance with the above-stated principles.

B. Level of Ordinary Skill in the Art

We review the grounds of unpatentability in view of the understanding of a person of ordinary skill in the art at the time of invention. *Graham*, 383 U.S. at 17.

In our Institution Decision, we adopted Patent Owner’s proposal that “a person of ordinary skill in the art of inkjet transfer systems would have at least a Bachelor’s degree in Chemistry, Chemical Engineering, or Material Science with at least one year of experience in coating technologies or at least five years of work experience in the field of coating technologies.” Inst. Dec. 11.

Petitioner does not address the definition of a person of ordinary skill in the art in the Petition. In its Reply, Petitioner directs us to the Scott Declaration, wherein Dr. Scott testifies that a person of ordinary skill in the art would have had “at least a Bachelor’s degree in mechanical engineering, chemical engineering, materials science and engineering, or a similar degree,

and at least three years of practical experience in the design, prototyping, and/or manufacturing of coatings, or a related field.” Ex. 1001 ¶ 33; Reply 2. Petitioner contends that the parties’ positions are not materially different, but requests that we adopt Dr. Scott’s opinion on the level of skill in the art. Reply 2. Petitioner also notes that “[n]either party asserts a different result in this IPR based on the level of skill.” Reply 2.

We agree that the parties’ positions are not materially different. In view of this, and Petitioner’s acknowledgment that “[n]either party asserts a different result in this IPR based on the level of skill,” we see no reason to deviate from the definition we adopted in our Institution Decision, which we determined was consistent with the level of skill in the art at the time of the invention as reflected by the prior art of record. *See Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001); Inst. Dec. 11. Accordingly, we maintain our determination that “a person of ordinary skill in the art of inkjet transfer systems would have at least a Bachelor’s degree in Chemistry, Chemical Engineering, or Material Science with at least one year of experience in coating technologies or at least five years of work experience in the field of coating technologies.” Inst. Dec. 11.

C. *Claim Construction*

In an *inter partes* review, we construe claim terms according to the standard set forth in *Phillips v. AWH Corp.*, 415 F.3d 1303, 1312–17 (Fed. Cir. 2005) (en banc). 37 C.F.R. § 42.100(b). Under that standard, we construe claims “in accordance with the ordinary and customary meaning of such claim as understood by one of ordinary skill in the art and the prosecution history pertaining to the patent.” 37 C.F.R. § 42.100(b). Furthermore, we expressly construe the claims only to the extent necessary to resolve the unpatentability issues before us. *See Nidec Motor Corp. v.*

Zhongshan Broad Ocean Motor Co. Ltd., 868 F.3d 1013, 1017 (Fed. Cir. 2017) (“[W]e need only construe terms ‘that are in controversy, and only to the extent necessary to resolve the controversy.’” (quoting *Vivid Techs., Inc. v. Am. Sci. & Eng’g, Inc.*, 200 F.3d 795, 803 (Fed. Cir. 1999))). For purposes of this decision, only the term “white layer” merits discussion. *See Nidec*, 868 F.3d at 1017.

In the Institution Decision, we determined that each of the claims in the ’042 patent requires a “white layer” that melts and mixes with another layer or layers during application. Inst. Dec. 13. Our construction was based on the parties’ agreement that the claims of the ’042 patent require a white layer that melts and mixes with another layer, and on the claim construction of “white layer” that the district court in the Arkwright Lawsuit adopted. Ex. 1031, 17 (Arkwright Lawsuit Markman Order). In the Institution Decision, we rejected Patent Owner’s attempt to modify the interpretation adopted in the Arkwright Lawsuit to include “a polymer that softens or melts and mixes to some degree with another layer.” Inst. Dec. 12–13 (Patent Owner’s modifications indicated by underlining).

In its Response, Patent Owner maintains its position that the proper construction of white layer should include its proposed modifications to the interpretation adopted in the Arkwright Lawsuit. PO Resp. 16–17.

On February 9, 2021, after Patent Owner filed its Response, the district court in the Delaware Lawsuit issued a Markman Order construing all of the claims to include a “white layer,” finding that the terms melt and mix have their plain and ordinary meaning, and determining that the plain and ordinary meaning of melt requires actual melting, not just softening. Ex. 1045, 6–8 (noting that “[s]oftening may be a step on the way to melting, but

. . . a [person of ordinary skill in the art] would not understand the two to be equivalent”); Reply 1.

In its Reply, Petitioner requests that we adopt the constructions from the Delaware Litigation. Reply 1. In its Sur-reply, Patent Owner points out that Petitioner has taken the position, consistent with the Delaware Lawsuit Markman Order and our Institution Decision, that the plain and ordinary meaning of melt “requires actual melting, not just ‘softening,’” and Patent Owner advances arguments distinguishing the prior art based on this construction. Sur-reply 1 (citing Reply 1); *see also* Sur-reply 2–7 (discussing the use of “soften” in DeVries). Additionally, during the oral hearing, counsel for Patent Owner confirmed that Patent Owner is no longer asserting its originally proposed construction of “white layer” that includes “a polymer that softens or melts,” in view of the constructions the district court adopted in the Delaware Litigation. Tr. 53:23–54:5 (“We are no longer asserting [our proposed construction] because . . . the Delaware Court made it clear and that’s the construction we’re living with.”).

Accordingly, for purposes of this Final Written Decision, we maintain our determination from the Institution Decision that the claims require a “white layer” that melts and mixes with another layer or layers during application. Our construction is consistent with the construction adopted in the Arkwright Lawsuit and the Delaware Lawsuit.

D. Alleged Obviousness over DeVries and Oez (claims 16–19)

Petitioner contends claims 16–19 are unpatentable as obvious over DeVries and Oez. Pet. 37–45. Petitioner directs us to portions of DeVries and Oez that purportedly disclose all the limitations in the challenged claims. Pet. 37–45. Petitioner also relies on the Scott Declaration and Scott Rebuttal Declaration to support its arguments.

1. DeVries (Ex. 1016)

DeVries “relates to a dry release sublimation transfer particularly suitable for decorating textile substrates, including cotton and cotton-polyester fabrics, and to a method of decorating substrates employing the dry release sublimation transfer, in a simple and efficient manner.”

Ex. 1016, 1:11–16. DeVries explains that sublimation printing involves “the printing of a design on a paper backing sheet by conventional printing techniques employing sublimation inks, and then transferring such design under heat and pressure to the cloth or fabric.” Ex. 1016, 1:19–24. DeVries describes “brilliant colors and clear designs” when transferring sublimation inks under heat and pressure to polyester fabrics or garments, but that traditionally sublimation designs on cotton-polyester combinations “are weak and easily removed by laundering.” Ex. 1016, 1:27–38.

In view of the above, DeVries discloses:

a dry release sublimation transfer which may be simply and efficiently applied to a textile substrate, including cotton fabrics, and cotton-polyester fabrics, in a one-step operation to provide a sublimation design of excellent clarity, the colors of which are brilliant and distinct and remain so even after relatively long periods of time and after being subjected to a substantial number of washings.

Ex. 1016, 2:50–57.

DeVries depicts one embodiment of a dry release sublimation transfer in Figure 2, reproduced below.

FIG. 2

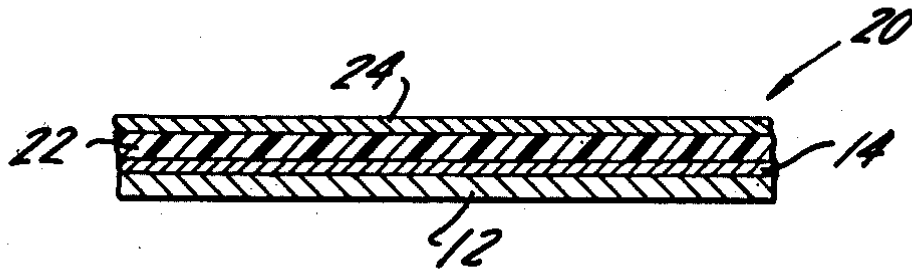


Figure 2 “is a diagrammatic cross-sectional representation of another embodiment of the dry release sublimation transfer of the invention.”

Ex. 1016, 4:39–41. Figure 2 shows dry release sublimation transfer 20 having temporary backing sheet 12, release layer 14, polymeric coating layer 22, and sublimation design layer 24 disposed on polymeric coating layer 22. Ex. 1016, 10:64–68.

DeVries discloses that “[t]he temporary backing sheet 12 may comprise a suitable sheet material which is relatively non-porous and substantially impervious to the release layer 14 when the latter is in softened or molten condition.” Ex. 1016, 4:57–60. DeVries also discloses that polymeric coating layer 22 is formed of “a polymeric material which upon being subjected to heat and pressure as described below will not only soften and penetrate into the interstices between the individual fibers forming the textile substrate to be decorated, but which also preferably includes functional groups which will set or cross-link during transfer.” Ex. 1016, 6:26–33. DeVries indicates that polymeric coating layer 22 may be formed from polyurethanes. Ex. 1016, 7:38–42.

DeVries further explains:

It will also be appreciated that the polymeric coating materials employed herein may include from about 2 to about 25% by weight and preferably from about 5 to about 15% by weight of an opacifying agent, such as titanium dioxide, calcium carbonate, calcium fluoride, kaolin, talcum, and the like, where it is designed to decorate a colored substrate.

Ex. 1016, 11:47–53.

2. *Oez (Ex. 1020)*

Oez “relates to a transfer paper and to a process for transferring photocopies to textiles, such as, in particular, T-shirts.” Ex. 1020, 1:6–8.

Oez describes “a transfer paper which has, as the coating of plastic, at least: a polyurethane which can be cross-linked under the action of heat by a melamine-formaldehyde resin esterified with methanol, mixed with an acrylic acid ester/acrylic acid copolymer, the latter being a thickener.”

