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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

TIETEX INTERNATIONAL, LTD.,
Petitioner,

v.

PRECISION FABRICS GROUP, INC.,
Patent Owner.

Case IPR2014-01248
Patent 8,501,639 B2

Before JAMES T. MOORE, GRACE KARAFFA OBERMANN, and JO-ANNE M. KOKOSKI, *Administrative Patent Judges.*

KOKOSKI, *Administrative Patent Judge.*

FINAL WRITTEN DECISION
35 U.S.C. § 318(a) and 37 C.F.R. § 42.73

I. INTRODUCTION

Tietex International, Ltd. ("Petitioner") filed a Corrected Petition (Paper 4, "Pet.") to institute an *inter partes* review of claims 1–22 of U.S. Patent No. 8,501,639 B2 ("the '639 patent," Ex. 1001). On January 30, 2015, we instituted an *inter partes* review of claims 1–22 based on our determination that the information presented in the Petition demonstrated that there was a reasonable likelihood that Petitioner would prevail in challenging claims 1–22 as unpatentable under 35 U.S.C. § 103 as obvious over the combination of Radwanski,[1] Rowan,[2] and Murch.[3] Paper 11 ("Dec. on Inst."). Precision Fabrics Group, Inc. ("Patent Owner") filed a Patent Owner Response (Paper 13, "PO Resp."). Petitioner filed a Reply (Paper 19, "Reply").

Patent Owner filed a Motion for Observation Regarding Cross-Examination of Dr. A. Richard Horrocks (Paper 22), and Petitioner filed a Response (Paper 28). Patent Owner also filed a Motion to Exclude (Paper 23) the Declaration of Charles A. Wilkie (Ex. 1002), the Declaration of A. Richard Horrocks (Ex. 1022), and an advertisement for a HYDROKNIT® fabric disposable drop cloth (Ex. 1023). Petitioner filed a Corrected Opposition (Paper 31), and Patent Owner filed a Reply (Paper 33).

An oral hearing was held on October 26, 2015. A transcript of the hearing is included in the record. Paper 37 ("Tr.").

We have jurisdiction under 35 U.S.C. § 6(b). This Final Written Decision is issued pursuant to 35 U.S.C. § 318(a) and 37 C.F.R. § 42.73.

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[1] Radwanski, U.S. Patent No. 5,912,196, issued June 15, 1999 (Ex. 1008).
[2] Rowan, GB 2293572 A, published April 3, 1996 (Ex. 1009).
[3] Murch, U.S. Patent No. 3,934,066, issued January 20, 1976 (Ex. 1010).

For the reasons that follow, we determine that Petitioner has not shown by a preponderance of the evidence that claims 1–22 of the ’639 patent are unpatentable.

A. The ’639 Patent

The ’639 patent, titled “Thermally Protective Flame Retardant Fabric,” is directed to lightweight fabrics that provide protection from heat, flame, and electrical arc. Ex. 1001, 1:18–21. According to the ’639 patent, the claimed fabric “provides a high degree of thermal protection compared to conventional fabrics” (*id*. at 5:15–16) and is soft and flexible, yet durable enough for long-term use and “inexpensive enough to be disposable and/or suitable for limited use applications” (*id*. at 4:33–40). The fabric comprises “a substrate treated with a combination of a flame retardant agent and an intumescent agent.” *Id*. at 3:62–4:2. The ’639 patent lists a number of commercially-available flame retardants that can be used in the claimed fabric. *Id*. at 6:3–25, 6:52–7:24 (Table 2). The ’639 patent also describes that a thermal barrier is provided by an intumescent finish that chars and swells upon contact with a flame, and likewise lists a number of commercially-available intumescent finishes that can be used in the claimed fabric. *Id*. at 7:24–27, 7:50–64 (Table 3).