Ex. 1020, 1:37–42. Oez states that it is of “essential importance that a white pigment (TiO_2) can be incorporated into the mixture so that the prior white coating of dark (black) textiles hitherto necessary can now be dispensed with and the print can be transferred immediately with a single film.” Ex. 1020, 1:51–55.

Oez discloses that the coating “can be peeled off from the paper as a film and can be laid as a positive on the textile substrate to be ironed on and to bond with the textile fibers.” Ex. 1020, 1:47–49. Oez-US describes ironing the film onto a textile “at elevated temperatures.” Ex. 1020, 3:56–58.

3. *Independent Claim 16*

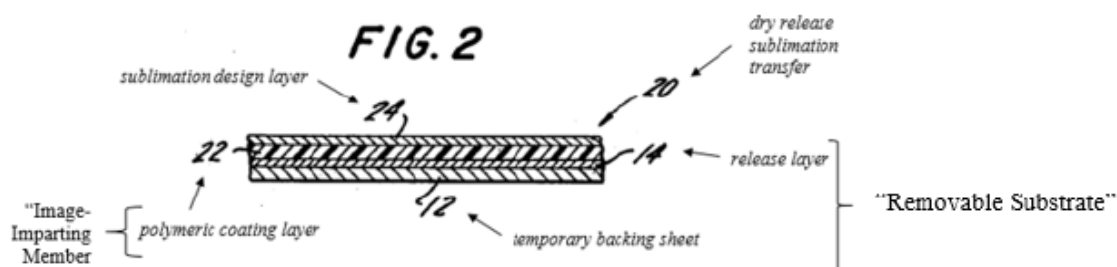
Claim 16 recites a “method of transferring an image to a dark-colored or black base.” Ex. 1009, 12:52–53. Petitioner contends that DeVries teaches the claimed method in view of its disclosure of a “dry release

sublimation transfer for the decoration of textile substrates” that includes “an opacifying agent, such as titanium dioxide . . . where [the dry release sublimation transfer (30)] is designed to decorate a colored substrate.”

Pet. 37 (citing Ex. 1016, 2:50–55, 2:63–64, 11:47–53).

The method of claim 16 requires “obtaining an image transfer article” that comprises “an image-imparting member, including at least one surface configured to receive and carry indicia to be transferred and including at least one portion comprising a pigment concentration or configuration sufficient to provide an opaque, non-transparent background for received indicia, when transferred to the dark-colored or black base,” and a “removable substrate disposed adjacent to the image-imparting member.” Ex. 1009, 12:54–63.

For these limitations, Petitioner contends the heat transfer sheets of DeVries are image transfer articles, and provides an annotated version of DeVries Figure 2, reproduced below.



DeVries Figure 2 shows a cross-sectional view of heat transfer sheet 20 having polymeric coating layer 22 disposed on temporary backing sheet 12, and sublimation design layer 24 disposed on polymeric coating layer 22. Ex. 1016, 10:64–68. According to Petitioner’s annotations, polymeric coating layer 22 is an image imparting member that is disposed on temporary backing sheet 12 and release layer 14, which comprise a

removable substrate. Pet. 39. Petitioner contends that sublimation design layer 24 comprises an image, and notes that in the embodiment shown in Figure 2, this layer is disposed on polymeric coating layer 22. Pet. 38. Accordingly, Petitioner argues that polymeric layer 22 includes “at least one surface configured to receive and carry indicia to be transferred” as claim 16 requires. Pet. 38. Petitioner also argues that DeVries teaches polymeric coating layer 22 may include an opacifying agent, such as titanium dioxide. Pet. 39 (citing Ex. 1016, 11:47–53).

Petitioner further argues that DeVries’ image imparting member (layer 22) includes a “white layer” having “a polymer that melts and mixes with another layer or layers during application.” Pet. 39–40. According to Petitioner, “DeVries discloses materials within the ‘white layer’ and in adjacent layers that are of the same type and, therefore, would have the same or similar thermal properties, such as melt and glass transition temperature ranges, as the materials disclosed in the ‘042 Patent for corresponding layers.” Pet. 39 (citing Ex. 1001 ¶¶ 169–175). Specifically, Petitioner contends DeVries discloses the use of polyethylene and/or polyurethane in the image-imparting layer (polymeric layer 22) and an adjacent layer (release layer 14). Pet. 40 (citing Ex. 1001 ¶ 213); Reply 11–13. Petitioner contends that the ’042 patent similarly discloses the use of urethanes, polyurethanes, or polyethylene in its release layers, and polyurethane or polyethylene in adjacent image-receiving layers. Pet. 40 (citing Ex. 1001 ¶ 174); Reply 11–13 (citing Ex. 1009, col. 3:46–48; 4:5–7; 6:12–13; 6:33–36; 7:44–46; 9:27; 5:14–17; 5:14–24; 6:56–60). Therefore, according to Petitioner, “[u]nder application of the same levels of heat and pressure, the materials disclosed in DeVries would ‘melt and mix’ to the same degree, if

any, as those disclosed in the '042 Patent.” Pet. 40 (citing Ex. 1001 ¶¶ 169–75).

Petitioner also contends that Dr. Ellison’s own declaration testimony confirms that DeVries’ polymeric layer 22 and release layer 14 mix. Reply 13. Specifically, Petitioner asserts that “Dr. Ellison acknowledge[s] that melted polymers in adjacent layers will necessarily ‘mix’ under application of pressure” based on his testimony that “[b]ecause the white layer of the '042 patent melts or softens at ironing temperatures, the white layer intermingles with one or more of the polymer layers.” Reply 13 (quoting Ex. 2011 ¶ 48 (emphasis is Petitioner’s)). Petitioner further argues that Ms. Schwendimann testified that she never tested her samples to see if the white layer mixed with an adjacent layer, but instead “she *just knew* they ‘mixed’ because she could see that the layers had ‘melted’ and the resulting image on the fabric was ‘soft’ and had good ‘wash durability.’” Reply 14 (citing Ex. 1042, 100:6–14, 108:19–109:6, 110:1–111:3, 112:8–22, 113:6–114:1). Petitioner notes that DeVries describes its transfer sheet as being soft and having good washability. Reply 14–15 (citing Ex. 1016, 13:6–7, 13:49–52, 13:68–14:2, 14:27–29). In view of the foregoing, Petitioner contends that DeVries discloses an image transfer article as claim 16 requires.

Claim 16 next requires “peeling the removable substrate away from the image imparting member” and “contacting the image-imparting member, after being separated from the removable substrate, to the dark-colored or black base such that the opaque background is closer to the dark-colored or black base than the received indicia.” Ex. 1009, 12:64–13:3.

Petitioner acknowledges that DeVries does not disclose first peeling the temporary substrate away from the polymeric layer followed by contacting the layered structure with the receiving surface of a colored

surface. Pet. 41. Petitioner, however, contends that “Oez teaches an advantageous method that includes peeling a coating (*e.g.*, film) from a paper (for example, a silicone paper) so the film ‘can be laid as a positive on the textile substrate to be ironed on and to bond with the textile fibers.’” Pet. 41 (quoting Ex. 1020, 1:47–50). Petitioner contends that a person of ordinary skill in the art would have used the method Oez teaches to apply the DeVries transfer sheet because Oez’s process is “simpler,” which “allows images to be more easily cut and eliminates difficulties associated with viewing images through a carrier paper.” Pet. 41–42 (citing Ex. 1020, 2:52–3:1).

Lastly, claim 16 requires “applying heat to at least the image-imparting member so that received indicia and the opaque background having the degree of non-transparency are transferred to the dark-colored or black base at substantially the same time.” Ex. 1009, 13:4–8. Petitioner argues that DeVries discloses applying adequate heat (200 to 450° F) and pressure (2 to 50 psig) to the temporary backing to transfer the image. Pet. 43 (citing Ex. 1016, 11:64–12:11).

Patent Owner argues that Petitioner fails to demonstrate that DeVries and Oez render any of the challenged claims obvious. PO Resp. 21–35. We address Patent Owner’s arguments in turn below.

a. Whether DeVries discloses the required “image imparting member”

Patent Owner argues that DeVries does not disclose “an image imparting member, including at least one surface configured to receive and carry an indicia to be transferred.” PO Resp. 25–26. Patent Owner agrees that the sublimation design layer in DeVries is “the image to be imparted to the fabric.” PO Resp. 26. Patent Owner, however, contends that polymeric

layer 22 is not a layer that receives an indicia to be transferred, as Petitioner argues, because “the DeVries product is manufactured with **two separate layers**, one of which contains sublimation dyes that create the design.”

Sur-reply 18. Patent Owner argues that the presence of separate layers in DeVries distinguishes it from the '042 patent, which “by contrast, describes a product with a layer upon which indicia is printed.” Sur-reply 18 (citing Ex. 1040, 149:7–10, 152:4–12, 152:21–153:5).

We are persuaded by Petitioner’s argument and evidence that polymeric layer 22 in DeVries includes “at least one surface configured to receive and carry an indicia to be transferred.” It is undisputed that the sublimation design layer in DeVries comprises an image to be imparted onto a fabric. PO Resp. 26; Ex. 1016, 2:56–68. In reference to Figure 2, DeVries teaches that “design layer 24 is disposed on the polymeric coating 22” (Ex. 1016, 10:67–68), and that polymeric coating layer 22 “functions as a base for sublimation design layer 24” (Ex. 10106, 11:34–36). Additionally, Dr. Ellison agreed during his deposition that polymeric coating layer 22 “receives” and “carries” sublimation design layer 24. Ex. 1040, 159:20–160:3.

Patent Owner’s arguments based on polymer layer 22 and sublimation design layer 24 being two separate layers are unavailing considering claim 16 requires nothing more than “at least one surface configured to receive and carry an indicia to be transferred.” Patent Owner expressly acknowledges that sublimation design layer 24 is the image (PO Resp. 25), and does not contest that DeVries Figure 2 shows layer 24 on polymer layer 22 (PO Resp. 25–26; *see generally* Sur-reply). Furthermore, DeVries discloses the use of “any conventional printing techniques” to apply sublimation design layer 24 (Ex. 1016, 6:6–9), which undermines Patent Owner and Dr. Ellison’s

attempts to distinguish the '042 patent from DeVries because the '042 patent “describes a product with a layer upon which indicia is printed.” Sur-reply 18; Ex. 1040, 149:7–10; 152:4–12.

For all of the foregoing reasons, we determine that the preponderance of the evidence supports Petitioner’s position that DeVries teaches or suggests “an image imparting member, including at least one surface configured to receive and carry an indicia to be transferred.”

b. Whether DeVries discloses an “opaque . . . background”

Patent Owner next argues that Petitioner has not demonstrated DeVries discloses an image-imparting member “including at least one portion comprising a pigment concentration or configuration sufficient to provide an opaque, non-transparent background for received indicia” as claim 16 requires. PO Resp. 26.

The relevant portion of DeVries, and the portion Petitioner relies upon for this limitation, states that

[i]t will also be appreciated that the polymeric coating materials employed herein may include from about 2 to about 25% by weight and preferably from about 5 to about 15% by weight of an opacifying agent, such as titanium dioxide, calcium carbonate, calcium fluoride, kaolin, talcum, and the like, where *it* is designed to decorate a colored substrate.

Ex. 1016, 11:47–53 (emphasis added). Patent Owner contends Petitioner and Dr. Scott misrepresent this passage by replacing the word “it” with “image transfer sheet,” which DeVries does not disclose. PO Resp. 27 (citing Pet. 39). According to Patent Owner, however, “the ‘it’ that is referenced in the final portion of the last sentence, must refer to either the ‘polymeric coating materials,’ or ‘an opacifying agent,’ in either case it **does not refer to the layer itself.**” PO Resp. 26–27. Patent Owner takes the

position that “[c]orrectly read, the ‘it’ in this passage of DeVries refers to the opacifying agent” because “there is no white sublimation dye.” PO

Resp. 27. As a result, Patent Owner asserts “a person of ordinary skill in the art would have read this disclosure as describing a way to use white pigment to create a design—an image—on a dark substrate” to decorate the fabric, not as disclosing “providing an opaque background upon which the received indicia would be visible when transferred to a dark base.” PO Resp. 27–28 (citing Ex. 2011 ¶¶ 129, 180); *see also* Sur-reply 16 (arguing “the passage **explicitly states the purpose of the opacifying agent**, which is to decorate the fabric”). Patent Owner further argues that Petitioner does not provide evidence or argument to support how one of ordinary skill in the art would have understood this passage in DeVries to mean using an opacifying agent to lay down an entire opaque layer. PO Resp. 28; Sur-reply 16 (arguing that Dr. Scott’s opinions are conclusory and find no support in DeVries).

Petitioner contends that the amount of opacifying agent used in DeVries, i.e., from about 2–25%, suggests to a person of ordinary skill in the art that the opacifying agent is “dispersed *throughout* layer 22 to provide an opaque background.” Reply 4 (citing Ex. 1039 ¶¶ 7–9). Petitioner argues that nothing in DeVries describes the opacifying agent as dispersed selectively “to ‘create a design’ instead of an opaque background.”

Reply 4–5. Rather, Petitioner explains that DeVries “consistently describes ‘decoration’ of a fabric by the design layer 24 or the complete dry sublimation transfer 20, but never the polymeric layer 22.” Reply 5 (citing Ex. 1016, 11:64–66, 12:21–22). Petitioner further contends that DeVries’ “deliberate use of the phrase ‘opacifying agent’ – as opposed to ‘white pigment’ or the like – states clearly that the purpose of this component is to provide *opacity*, regardless of its color.” Reply 5. Petitioner also notes that

the amount of opacifying agent in DeVries “substantially overlaps” with the amount of opaque pigment in the ’042 patent. Reply 5 (citing Ex. 1009, 4:10–13 (about 20%), 4:30–33 (10–40% by weight), 10:52–55 (5, 10, 30 and 40%)).

On this record, we are persuaded that DeVries describes an image-imparting member “including at least one portion comprising a pigment concentration or configuration sufficient to provide an opaque, non-transparent background for received indicia” as claim 16 requires. Ex. 1009, 12:55–61. Notably, claim 16 requires only that the pigment concentration in the image-imparting member is *sufficient to provide* an opaque background. It is undisputed that DeVries specifies the polymer layer may include “an opacifying agent, such as titanium dioxide, calcium carbonate, calcium fluoride, kaolin, talcum, and the like.” Ex. 1016, 11:50–52. It is also undisputed that DeVries teaches the use of 2 to 25% by weight of an opacifying agent, an amount that overlaps with the amount utilized in the ’042 patent to provide an opaque background, i.e., about 5 to 40% by weight. Ex. 1016, 11:47–50; Ex. 1009, 4:10–13, 4:30–33, 10:52–55.

Thus, the evidence of record supports Petitioner’s assertion that DeVries, which discloses using an amount of opacifying agent that overlaps with the amount of opaque pigment in the ’042 patent, at least suggests the use of an opacifying agent in its polymer layer that is *sufficient to provide* an opaque, non-transparent background for received indicia. Furthermore, even if the “it” in column eleven of DeVries refers to the opacifying agent and not the polymeric coating, as Patent Owner asserts (PO Resp. 26–27), the opacifying agent remains part of the polymeric coating—not the indicia layer—and contains an amount *sufficient to provide* an opaque background.

As to Patent Owner's arguments that are based on the assertion that "there is no white sublimation dye," we note, as Petitioner accurately points out, that DeVries uses the term "opacifying agent" and not "white sublimation dye." In view of this, we are persuaded by Petitioner's argument that a person of ordinary skill in the art would have understood DeVries to teach that "the purpose of [the opacifying agent] is to provide *opacity*, regardless of its color." Reply 5.

For all of the foregoing reasons, we determine that the preponderance of the evidence supports Petitioner's position that DeVries teaches or suggests a polymeric coating comprising a pigment concentration or configuration sufficient to provide an opaque, non-transparent background for received indicia.

c. Whether DeVries discloses a white layer that melts and mixes with another layer of the transfer sheet

Patent Owner also argues that Petitioner has not demonstrated DeVries discloses a "white layer" that melts and mixes with another layer of the transfer sheet because DeVries requires that its polymer layer includes cross-linking polyurethanes, which "behave entirely opposite from polymers in the white layer of the '042 patent that does melt and mix with adjacent layers." PO Resp. 29. In particular, Patent Owner contends cross-linking polyurethanes will not melt and mix with other layers because cross-linking creates a stiff layer. PO Resp. 29–30.

Patent Owner argues that although DeVries describes its polymeric layer as preferably including functional groups that cross-link upon heating, "crosslinking is critical because otherwise the transferred design would not adhere to the fabric." PO Resp. 30–31 (citing Ex. 2011 ¶ 116); Sur-reply 7. Patent Owner also asserts that "[m]ultiple other passages in DeVries confirm

that crosslinking is a critical feature of the polymer coating layer. PO Resp. 31–32 (citing Ex. 1016, 4:14–33, 6:50–53). Patent Owner explains that a person of ordinary skill in the art would have understood from these passages that DeVries requires cross-linking. PO Resp. 32 (citing Ex. 2011 ¶ 121).

Petitioner argues that “DeVries explicitly states multiple times that the polymeric layer 22 merely ‘preferably includes functional groups which will set or cross-link during transfer” and, therefore, DeVries does not require cross-linking. Reply 7 (citing Ex. 1016, 6:31–32, 3:26–30). Petitioner explains that DeVries describes the cross-linking as one improvement over conventional non-cross-linking polymer transfer sheets because cross-linking polymers improve stability of the transfer when applied to cotton fabrics. Reply 7–8 (citing Ex. 1016. 1:19–43, 2:25–30, 2:49–3:16; Ex. 1039 ¶ 10). Petitioner reasons that although a cross-linking polymer may be *preferred* to improve performance on cotton, it is not required, particularly when used on polyester. Reply 8.

With regard to melting specifically, Petitioner further contends that even when cross-linking polymers are utilized, DeVries describes that its polymeric layer must soften and penetrate into the fabric before the polymer is cross-linked. Reply 8–9 (citing Ex. 1016, 3:8–14, 3:24–26, 4:24–30, 6:25–32). Petitioner states that DeVries warns that problems occur when cross-linking occurs too rapidly and before the polymer can soften and penetrate the substrate. Reply 9 (citing Ex. 1016, 7:9–23, 14:56–60). Petitioner further cites to Dr. Ellison’s testimony where he agreed that the polymer must melt first for it to “meld” into the fabric. Reply 9 (quoting Ex. 1040, 178:10–179:3).

Patent Owner, in its Sur-reply, argues that “DeVries clearly and unequivocally teaches a polymeric layer that softens—not melts—during the application of the transfer sheet to a fabric substrate.” Sur-reply 2–3 (citing Ex. 1016, Abstract, 3:8–14, 3:23–26, 4:14–30, 6:25–32). According to Patent Owner, the polymeric layer “**softens** and then immediately cross-links, or **hardens**, in order to adhere to the transfer sheet to the fabric.” Sur-reply 3 (citing Ex. 1016, 7:9–23). Patent Owner explains that DeVries does not use the word “melt” or teach that its polymeric layer “melts.” Sur-reply 4. Patent Owner argues that DeVries’ disclosure that its polymeric layer softens is insufficient to prove the layer melts in view of Petitioner’s argument, consistent with the Delaware Lawsuit Markman Order and our Institution Decision, that the plain and ordinary meaning of melt requires actual melting, not just softening. Sur-reply 4 (citing Ex. 1045, 8 (stating that “‘softening’ is not the same as ‘melting’”)).