The ’639 patent describes a number of embodiments of the claimed fabric, including embodiments having thermal protective performance values of at least 4.5, 6.5, and 9.0 (*id*. at 5:17–22), basis weights ranging from 3.0 to 8.0 ounces per square yard (*id*. at 5:26–30), and fabric thicknesses ranging from 0.01 to 0.15 inches (*id*. at 5:33–35). The ’639 patent also describes an embodiment where “the substrate comprises a nonwoven fabric chosen from needlepunched, spunbonded, thermalbonded,

spunlaced, resin bonded, stitch bonded, and meltblown fabrics." *Id*. at 5:37–40.

Claims 1, 11, 12, and 17 of the '639 patent are independent. Claim 1 is illustrative, and is reproduced below:

> 1. A fabric consisting of a single layer of a non-woven substrate,
>
> wherein the non-woven substrate is treated with an intumescent finish comprising one or more flame retardant phosphorous compounds or nitrogen compounds,
>
> wherein the non-woven substrate is a non-woven fabric comprising cellulosic fibers and has a basis weight ranging from 3.0 to 8.0 ounces per square yard,
>
> wherein the finish is applied to the non-woven substrate in an amount ranging from 15 to 130 percent solids, based upon the weight of the non-woven substrate,
>
> wherein the single-layer, finished fabric has a thickness ranging from 0.01 to 0.15 inches and a contact thermal protective performance value of at least 4.5,
>
> wherein the non-woven substrate is a non-woven, stitchbonded fabric, and
>
> wherein the non-woven substrate comprises polyester fibers.

Ex. 1001, 12:6–23.

II. ANALYSIS

A. Claim Interpretation

We interpret claims of an unexpired patent using the "broadest reasonable construction in light of the specification of the patent in which [the claims] appear[]." 37 C.F.R. § 42.100(b). The Board, however, may not "construe claims during IPR so broadly that its constructions are *unreasonable* under general claim construction principles. . . . '[T]he

protocol of giving claims their broadest reasonable interpretation . . . does not include giving claims a legally incorrect interpretation.'" *Microsoft Corp. v. Proxyconn, Inc.*, 789 F.3d 1292, 1298 (Fed. Cir. 2015) (citation omitted). "Rather, 'claims should always be read in light of the specification and teaching in the underlying patent'" and "[e]ven under the broadest reasonable interpretation, the Board's construction 'cannot be divorced from the specification and the record evidence.'" *Id.* (citations omitted).

In the Decision on Institution, we interpreted the claim term "intumescent" to mean "a substance that swells and chars upon exposure to heat or flame." Dec. on Inst. 6. The parties do not dispute this interpretation, and we see no reason to modify it in light of the record developed at trial.

B. Level of Ordinary Skill in the Art

Petitioner and Patent Owner each propose a particular level of ordinary skill in the art. Ex. 1002 ¶ 45; Ex. 2006 ¶ 50. In light of the evidence before us, we find that the references themselves represent the level of ordinary skill in the art, and that we need not explicate it further. *See Okajima v. Bourdeau*, 261 F.3d 1350, 1355 (Fed. Cir. 2001) (the level of ordinary skill in the art usually is evidenced by the references themselves); *In re GPAC, Inc.*, 57 F.3d 1573, 1579 (Fed. Cir. 1995) (finding that the Board of Patent Appeals and Interferences did not err in concluding that the level of ordinary skill in the art was best determined by the references of record).

C. Obviousness of Claims 1–22 over Radwanski, Rowan, and Murch

Petitioner asserts that claims 1–22 are unpatentable under 35 U.S.C. § 103 over the combination of Radwanski, Rowan, and Murch. Pet. 11–40;

Reply 3–15. Petitioner explains how the combination of Radwanski, Rowan, and Murch discloses or suggests the claimed subject matter, and also relies on the Declaration of Charles A. Wilkie ("Wilkie Declaration," Ex. 1002), and the Declaration of Dr. A. Richard Horrocks ("Horrocks Declaration," Ex. 1022). Patent Owner disagrees with Petitioner's assertions and relies on the Declaration of Gajanan S. Bhat, Ph.D. ("Bhat Declaration," Ex. 2006), the Declaration of A. Frank Baldwin, Jr. (Ex. 2016), the Declaration of Tom Taylor (Ex. 2017), and the Declaration of Allen Podratsky (Ex. 2020). PO Resp. 25–59.