Additionally, Patent Owner states that the Board should reject Dr. Scott’s opinion that a person of ordinary skill in the art “would have clearly understood that DeVries’ polymeric layer 22 would have ‘melted’ upon application of heat, whether the polymeric layer used cross-linking or non-cross-linking polymers,” because his testimony is conclusory. Sur-reply 6–7 (citing Ex. 1039 ¶ 10(f)). Patent Owner also claims that Petitioner’s assertion that Dr. Ellison conceded that DeVries transfer sheet would adhere to fabric without use of cross-linking polymers “is simply wrong.” Sur-reply 9. Instead, according to Patent Owner, Dr. Ellison testified that the transfer sheet *may* adhere to “some degree” but that experimentation would need to be performed to know for certain. Sur-reply 9 (citing Ex. 1040, 186:3–10); *see also* Ex. 1040 183:25–184:13, 185:4–8 (explaining that a transfer sheet would not work effectively without a cross-linker).

As we discussed in our Institution Decision, we are not persuaded that DeVries requires cross-linking. Inst. Dec. 22. In the Summary of the Invention, DeVries describes four separate embodiments, only one of which uses isocyanate functional groups to promote cross-linking. Ex. 1016, 3:17–60. In fact, the entirety of DeVries’ discussion of Figures 2 and 3 excludes any reference to the use of cross-linking polymers despite describing the application of heat and pressure to “embed” the polymeric coating and design layer into the substrate. Ex. 1016, 10:61–12:33. Though Patent Owner contends DeVries describes cross-linking as “critical” (PO Resp. 31–32 (citing Ex. 1016, 4:14–33, 6:50–53); Sur-reply 7), we disagree. DeVries uses “critical” only once to describe certain characteristics of polymeric coating layer 18—namely, that the polymer will soften and penetrate into the fibers of the substrate when heated. Ex. 1016, 6:26–32. For example, DeVries states:

The polymeric coating layer 18 of this invention has certain critical characteristics. Specifically, it is formed of a polymeric material which upon being subjected to heat and pressure as described below will not only soften and penetrate into the interstices between the individual fibers forming the textile substrate to be decorated, but which also preferably includes functional groups which will set or cross-link during transfer.

Ex. 1016, 6:26–32. This portion of DeVries expressly describes the polymer as *preferably* including functional groups to facilitate cross-linking.

Ex. 1016, 6:26–32. Further suggesting that the cross-linking function is *preferable*, DeVries continues to explain that it is “highly preferred that these functional groups be blocked.” Ex. 1016, 6:33–35. Therefore, although DeVries suggests cross-linking may be advantageous, in particular for textiles made from cotton or cotton-polyester (Ex. 1016, 1:19–43, 2:25–61), DeVries does not mandate cross-linking.

Furthermore, even where cross-linking occurs in DeVries, the polymer does not always “**soften**[] and then *immediately* crosslink[], or **harden**[]” as Patent Owner suggests. Sur-reply 3 (italics added). Instead, DeVries suggests that rapid cross-linking should be avoided. In particular, DeVries explains that:

[p]referably, the polymeric coating layer *will not immediately become unblocked*, but will do so in a manner such that cross-linking does not occur with the temporary backing sheet, particularly when cellulosic materials such as paper are employed for these purposes.

Ex. 1016, 6:35–40 (emphasis added). Rather, cross-linking should be delayed to allow the polymer to soften and penetrate into the fabric and for the backing sheet to be removed. Ex. 1016, 7:9–15 (describing problems where the “polymer material begins cross-linking too rapidly, that is before the polymer layer softens and penetrates into the textile substrate.”); Ex. 1039 ¶ 10(e); *see also* Ex. 1040, 177:25–178:17 (Dr. Ellison’s testimony that cross-linking does not preclude melting and that “cross-linking should not occur before it imbibes [sic] into the fabric.”).

We further agree with Petitioner that a person of ordinary skill in the art would have understood DeVries’ polymer layer would have melted when heat and pressure are applied regardless of whether a cross-linking or non-cross-linking polymer was employed. *See* Reply 9–10; Ex. 1039 ¶¶ 10(e)–(f). DeVries states that when heat and pressure are applied, its polymer coating “softens *and penetrates*” into the textile substrate and into the interstices between the individual fibers forming the substrate. Ex. 1016, 3:8–11 (emphasis added), 6:28–30. Indeed, each instance where DeVries describes its polymer as softening, DeVries also describes its polymer as penetrating into the textile. Ex. 1016, Abstract, 3:8–13, 3:25, 4:23–26,

6:24–30, 7:12–16, claims 1, 14, and 17. As a result, Dr. Scott testifies that a person of ordinary skill in the art would have understood the polymers of DeVries to melt with or without cross-linking. Ex. 1039 ¶¶ 10(e)–(f). In fact, record evidence suggests that polymeric layer 22 in DeVries must melt, i.e., soften and penetrate into the fibers of the textile fabric, to function properly. Ex. 1039 ¶ 10(e); Ex. 1016, 3:23–26, 6:25–33.

The description in DeVries that the polymer softens and penetrates undermines Patent Owner’s argument that DeVries’ disclosure is insufficient to prove melting because it only uses the word softens, and, therefore, does not teach that the polymer “melts,” as the proper construction of the term “white layer” requires. Contrary to Patent Owner’s argument, however, the language in DeVries that the polymer softens and penetrates suggests that the polymers do more than “only soften[].” Sur-reply 4. Patent Owner’s own declarant, Dr. Ellison, agreed that for the polymeric layer in DeVries to “go into the fabric,” i.e., penetrate into the substrate, it must first melt:

Q. Correct. And for it to go into the fabric, for it to meld into the fabric, doesn’t the polymeric layer 22 have to melt first?

A. Yes.

Q. So polymeric -- in application of the image to the garment, the polymeric -- the heat is applied, the polymeric layer melts, moves into the fabric, and then if cross-link is used, cross-linking occurred at that point after the melting process, correct?

A. Yes.

Ex. 1040, 178:18–179:3; *see* Ex. 1040, 186:3–10. Patent Owner’s only response to this testimony⁹ is that expert testimony cannot supply a

⁹ During the oral hearing, counsel for Patent Owner argued that at the time he provided this testimony, Dr. Ellison was using a definition of melt that included softening. Tr. 48:20–23. Dr. Ellison, however, testified that “in

limitation that is missing from a reference. Sur-reply 6–7. Here, however, Dr. Ellison’s testimony is not supplying a limitation missing from the reference, but rather providing evidence as to what a person of ordinary skill in the art would have understood from the disclosures in DeVries.

Therefore, we find the preponderance of the evidence supports Petitioner’s contention that DeVries teaches a polymer layer, i.e., a white layer, that melts as the claims of the ’042 patent require.

We next turn to Patent Owner’s argument that even if the polymer layer in DeVries melts, there is no disclosure in DeVries that it would mix with another layer.¹⁰ In addition to the absence of express disclosure of mixing, Patent Owner contends that a person of ordinary skill in the art would have understood DeVries does not disclose that its layers mix because

mixing of a reacting system with a nonreactive layer (or a layer that reacts by a different reaction mechanism) could detrimentally affect the crosslinking itself, because mixing can dilute and distribute or disperse the reactive functional groups required for the crosslinking reaction. [Ex. 2011 ¶ 181.] If the layers were to mix, it could prevent the product from performing reactions efficiently and in reasonable time frames. *Id.*

PO Resp. 32; *see also* Sur-reply 13 (arguing that the inclusion of cross-linking agents directly affects the layers’ ability to mix (citing Ex. 2011 ¶ 133 which contains similar language to paragraph 181)).

determining whether the prior art references had a white layer that mixes and melts,” his definition of melt did not include softening. Ex. 1041, 369:19–370:3; Tr. 91:24–92:15.

¹⁰ Petitioner argues that polymeric layer 22 mixes with one of release layer 14 or design layer 24 when heat is applied during transfer. Reply 10–11. Because we determine that the polymeric layer and the release layer mix and melt, we do not reach Petitioner’s separate argument that the polymer layer and the indicia layer also mix and melt.

Patent Owner also argues that the materials used in the relevant layers in DeVries are not the same types of materials used in the allegedly corresponding layers of the '042 patent, and, therefore, they will not behave the same way. Sur-reply 12–13. Specifically, Patent Owner asserts that DeVries incorporates into polymeric layer 22 polyurethane chains with blocked isocyanate functional groups that cross-link, which, according to Dr. Ellison, are unique and very different from the polyurethanes used in the '042 patent. Sur-reply 13 (citing Ex. 1040, 162:17–20, 163:7–9). Patent Owner contends this difference undermines Petitioner's arguments regarding melting and mixing, which are based on DeVries and the '042 patent using the same materials. Sur-reply 12–13.

We recognize that DeVries does not expressly state that polymeric layer 22 and release layer 14 mix. Nevertheless, there is sufficient evidence in the record supporting Petitioner's assertion that a person of ordinary skill in the art would have understood the adjacent layers in DeVries will mix because they melt. This evidence includes Dr. Ellison's testimony that "[b]ecause the white layer of the '042 patent melts or softens at ironing temperatures, the white layer intermingles with one or more of the polymer layers" and Ms. Schwendimann's testimony that she did not test her samples to determine if mixing occurred, but instead relied on the fact that they melted, as well as the resulting image on the fabric being soft and having good washability. Ex. 2011 ¶ 48; Ex. 1042, 100:6–14, 108:19–109:6, 110:1–111:3, 112:8–22, 113:6–114:1.

Patent Owner does not directly address or dispute this testimony or Petitioner's arguments based on it. Instead, Patent Owner simply argues that Petitioner's attempts to show mixing based on the layers in DeVries melting fails because the polymeric layer only softens, not melts. Sur-reply 12–15.

For the reasons discussed above, however, there is sufficient evidence demonstrating that polymeric layer 22 and release layer 14 melt. This evidence includes express language in DeVries itself (Ex. 1016, 4:57–61 (“the release layer 14 . . . is in softened or molten condition”); 6:25–31 (“The polymeric coating layer . . . [will] soften and penetrate into the interstices”)) and the testimony from Dr. Ellison (Ex. 1040, 178:10–179:3) and Dr. Scott (Ex. 1001 ¶¶ 170–174; Ex. 1039 ¶ 10). It is also undisputed that DeVries describes its products as being soft and having good washability. Ex. 1016, 13:6–7, 13:49–52, 13:68–14:2, 14:27–29. According to Ms. Schwendimann, these properties are suggestive of melting and mixing. *E.g.*, Ex. 1042, 110:1–111:3.

All of the foregoing evidence supports Petitioner’s contention that DeVries discloses materials within its polymeric layer and adjacent layers that, “when applied under similar conditions [to those in the ’042 patent], whatever ‘melting and mixing’ that may occur in the ‘042 Patent . . . will also occur in DeVries.” Pet. 39–40.

Patent Owner’s argument that DeVries discloses unique polyurethanes that are distinct is unavailing. First, Petitioner argues only that both DeVries and the ’042 patent disclose “the same *types of materials*,” not the exact same materials, as Patent Owner appears to assert. Sur-reply 13. It is undisputed that both DeVries and the ’042 patent disclose using types of polyurethanes. Second, even assuming Patent Owner is correct that DeVries requires the use of cross-linking polymers in general, and more specifically the use of polyurethane chains with blocked isocyanate functional groups that cross-link, the evidence of record shows these polymers still melt before cross-linking. Ex. 1016, 4:57–61; 6:25–31; Ex. 1040, 178:10–179:3; Ex. 1001 ¶¶ 170–174; Ex. 1039 ¶ 10. This is particularly important

considering that Dr. Ellison, when discussing the “blocked polyurethane” in polymer layer 22 of DeVries, testified that (1) “[t]he *blocked isocyanate part* is unique and very different from the polyurethanes used in Schwendimann” and (2) agreed that the difference has to do with cross-linking, and stated that “[d]uring heating, the blocking agents come off . . . and then participate in a cross-linking.” Ex. 1040, 162:11–163:14 (emphasis added). Thus, the evidence of record demonstrates that the main difference between the polyurethanes disclosed in the ’042 patent and in DeVries relates to cross-linking, not melting.

Patent Owner’s additional argument that that the inclusion of specific cross-linking agents in DeVries “directly affects the layers’ ability to mix” is equally unavailing. Sur-reply 13 (citing Ex. 2011 ¶ 133); PO Resp. 32. Patent Owner’s arguments appear to be based on Dr. Ellison’s statements in his declaration regarding problems that “could” result from the “mixing of a reacting system (the polymer layer with crosslinking agents) with a nonreactive layer (or a layer that reacts by a different reaction mechanism).” Ex. 2011 ¶¶ 133, 181; PO Resp. 32. Even if we were to give Dr. Ellison the full credit of his statements, they, at best, suggest that such mixing may *potentially* cause problems, not that they “directly affect[] the layers’ ability to mix.” Sur-reply 13. The possibility that mixing a polymer layer having cross-linking agents with a nonreactive layer (or a layer that reacts by a different mechanism) “*could* detrimentally affect the crosslinking itself,” or that it “*could* prevent the product from performing reactions efficiently and in reasonable time frames” (Ex. 2011 ¶¶ 133, 181 (emphasis added)), does not outweigh all of the evidence discussed above demonstrating a person of ordinary skill in the art would have understood DeVries discloses or suggests adjacent layers that mix after melting.

For all of the foregoing reasons, we find the preponderance of the evidence supports Petitioner's contention that DeVries teaches or suggests that polymer layer 22 melts and mixes with release layer 14.

d. Whether a person of ordinary skill in the art would have had reason to combine the teachings of Oez and DeVries

Patent Owner also argues that a person of ordinary skill in the art would not have been motivated to incorporate the peel first method from Oez into DeVries, and would not have had a reasonable expectation of success in making such a modification. PO Resp. 33–35.

Patent Owner first argues “a person of skill in the art would not naturally look to Oez to modify DeVries, because they are structurally and chemically different invention[s].” PO Resp. 34. In particular, Patent Owner contends DeVries is a multi-layer transfer sheet that depends on unblocked isocyanate reactive groups, whereas Oez has only a single layer of plastic coating and uses melamine formaldehyde resins. PO Resp. 34 (citing Ex. 2011 ¶¶ 182–183).

Patent Owner also argues that modifying DeVries to allow a peel first method would “require a complete re-engineering of DeVries.” PO Resp. 34. Relying on testimony from Dr. Ellison, Patent Owner asserts that “[e]ach layer of a transfer sheet is engineered to fill a specific role or function,” and “[r]eversing the order of the layers, particularly in the Figure 2 embodiment, would change the role or function of each layer.” PO Resp. 34 (citing Ex. 2011 ¶ 178). Additionally, Patent Owner contends that Petitioner's proposed modification would mean the sublimation design layer in DeVries is placed in direct contact with the heat source, and that “[t]he result of this change would be unpredictable and could likely result in the design being damaged and prevent the vaporized ink from entering

polymeric coating layer.” PO Resp. 34–35 (citing Ex. 2011 ¶ 178). Noting that Oez does not provide guidance on how to modify DeVries to address this problem, Patent Owner contends Petitioner’s only motivation for the proposed modification is hindsight. PO Resp. 35; Sur-reply 19–20.

We disagree that Petitioner’s only motivation for the proposed modification is based on hindsight. In the Petition, Petitioner directs us to statements in Oez discussing the benefits of a peel first method. Pet. 41–42. Specifically, Oez describes its invention as a “simpler procedure,” indicates that its procedure allows an image to be cut out “without effort,” and states generally that “an essential difficulty of all of the printing processes known hitherto is dispensed with.” Ex. 1020, 2:65–3:9. Patent Owner does not directly address these statements in Oez, or Petitioner’s arguments based on them. *See* PO Resp. 33–35; Sur-reply 19. Thus, contrary to Patent Owner’s arguments, Petitioner has directed us to evidence of advantages disclosed in Oez itself as support for the proposed modification. As a result, we find Petitioner has provided a reasonable explanation, with evidentiary support, for why a person of ordinary skill in the art would have had reason to modify the steps in DeVries based on Oez.

We also disagree with Patent Owner’s argument based on alleged structural and chemical differences between Oez and DeVries. PO Resp. 34. Contrary to Patent Owner’s assertion otherwise, Oez discloses two different multi-layer embodiments. Reply 18; Ex. 1020, 2:41–45, 3:15–17. Additionally, as Petitioner correctly notes, both Oez and DeVries disclose the use of titanium dioxide when transferring an image to a colored substrate. Pet. 42; Ex. 1016, 11:47–53; Ex. 1020, 1:51–55. These chemical and structural similarities between Oez and DeVries undermine Patent

Owner's argument that a person of ordinary skill in the art would not have looked to Oez to modify DeVries.

With regard to the alleged need to completely re-engineer DeVries to implement the peel first method of Oez, the record contains competing testimony from Dr. Ellison (Ex. 2001 ¶ 178) and Dr. Scott (Ex. 1039 ¶ 15). Dr. Ellison does not cite to anything to support his testimony, and, as Petitioner points out, was not able to provide any further details regarding any necessary re-engineering during his deposition. Reply 18; Ex. 1040, 189:8–15. On the other hand, in support of his testimony that re-engineering of DeVries would not be necessary, Dr. Scott refers to “Oez’s teaching that the peel ‘first method’ described therein eliminates ‘an essential difficulty of all the printing processes known hitherto,’ (*i.e.*, ‘the print can be applied directly to the textile’).” Ex. 1039 ¶ 15 (quoting Ex. 1020, 3:7–9).

Additionally, Dr. Ellison’s testimony that that the proposed modification would result in applying the heat source directly to the ink with unpredictable results, and that Oez does not provide any guidance on how to modify DeVries to address this potential problem, ignores the express disclosure in Oez addressing this by using the peeled backing as a protective covering for the image during the heating step. Reply 19. Specifically, Oez states “[i]n order to protect the film during ironing, the paper on which the print was first [sic] can be laid in a simple manner on the side carrying the toner, *i.e.*, on the outside, or a corresponding larger paper can be chosen for the cutting.” Ex. 1020, 3:10–13. We thus find the evidence of record supports Petitioner’s argument that a person of ordinary skill in the art would have known how to use the method taught by Oez to apply the transfer sheet taught by DeVries. Pet. 42; Reply 16–19; *KSR*, 550 U.S. at

421 (“A person of ordinary skill in the art is also a person of ordinary creativity, not an automaton.”).

e. Conclusion

After considering the parties’ arguments and the evidence of record, we determine Petitioner has established, by a preponderance of the evidence, that claim 16 is unpatentable as obvious based on DeVries and Oez.

Petitioner directs us to sufficient evidence demonstrating that DeVries and Oez teach or suggest all of the limitations in claim 16, and that a person of ordinary skill in the art would have had reason to modify DeVries in view of Oez to successfully arrive at the claimed invention.