To prevail on its patentability challenge, Petitioner must establish facts supporting its challenge by a preponderance of the evidence. 35 U.S.C. § 316(e); 37 C.F.R. § 42.1(d). A claim is unpatentable under 35 U.S.C. § 103 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 to a person having ordinary skill in the art to which the subject matter pertains. *KSR Int'l Co. v. Teleflex, Inc.*, 550 U.S. 398, 406 (2007). A party that petitions the Board for a determination of obviousness must show that "a skilled artisan would have been motivated to combine the teachings of the prior art references to achieve the claimed invention, and that the skilled artisan would have had a reasonable expectation of success in doing so." *Procter & Gamble Co. v. Teva Pharms. USA, Inc.*, 566 F.3d 989, 994 (Fed. Cir. 2009) (citing *Pfizer, Inc. v. Apotex, Inc.*, 480 F.3d 1348, 1361 (Fed. Cir. 2007)).

1. Overview of Radwanski

Radwanski is directed to flame retardants that include solubilized phosphorous. Ex. 1008, 1:5–7. Radwanski states that the described flame

retardant composition "prevents synergistic flaming from the combination of cellulose and polypropylene fibers" when applied to a high-pulp content nonwoven web. *Id*. at 4:56–59. Radwanski further states that ammonium phosphates "are the most effective" flame retardants for treating such high-pulp content nonwoven webs. *Id*. at 5:64–67. The Radwanski flame retardant composition, which Radwanski refers to as the "Absorbent Flame Inhibitor" or "AFI" composition, is an ammonium phosphate-based composition with specified soluble solids content. *Id*. at 6:64–7:14. The AFI composition utilizes "the complimentary chemistries of various commercially available" ammonium phosphate-based flame retardants, and avoids monovalent and divalent cations that denature ammonium phosphate. *Id*. at 7:27–29.

Radwanski states that the AFI composition can be applied to permeable sheets formed by meltblowing, spunbonding, and bonded-carded web-making processes, among others. *Id*. at 9:33–48. The permeable sheet can be formed from thermoplastic or thermoset polymers. *Id*. at 10:2–3. The permeable sheet can also be nonwoven web made of a mixture of two or more different fibers. *Id*. at 10:14–16.

2. Overview of Rowan

Rowan is directed to a fire and heat-resistant fabric that includes a laminate of first and second sheets of material connected together, where each sheet comprises a mixture of an organic intumescent filler and an adhesive. Ex. 1009, Abstract. The organic intumescent filler and adhesive mixture is applied to a first side of each sheet of material in liquid form and partially penetrates into the sheet. *Id*. at 2. Upon drying, each sheet of material will have "an inner layer formed of just the mixture, an intermediate

layer formed of that part of the sheet of material that has been penetrated by the mixture, and an outer layer formed of that part of the sheet of material that has not been penetrated by the mixture." *Id*. In the Rowan fabric, the first and second sheets are positioned such that the inner layers are touching, and are at least partially connected together by the adhesive in the mixture. *Id*.

Rowan states that the first and second sheets of material preferably are non-woven fabric structures. *Id*. at 5. Rowan states that "[p]referably, the first and the second sheets of material contain cellulose-based organic fibres, together with a phosphorous-based flame retardant" and an organic intumescent filler comprising an ammonium phosphate/melamine/pentaerythritol system. *Id*. at 8.

3. Overview of Murch

Murch is directed to fire-retardant intumescent laminate systems that are useful as a protective overlay for combustible or heat-deformable substrates such as wood, plywood, fiberboard, and organic foams. Ex. 1010, 1:5–12. Murch describes a system that "comprises an intumescent layer comprising a porous sheet material which is impregnated with an intumescent component and a flexible protective layer adhered to the outer surface of the intumescent layer." *Id*. at 2:18–23. The porous sheet material can be comprised of natural fibers such as cellulose and wool, inorganic fibers such as metallic fibers, or synthetic polymer fibers such as polyimide and polyester. *Id*. at 4:15–20. The porous sheets range in thickness of from about 5 mils to 1.0 inch. *Id*. at 4:6–11.