4. Claims 17–19

Claims 17–19 all depend from claim 16. Petitioner presents evidence that Oez and DeVries disclose or suggest the added limitations in these claims and argues that a person of ordinary skill in the art would have had reason to combine the disclosures in DeVries and Oez with a reasonable expectation of successfully achieving the claimed invention. Pet. 44–45.

Patent Owner does not separately address dependent claims 17–19 and, therefore, has forfeited any arguments based on these uncontested claims. *See generally* PO Resp. 21–35; *cf. NuVasive*, 842 F.3d at 1381 (explaining that a patent owner waives an argument presented in the preliminary response if it fails to renew that argument in the patent owner response during the instituted trial). Instead, Patent Owner relies on the same arguments addressed above in our discussion of claim 16.

We have reviewed the information Petitioner provides, including the relevant portions of the Scott Declaration, and agree with Petitioner’s undisputed arguments and evidence that DeVries and Oez teach or suggest all of the limitations in claims 17–19. Additionally, for the same reasons

discussed above, we are persuaded by Petitioner’s arguments and evidence demonstrating that a person of ordinary skill in the art would have had reason to combine the disclosures set forth in DeVries and Oez, and that a person of ordinary skill in the art would have had a reasonable expectation of success in achieving the claimed invention. We, therefore, find Petitioner has established, by a preponderance of the evidence, that claims 17–19 are unpatentable as obvious in view of the combined teachings of DeVries and Oez.

E. Alleged Anticipation by Williams (claims 16 and 18–22)

Petitioner contends Williams anticipates claims 16 and 18–22.
Pet. 63–71.

1. Williams (Ex. 1024)

Williams is directed to “a heat-setting label sheet that is a polymeric transfer sheet that can be marked and transferred by the consumer.” Ex. 1024, code (57). Williams teaches that its transfer sheet may contain a support, a pressure-sensitive adhesive layer, an adhesion layer, one or more opaque layers, and one or more image receiving layers. Ex. 1024, 3:11–19. Williams explains that “a white pigment may be used to exhibit opacity capabilities,” and indicates that the opaque layers “render the image visible against a dark receptor, and otherwise improves the appearance and readability of an image.” Ex. 1024, 20:2–6, 20:30–32; *see also* Ex. 1024, 7:13–14 (indicating that opaque backgrounds are used “to aid in ink visibility on various colored receptors”).

Williams also teaches a process for transferring an image, which comprises imaging a heat-setting label sheet, peeling the adhesive layer from the base sheet, placing the peeled portion of the label sheet onto the receptor element, and heating the layers. Ex. 1024, 2:36–46.

2. *Analysis*

Petitioner notes that Williams claims priority to U.S. Provisional Application No. 60/148,562 (Ex. 1025, the “Williams Provisional Application”), filed on August 13, 1999. Pet. 13–14. Petitioner contends that the Williams Provisional Application supports at least one of the claims in Williams and, therefore, is prior art to the ’042 patent as of its filing date on August 13, 1999. Pet. 13–14. Petitioner directs us to portions of Williams and the Williams Provisional Application that purportedly disclose all the limitations in the challenged claims. Pet. 63–71. Petitioner also relies on the declaration testimony of Dr. Scott to support its arguments.

We agree with Petitioner’s arguments and evidence that Williams is entitled to claim priority to the August 13, 1999 filing date of the Williams Provisional Application, and that Williams (and the Williams Provisional Application) discloses the limitations in claims 16 and 18–22, which Patent Owner does not dispute. PO Resp. 36 (stating “Williams has a priority date of August 13, 1999”); Pet. 13–14, 63–71. Instead, Patent Owner argues that Williams cannot anticipate the challenged claims because it is not prior art to the ’042 patent. PO Resp. 35. According to Patent Owner, the inventors of the ’042 patent invented the subject matter of the challenged claims before the August 13, 1999, priority date of Williams. PO Resp. 35; Ex. 1024, code (60) (indicating a provisional application filing date of August 13, 1999).

As we explain above, independent claim 16 recites a method for transferring an image to a dark-colored or black base that requires obtaining an image transfer article comprising, *inter alia*, an image-imparting member and a removable substrate. Ex. 1009, 12:52–63. Claim 16 further requires peeling the removable substrate away from the image-imparting member and contacting the image-imparting member to the dark-colored or black base

after being separated from the removable substrate (referred to as the “peel first” method or technique”). Ex. 1009, 12:64–13:3.

In its Response, Patent Owner states that “[c]ontemporary evidence demonstrates unequivocally that the inventors of the ‘042 Patent invented and created *image transfer articles* meeting all of the limitations of the Challenged Claims no later than December 16, 1997.” PO Resp. 36 (emphasis added). This evidence—first submitted by Ms. Schwendimann in the interference proceedings involving the ’042 patent—consists of two “Formula Books” (Ex. 2015 and 2016) described as “lab notebooks kept by the inventors to document their experimentation and inventions” and the 2013 Schwendimann Declaration (Ex. 2003), describing and explaining the information contained in the Formula Books. PO Resp. 36–37.

Patent Owner argues that the Formula Books and 2013 Schwendimann Declaration show the inventors began working on a dark T-shirt transfer product around June 1996, and by July 1999, had made at least 22 samples and applied them to dark T-shirts. PO Resp. 37 (citing Ex. 2003 ¶¶ 7–21). Patent Owner contends these samples included each of the structures (i.e., the image transfer articles) that the challenged claims require. PO Resp. 37–38. Patent Owner states that “during this time, the inventors also performed all of the steps of the Challenged Claims *except the ‘peel-first’ technique.*” PO Resp. 39 (emphasis added).

Patent Owner asserts that Ms. Schwendimann “subsequently used the ‘peel-first’ technique on August 10, 1999,” based on testimony in the January 2021 Schwendimann Declaration (Ex. 2014). PO Resp. 39–40. According to Patent Owner, Ms. Schwendimann “came up with the idea of a peel-first method” during a visit by a customer on August 10, 1999. PO Resp. 40 (citing Ex. 2014 ¶¶ 6, 7). On that date, Ms. Schwendimann

allegedly performed the peel first technique using the dark fabric transfer sheet formulation she had previously invented. PO Resp. 40. Patent Owner contends that this invention date is corroborated by “a contemporaneous Contact Report that NuCoat maintained to document all meetings with customers.” PO Resp. 40 (citing Ex. 2014 ¶ 7; Ex. 2018 (the “Contact Report”)). Patent Owner further contends that Ms. Schwendimann confirmed these facts in a deposition taken on May 20, 2008, in a district court proceeding involving the ’042 patent. PO Resp. 40 (citing Ex. 2014 ¶ 6; Ex. 2017 (the May 2008 deposition transcript)). Patent Owner also argues that “the sworn Declaration of Dr. Scott Williams previously submitted confirms that the Williams reference is not prior art to the ’042 Patent.” PO Resp. 41.

Petitioner argues that Patent Owner and Ms. Schwendimann’s “attempt to swear behind Williams fails because she has not corroborated her testimony, as she must as a matter of law.” Reply 19. Citing the Federal Circuit’s decision in *Apator Miitors ApS v. Kamstrup A/S*, 887 F.3d 1293, 1295 (Fed. Cir. 2018), Petitioner contends that “[i]t is well-established that when a party seeks to prove conception through an inventor’s testimony the party must proffer evidence, “in addition to [the inventor’s] own statements and documents,” corroborating the inventor’s testimony.” Reply 19–20 (also citing *Mahurkar v. C.R. Bard, Inc.*, 79 F.3d 1572, 1577 (Fed. Cir. 1996); *Medichem, S.A. v. Rolabo, S.L.*, 437 F.3d 1157, 1171–72 (Fed. Cir. 2006); *Cooper v. GoldFarb*, 154 F.3d 1321, 1330 (Fed. Cir. 1998)).

Petitioner first argues that the Formula Books are unwitnessed, making them legally insufficient to corroborate Ms. Schwendimann’s testimony that she conceived of the physical image transfer article recited in claim 16 because “an unwitnessed laboratory notebook, alone, cannot

corroborate an inventor's testimony of conception." Reply 21–22 (quoting *Apator*, 887 F.3d at 1297, citing *Brown v. Barbacid*, 276 F.3d 1327, 1335 (Fed. Cir. 2002); *Procter & Gamble Co. v. Teva Pharms. USA, Inc.*, 566 F.3d 989, 998–99 (Fed. Cir. 2009)). Petitioner likewise argues the Contact Report is legally insufficient to corroborate Ms. Schwendimann's testimony regarding the peel first method because she entered the notes in the Contact Report herself, and she cannot corroborate her testimony with her own documents. Reply 24 (citing Ex. 1042, 124:18–24, 127:12–14). Petitioner also argues the Contact Report is factually insufficient to corroborate Ms. Schwendimann's testimony because Ms. Schwendimann points to two lines in the Contact Report as demonstrating her invention of the peel first method, but neither entry references a peel first method. Reply 27–28. Petitioner asserts that without an explanation from Ms. Schwendimann, the Contact Report is "untethered" to a peel first method and Ms. Schwendimann "cannot rely on her own testimony to circularly explain what the purportedly corroborating evidence is supposed to corroborate." Reply 28 (citing *Apator*, 887 F.3d at 1296–97).

Petitioner also notes that after "repeatedly testifying over the years, including in this IPR," that she conceived of the peel first method during her customer meeting on August 10, 1999, Ms. Schwendimann "changed that long-standing story in her most recent deposition in this IPR, wherein she repeatedly testified that she had performed the 'peel first' method many times in the lab *before* her meeting." Reply 26–27 n.6 (citing Ex. 2014 ¶¶ 6–7; Ex. 2017, 43:24–45:9; Ex. 1044, 137:14–17, 235:18–24, 242:2–10; Ex. 1042, 63:2–5, 79:15–22, 84:8–16). Petitioner contends this "180-degree change" in Ms. Schwendimann's story is uncorroborated and "underscores the fundamental reason for the Federal Circuit's absolute rule requiring

independent corroboration of an inventor's testimony." Reply 26–27 n.6 (citing Ex. 1042, 89:6–22, 92:11–21, 93:19–94:18).