4. Analysis

Petitioner contends that the combination of Radwanski, Rowan, and Murch discloses all of the limitations of claim 1 except a contact thermal protective performance value of at least 4.5. Pet. 12–17, 30–32. For example, Petitioner contends that Radwanski discloses a single-layer, non-woven substrate that may comprise cellulosic fibers, Rowan discloses applying a phosphorous-containing intumescent finish to a stitch-bonded nonwoven fabric, and Murch discloses a non-woven substrate comprising cellulosic and polyester fibers, coated with an intumescent finish, having a thickness from about 5 mils to 1.0 inch. *Id.* at 12–15, 30–32.

With respect to the thermal protective performance ("TPP") limitation, Petitioner contends that

> it is noted that during prosecution of the '639 patent's related parent application No. 12/172,681, this Board's predecessor, The Board of Patent Appeals and Interferences, previously concluded in Appeal No. 2011-001870 that one of ordinary skill in the art would have found it obvious to construct a flame retardant, intumescent fabric in accordance with the teachings of the prior art with a thermal protective performance value greater than 4.5. ("USPTO Appeal Decision[,]" Ex. 1011 p.3:17 through p.4:2)[.]

Pet. 16; *see id.* at 31. According to Petitioner, a person having ordinary skill in the art would combine the teachings of Radwanski, Rowan, and Murch "because each of these references discloses nonwoven, cellulose-containing webs that are coated with phosphorous-containing flame retardants." *Id.* at 17 (citing Ex. 1002 ¶ 102).

Patent Owner argues that none of Radwanski, Rowan, or Murch discloses a TPP of at least 4.5 as required by claim 1. PO Resp. 27. Patent Owner argues that Petitioner's reliance on the Board's decision in Appeal No. 2011-001870 ("Appeal Decision") "is misleading and mischaracterizes

the prosecution history." *Id.* at 28. Patent Owner notes that, after the Appeal Decision was entered, Patent Owner filed a request for continued examination, the appeal was withdrawn, and prosecution of the parent application was reopened. *Id.* at 15, 28; *see also* Ex. 2002,[4] 298 ¶ 2 ("Since this application is eligible for continued examination under 37 CFR 1.114 and the fee set forth in 37 CFR 1.17(e) has been timely paid, the appeal has been withdrawn pursuant to 37 CFR 1.114 and prosecution in this application has been reopened pursuant to 37 CFR 1.114."). Patent Owner also argues that "the suggestion in the Appeal Decision that prior art fabrics suggested the thermal protective performance of the claims is misplaced because the conventional fabrics described in the '639 patent were woven fabrics with different constructions from the fabrics of the claims of the '639 patent." PO Resp. 29.

We are not persuaded by Petitioner's argument that the Appeal Decision establishes "that one of ordinary skill in the art would have found it obvious to construct a flame retardant, intumescent fabric in accordance with the teachings of the prior art" with the claimed TPP value of at least 4.5. Pet. 16. During examination of a patent application, a *prima facie* case of either anticipation or obviousness is established "[w]here the claimed and prior art products are identical or substantially identical in structure or composition, or are produced by identical or substantially identical processes." MPEP § 2112.01; *see also In re Brown,* 459 F.2d 531, 535 (CCPA 1972) ("[W]hen the prior art discloses a product which reasonably appears to be either identical with or only slightly different than a product

[4] The cited page numbers in Exhibit 2002 refer to the numbers added by Patent Owner at the bottom of each page.

claimed in a product-by-process claim, a rejection based alternatively on either section 102 or section 103 of the statute is eminently fair and acceptable. As a practical matter, the Patent Office is not equipped to manufacture products by the myriad of processes put before it and then obtain prior art products and make physical comparisons therewith."). Once the examiner provides a basis for believing that the applicant's claimed product and the prior art products are the same, the burden shifts to the applicant to show they are not, and the *prima facie* case can be rebutted by evidence showing that the prior art products do not necessarily possess the characteristics of the claimed product. *See In re Spada*, 911 F.2d 705, 709 (Fed. Cir. 1990).