In its Sur-reply, Patent Owner argues the Formula Books corroborate Ms. Schwendimann's deposition testimony regarding the 1996–1998 invention date of the peel first method. Sur-reply 21–23. Patent Owner contends the Formula Books are legally sufficient to corroborate Ms. Schwendimann's testimony because "[t]he law . . . holds that unwitnessed lab notebooks can corroborate inventor testimony so long as there is additional corroborating evidence," and the Contact Report constitutes such additional corroborating evidence. Sur-reply 23–24.

After considering the full record developed during trial, we agree with Petitioner that there is insufficient evidence to support Patent Owner's assertion that inventors of the '042 patent invented the subject matter of the challenged claims before the August 13, 1999 priority date of Williams.

It is undisputed that independent claim 16 recites a peel first method. Patent Owner initially attempts to establish August 10, 1999, as the invention date of the peel first method based on statements in the January 2021 Schwendimann Declaration (Ex. 2014 ¶¶ 6–10). PO Resp. 38–40. Then, in the Sur-reply, Patent Owner attempts to establish an invention date between 1996 and 1998 for the peel first method based on Ms. Schwendimann's deposition testimony about six samples in the Formula Books, purportedly showing tests "in which the backing paper was peeled from the transfer sheet first, after which the transfer sheet was applied to the t-shirt, as claimed in the '042 Patent." Sur-reply 21–23 (citing Ex. 1042, 79:10–80:15). The evidence of record, however, is insufficient to support either alleged invention date.

With regard to the August 10, 1999 date, Patent Owner attempts to corroborate Ms. Schwendimann’s declaration testimony using the Contact Report. PO Resp. 39–40. For example, in the January 2021 Schwendimann Declaration, Ms. Schwendimann testifies she “first used a dark fabric transfer sheet using the ‘peel first’ method on August 10, 1999.” Ex. 2014 ¶ 6. She also states that “[m]y invention of the ‘peel first’ method on August 10, 1999, is confirmed and documented by the Contact Report for that date.” Ex. 2014 ¶ 7. “It is well established, however, that when a party seeks to prove conception through an inventor’s testimony the party must proffer evidence, ‘in addition to [the inventor’s] own statements and documents,’ corroborating the inventor’s testimony.” *Apator*, 887 F.3d at 1295 (quoting *Mahurkar*, 79 F.3d at 1577). Ms. Schwendimann testifies that she personally entered the notes that appear in the Contact Report. Ex. 1042, 127:12–14; Ex. 2028 ¶ 8. Accordingly, we consider the Contact Report to fall within the category of the inventor’s “own statements or documents.”¹¹ *Apator*, 887 F.3d at 1295. According to the Federal Circuit’s holding in *Apator*, Patent Owner cannot rely on the Contact Report to corroborate Ms. Schwendimann’s testimony. *Id.*

¹¹ Patent Owner appears to place some significance on the fact that NuCoat “maintained” the Contact Report. PO Resp. 40. To the extent Patent Owner is arguing that the Contact Report is not Ms. Schwendimann’s own document because it is “maintained” by NuCoat, we do not consider such an argument to be persuasive. First, it is not clear what Patent Owner means by “maintained.” Second, Patent Owner has not presented any authority to support a position that the relevant inquiry into whether a document is an inventor’s own document is based on who “maintains” the document after it has been prepared, as opposed to the individual who prepared the document itself, including providing the relevant substantive information in the document. *See* PO Resp. 40.

Patent Owner's reliance on the Contact Report suffers from an additional problem. According to Patent Owner, the lines "[w]e figured out the Dark Fabric Transfer" and "we need to check into ammending [sic] our patent" in the Contact Report confirm the August 10, 1999 invention date of the peel first method. PO Resp. 40; Ex. 2018; Ex. 2014 ¶ 7. As Petitioner points out, however, these lines do not expressly refer to the peel first method. Reply 27–28. The only evidence linking these lines in the Contact Report to the peel first method is testimony from Ms. Schwendimann herself. Ex. 2018; Ex. 2014 ¶ 7. Thus, in order to understand the relevance of the corroborating evidence, we must rely on testimony from the inventor. This is analogous to the "catch-22 of corroboration" identified in *Apator*, in which the party attempted to corroborate the inventor's testimony with a document, but the document only provided corroboration with help from the inventor's testimony. *Apator*, 887 F.3d at 1296–1297. According to the Federal Circuit, "[i]t would be strange indeed to say that [an inventor], who filed the . . . affidavit that needs corroborating, can by his own testimony provide that corroboration." *Id.* at 1297 (quoting *In re NTP, Inc.*, 654 F.3d 1279, 1292 (Fed. Cir. 2011)). For this additional reason, we do not consider the Contact Report to constitute sufficient evidence corroborating Ms. Schwendimann's testimony regarding the August 10, 1999, invention date of the peel first method.

In view of the foregoing, Patent Owner has failed to sufficiently corroborate Ms. Schwendimann's testimony that she invented the peel first method on August 10, 1999.

As to the alleged 1996–1998 invention date of the peel first method, Patent Owner attempts to corroborate Ms. Schwendimann's deposition testimony with the Formula Books. Sur-reply 21–23. It is undisputed,

however, that the Formula Books are unwitnessed. Sur-reply 23; Tr. 59:12–60:6. Nevertheless, Patent Owner asserts that “[t]he law . . . holds that unwitnessed lab notebooks can corroborate inventor testimony so long as there is additional corroborating evidence,” and contends that the Contact Report constitutes “additional corroborating evidence” such that the unwitnessed lab notebooks can legally corroborate Ms. Schwendimann’s testimony. Sur-reply 23–24 (citing *Singh v. Brake*, 222 F.3d 1362, 1369 (Fed. Cir. 2000)).

We disagree. To the extent the Contact Report corroborates anything, it would be an invention date of August 10, 1999. Ex. 2018; *see also* Ex. 2014 ¶ 6 (Ms. Schwendimann’s sworn testimony that she came up with the peel first method during a customer meeting on August 10, 1999). There is no indication of an earlier invention in the Contact Report. Ex. 2018. Thus, the Contact Report does not constitute “additional corroborating evidence” of a 1996–1998 invention date, and the unwitnessed Formula Books remain the only evidence purportedly corroborating Ms. Schwendimann’s deposition testimony regarding a 1996–1998 invention date for the peel first method. According to the Federal Circuit, the unwitnessed Formula Books alone cannot corroborate Ms. Schwendimann’s testimony regarding a purported invention date between 1996 and 1998. *Apator*, 887 F.3d at 1297; *Brown*, 276 F.3d at 1335; *Procter & Gamble*, 566 F.3d at 998–99.

Patent Owner appears to argue that prior Federal Circuit cases restricting the use of unwitnessed laboratory notebooks to corroborate inventor testimony are inapplicable here. In particular, Patent Owner argues that the reason behind the corroboration requirement is to “address[] the concern that a party claiming inventorship might be tempted to describe his

actions in an unjustifiably self-serving manner in order to obtain a patent or to maintain an existing patent.” Sur-reply 23 n. 8 (quoting *Singh*, 222 F.3d at 1367). According to Patent Owner, this is not a concern here because the Formula Books were recorded by “numerous other individuals other than Ms. Schwendimann who were working at her direction” and, therefore, the unwitnessed Formula Books “bear hallmarks of reliability to the same extent as witnessed lab notebooks do.” Sur-reply 23 n.8.

Patent Owner, however, offers no authority to support the argument that unwitnessed lab notebooks, purportedly drafted by persons working at the direction of an inventor and not the inventor herself, “bear hallmarks of reliability to the same extent as witnessed lab notebooks do.” Sur-reply 23 n.8. Indeed, the laboratory notebooks in the only case Patent Owner relies upon to support its argument were eventually witnessed. *Singh*, 222 F.3d at 1369 (noting the lab notebooks in question were witnessed several years after they were made). Here, the lab notebooks were never witnessed. Further, the only testimony Patent Owner directs us to on this subject is Ms. Schwendimann’s deposition testimony “guess[ing]” that her co-inventor, Mr. Nasser, wrote one specific entry in a Formula Book. Ex. 1042, 94:20–24. This testimony does not support Patent Owner’s argument that we should consider *all* of the entries in *both* Formula Books without concern that “a party claiming inventorship might be tempted to describe his actions in an unjustifiably self-serving manner in order to obtain a patent or to maintain an existing patent.” *Singh*, 222 F.3d at 1367.

This is especially true considering Patent Owner describes the Formula Books as “lab notebooks *kept by the inventors* to document their experiments and inventions.” PO Resp. 37 (emphasis added). Likewise, in her January 2021 Declaration, Ms. Schwendimann testifies that “*we* keep a

‘Formula Book’ in which *we* record the formulas *we* make in our facilities.” Ex. 2014 ¶ 3 (emphasis added). Ms. Schwendimann provided similar testimony in her 2013 Declaration. Ex. 2003 ¶ 2 (“As part of our development efforts, we keep a ‘Formula Book’ in which we record the formulas we make in our facilities.”). In contrast to Patent Owner’s representation, these statements suggest some connection between Ms. Schwendimann herself and the information in the Formula Books, which undermines the argument that there “is not a concern here” that “a party claiming inventorship might be tempted to describe his actions in an unjustifiably self-serving manner in order to obtain a patent or to maintain an existing patent.” *Singh*, 222 F.3d at 1367; *see* Sur-reply 23.