In the examination of Application No. 12/172,681 (which led to the Appeal Decision), the Examiner recognized that the cited prior art did not disclose the TPP value, but found that, because the structure of the primary reference "is the same as the claimed structure, it is reasonable to presume that the structure of [the primary reference] would necessarily possess the claimed properties" when combined with the secondary reference. Examiner's Answer (8/13/10), 6. In an *inter partes* review, however, the burden of proof is on the petitioner to prove unpatentability by a preponderance of the evidence, and that burden never shifts to the patent owner. *Dynamic Drinkware, LLC v. National Graphics, Inc.*, 800 F.3d 1375, 1378 (Fed. Cir. 2015).

Thus, in order to prevail, Petitioner must provide evidence establishing that the claimed TPP values are inherent in the prior art. Petitioner cannot, as an examiner can, establish unpatentability of the challenged claims based on the presumption that the structure of fabric that

results from the combination of Radwanski, Rowan, and Murch would necessarily possess the claimed properties. Allowing Petitioner to rely solely on a presumption of inherency would improperly shift the burden to Patent Owner to establish that the claimed properties are not necessarily present in the prior art. Therefore, we are not persuaded that the Appeal Decision establishes "that one of ordinary skill in the art would have found it obvious to construct a flame retardant, intumescent fabric in accordance with the teachings of the prior art" with the claimed TPP value of at least 4.5 as Petitioner contends. Pet. 16.

Patent Owner also argues that Petitioner has not established that the claimed TPP value is inherently disclosed by Radwanski, Rowan, Murch, or the combination thereof. PO Resp. 30–32. According to Patent Owner, "Petitioner does not explain or support, with specific citations, why fabrics made by the combination ***necessarily*** would have the claimed TPP" values and "does not address specific differences of the structures of the fabrics of its combination of references and the fabric structure of the claims of the '639 patent." *Id.* at 31–32. Additionally, Patent Owner has placed the testimony of Dr. Bhat into the record, which asserts the view that the combination of Radwanski, Rowan, and Murch would not be expected to have the claimed properties. *Id.* at 31 (citing Ex. 2006 ¶¶ 127–165, 192–278, 320–340).

Petitioner contends that the TPP value "is a non-structural characteristic of a fabric dictated by the construction, weight, thickness, materials, and any flame retardant treatment of the fabric" and thus "relates to a functional rather than to a structural characteristic[]." Pet. 16. In its Reply, Petitioner further contends that "the TPP test, and its related thermal

protective performance efficiency, measures the performance of a material to protect a wearer against a defined level of burn injury" and, therefore, TPP "is determined by the structure of the material and any treatment of the material that increases the general protective characteristics of the material." Reply 7. According to Petitioner, the claimed TPP value "would be inherent in any fabric having the recited physical characteristics." *Id.* at 8. As support, Petitioner relies on Dr. Horrocks's testimony that

> [t]he common denominators that allow a material to be an effective thermal barrier fabric are thickness of the fabric, the amount of air entrapped within the fabric, and the ability of the fabric to retain a sufficient level of entrapment during exposure to heat. If an appropriate material structure is employed to create a thermally protective barrier, then the TPP and other heat tests set forth in the '639 patent will be necessarily met. In other words, it is the material structure and any treatment of the material will result in acceptable performance results such as TPP values. Materials that have the necessary structure or treatment will necessarily meet the performance tests set forth in the '639 patent.

Ex. 1022 ¶ 17.