Ms. Schwendimann’s inconsistent testimony regarding the samples in the Formula Books compounds the problem with Patent Owner’s argument regarding the reliability of the unwitnessed Formula Books. Prior to its Sur-reply, Patent Owner asserted that the samples in the Formula Book were peel last formulations. PO Resp. 38–40. This assertion was based on Ms. Schwendimann repeatedly testifying that the samples in the Formula Books were used with a peel last technique, not a peel first technique. Ex. 2003 ¶ 16–17; Ex. 2014 ¶ 4; Ex. 2017, 43:24–45:9. Ms. Schwendimann offered this testimony in a sworn affidavit in the interference proceeding involving the ’042 patent (Ex. 2003), a deposition under oath in a district court action involving the ’042 patent (Ex. 2017), and a sworn declaration in this IPR proceeding (Ex. 2014). All of this prior testimony is inconsistent with the testimony presented during Ms. Schwendimann’s March 4, 2021 deposition, in which she stated, for the first time, that some samples in the Formula Book were used in peel first tests.

In addressing this issue during the oral hearing, counsel for Patent Owner explained that up until the time she provided her deposition testimony in this proceeding, Ms. Schwendimann “had always remembered” the samples from the Formula Book were peel last formulations, but that “she was just wrong about it.” Tr. 71:19–20. But Patent Owner has not offered any evidence (other than the Formula Books themselves) to support its position that Ms. Schwendimann’s prior recollection regarding the Formula Book samples was incorrect, and her new testimony is correct. Indeed, the fact that Ms. Schwendimann testified multiple times, under oath, that these formulations were peel last formulations suggests otherwise. So does the fact that even though, in our Institution Decision, we invited Patent Owner to further develop the issue of the invention date of the peel first limitation during the trial, specifically referring to testimony in Exhibit 2003 regarding Formula Book samples (Inst. Dec. 34 (citing Ex. 2003 ¶¶ 16–17)), in the Response, Patent Owner and Ms. Schwendimann maintained their positions that the samples in the Formula Books were peel last formulations.

Thus, contrary to Patent Owner’s contentions otherwise, the facts in this case emphasize the need for evidence corroborating Ms. Schwendimann’s testimony. *Mahurkar*, 79 F.3d at 1577 (stating that the corroboration “requirement arose out of a concern that inventors testifying in patent infringement cases would be tempted to remember facts favorable to their case by the lure of protecting their patent or defeating another’s patent”); *Medichem, S.A. v. Rolabo, S.L.*, 437 F.3d 1157, 1171–72 (Fed. Cir. 2006) (“Even the most credible inventor testimony is *a fortiori* required to be corroborated by independent evidence.”).

Furthermore, Patent Owner’s reliance on the Declaration of Dr. Williams to support its argument that Williams is not prior art is

unavailing. PO Resp. 41. Dr. Williams relies on the 2013 Schwendimann Declaration to support his opinion that Ms. Schwendimann “invented her dark fabric transfer product and applied it to a dark t-shirt before me.”

Ex. 2001 ¶ 19. The testimony in the 2013 Schwendimann Declaration, however, describes a peel last method, and Dr. Williams does not otherwise address the peel first method recited in claim 16.

Thus, in the absence of sufficient evidence corroborating Ms. Schwendimann’s testimony regarding the various alleged invention dates of the peel first method recited in claim 16, we find there is insufficient evidence to support Patent Owner’s assertion that inventors of the ’042 patent invented the subject matter of the challenged claims before the August 13, 1999 priority date of Williams. We thus consider Williams to be prior art to the ’042 patent.

As noted above, it is undisputed that Williams discloses all of the limitations in independent claim 16, and claims 18–22 which depend therefrom. We have considered the evidence and arguments presented in the Petition, and agree with Petitioner that Williams discloses each limitation of claims 16 and 18–22. As a result, we find Petitioner has established, by a preponderance of the evidence, that Williams anticipates claims 16 and 18–22 of the ’042 patent.

F. Remaining Unpatentability Challenges

Having determined that Petitioner establishes by a preponderance of the evidence that claims 16–19 are unpatentable as obvious over the combined teachings of DeVries and Oez and that claims 16 and 18–22 are unpatentable as anticipated by Williams, we do not address Petitioner’s additional grounds challenging claims 16–22. *See SAS Inst. Inc. v. Iancu*, 138 S. Ct. 1348, 1359 (2018) (holding a petitioner “is entitled to a final

written decision addressing all of the claims it has challenged”); *Boston Sci. Scimed, Inc. v. Cook Grp. Inc.*, 809 F. App’x 984, 990 (Fed. Cir. 2020) (nonprecedential) (“We agree that the Board need not address [alternative grounds] that are not necessary to the resolution of the proceeding.”).

IV. PETITIONER’S MOTION TO EXCLUDE

Petitioner filed a Motion to Exclude Exhibits 2015 and 2016 (the Formula Books) in their entirety. Paper 37. We dismiss Petitioner’s motion as moot because, even without excluding these exhibits, we find Petitioner has established, by a preponderance of the evidence, that Williams anticipates claims 16 and 18–22 of the ’042 patent.

V. PETITIONER’S MOTION TO SEAL

Petitioner seeks to seal Exhibit 1044 in its entirety because the exhibit contains information that comprises a trial transcript from the Arkwright Lawsuit that was filed under seal in that case. Paper 27, 1. Petitioner’s Motion is unopposed. The parties also jointly stipulate to the entry of our default Protective Order (Paper 25). Paper 27, 1.

There is a strong public policy in favor of making information filed in an *inter partes* review open to the public, especially because the proceeding determines the patentability of claims in an issued patent and, therefore, affects the rights of the public. Under 35 U.S.C. § 316(a)(1) and 37 C.F.R. § 42.14, all papers filed in an *inter partes* review are open and available for access by the public. A party, however, may file a motion to seal confidential information, and the information is sealed pending the outcome of the motion. 37 C.F.R. § 42.54. As set forth in the Board’s Consolidated Trial Practice Guide (“CTPG”), “[t]he rules aim to strike a balance between the public’s interest in maintaining a complete and understandable file history and the parties’ interest in protecting truly sensitive information.”

CTPG 19.¹² We have reviewed Exhibit 1044, and we agree it contains confidential information. The parties' treatment of the confidential information effectively balances the parties' commercial and legal interests against the Board's strong public policy that favors making information filed in *inter partes* review proceedings open to the public. For these reasons, we find Petitioner has shown good cause for the Motion to Seal. Therefore, we enter the Board's default Protective Order (Paper 25) and grant the unopposed Motion to Seal.

As a reminder, confidential information that is subject to a protective order ordinarily becomes public forty-five (45) days after final judgment in a trial. CTPG 21–22. After final judgment in a trial, a party may file a motion to expunge confidential information from the record prior to the information becoming public in accordance with 37 C.F.R. § 42.56.

VI. CONCLUSION

After reviewing the complete record developed during the course of the trial, we conclude that Petitioner has satisfied its burden of demonstrating, by a preponderance of the evidence, that claims 16–22 of the '042 patent are unpatentable.¹³ We also dismiss Petitioner's Motion to Exclude as moot and grant Petitioner's Motion to Seal.

¹² Available at <https://www.uspto.gov/TrialPracticeGuideConsolidated>.

¹³ Should Patent Owner wish to pursue amendment of the challenged claims in a reissue or reexamination proceeding subsequent to the issuance of this decision, we draw Patent Owner's attention to the April 2019 *Notice Regarding Options for Amendments by Patent Owner Through Reissue or Reexamination During a Pending AIA Trial Proceeding*. See 84 Fed. Reg. 16,654 (Apr. 22, 2019). If Patent Owner chooses to file a reissue application or a request for reexamination of the challenged patent, we remind Patent Owner of its continuing obligation to notify the Board of any such related matters in updated mandatory notices. See 37 C.F.R. § 42.8(a)(3), (b)(2).

VII. ORDER

In consideration of the foregoing, it is hereby:

ORDERED that, Petitioner establishes by a preponderance of the evidence that claims 16–22 are unpatentable;

FURTHER ORDERED that Patent Owner’s Motion to Exclude is dismissed as moot;

FURTHER ORDERED that Petitioner’s Motion to Seal is granted and the Board’s default Protective Order shall be entered; and

FURTHER ORDERED that, because this is a Final Written Decision, parties to the proceeding seeking judicial review of the decision must comply with the notice and service requirements of 37 C.F.R. § 90.2.

In summary:

Claims	35 U.S.C. §	Reference(s)/ Basis	Claim(s) Shown Unpatentable	Claim(s) Not Shown Unpatentable
16–22	103	Asajima, Oez ¹⁴		
16–19	103	DeVries, Oez,	16–19	
16–22	103	Keino, Oez		
16–19, 21	102	Oez		
16, 18–22	102	Williams	16, 18–22	
Overall Outcome			16–22	

¹⁴ As explained above, we do not reach this ground, or the other grounds for which the last two columns of this table are blank, in view of our determination that claims 16–19 are unpatentable as obvious over DeVries and Oez, and claims 16 and 18–22 are anticipated by Williams.

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FOR PETITIONER:

Glenn E. Forbis
Matthew L. Cutler
James B. Luchsinger
Jewell N. Briggs
HARNESS DICKY & PIERCE, P.L.C.
gforbis@hdp.com
mcutler@hdp.com
bluchsinger@hdp.com
jbriggs@hdp.com

FOR PATENT OWNER:

Devan V. Padmanabhan (Reg. No. 38,262)
Michelle E. Dawson (Reg. No. 62,319)
PADAMANABHAN & DAWSON, PLLC
devan@paddalawgroup.com
michelle@paddalawgroup.com