None of the analysis in the Horrocks Declaration, however, was included with the Petition, which was supported solely by the Wilkie Declaration. For example, Dr. Horrocks dedicates five paragraphs of his Declaration to discussing why the claimed TPP value is a necessary result of the structure and treatment of the material tested. Ex. 1022 ¶¶ 15–19. At the oral hearing, when asked to identify the evidence on which Petitioner is relying to establish inherency, Petitioner's counsel pointed to the Horrocks Declaration and stated that Dr. Horrocks's opinion that the claimed TPP value is inherent in the prior art is based on "over 30 years of experience in the field" and his awareness of TPP values. Tr. 13:3–14:15, 36:23–25. In

contrast, in support of the Petition, Dr. Wilkie testifies that "[t]he Contact Thermal Protective Performance Value ('TPP') is a non-structural characteristic of a fabric dictated by the construction, weight, thickness, materials, and any flame retardant treatment of the fabric." Ex. 1002 ¶ 104. Neither the Petition nor the Wilkie Declaration provides further analysis regarding whether the claimed TPP values are inherent in the fabric resulting from the combination of Radwanski, Rowan, and Murch.

Rule 42.22(a)(2) provides that a petition must include "[a] full statement of the reasons for the relief requested, including a detailed explanation of the significance of the evidence including material facts, and the governing law, rules, and precedent." 37 C.F.R. § 42.22(a)(2). Rule 43.23(b) provides that "[a] reply may only respond to arguments raised in the corresponding . . . patent owner response." *Id.* § 42.23(b). Practice relating to replies is addressed in the Office Patent Trial Practice Guide:

> While replies can help crystallize issues for decision, a reply that raises a new issue or belatedly presents evidence will not be considered and may be returned. The Board will not attempt to sort proper from improper portions of the reply. Examples of indications that a new issue has been raised in a reply include new evidence necessary to make out a *prima facie* case for the patentability or unpatentability of an original or proposed substitute claim, and new evidence that could have been presented in a prior filing.

Office Patent Trial Practice Guide, 77 Fed. Reg. 48,756, 48,767 (Aug. 14, 2012).

In our judgment, Petitioner's arguments and evidence in the Reply are outside the scope of a proper reply because they do more than merely address Patent Owner's argument that Petitioner did not establish that fabrics made by the combination inherently would have the claimed TPP

value; rather, they attempt to provide new evidence that was not set forth clearly in the Petition as to why the fabric resulting from the combination of Radwanski, Rowan, and Murch necessarily would have the claimed TPP values. Because Petitioner waited until the Reply to serve this evidence on Patent Owner, Patent Owner was denied the opportunity to file responsive evidence. Consideration by the Board of the arguments in the Reply and evidence presented in the Horrocks Declaration in support thereof would be unfair to Patent Owner. Petitioner could have presented this argument and evidence with the Petition, and has not contended or offered any evidence to show otherwise.

Because Petitioner belatedly presented these new arguments and evidence to make its case that the TPP value is dictated by the structure of the fabric, we decline to consider the portions of the Reply and the Horrocks Declaration on this issue. *See* Office Trial Practice Guide, 77 Fed. Reg. at 48,767. Patent Owner had a chance to, and in fact did, cross-examine Dr. Horrocks, but had no further briefing opportunity to challenge Petitioner's evidence. Although Patent Owner did file observations regarding the cross-examination of Dr. Horrocks, such observations are not designed for submitting substantive arguments. *See id.* at 48,768 ("An observation (or response) is not an opportunity to raise new issues, re-argue issues, or pursue objections."). Considering the new arguments and evidence at this late stage would not serve the interests of justice. We have, however, reviewed and considered the arguments in the Petition and evidence therein, and are in agreement with Patent Owner that Petitioner has not provided adequate explanation or evidence to support its contention that the claimed TPP values are inherent in the prior art.

In order to rely on inherency to establish the existence of a missing claim limitation in an obviousness analysis, "the limitation at issue must necessarily be present, or the natural result of the combination of elements explicitly disclosed by the prior art." *PAR Pharma, Inc. v. TWI Pharmas., Inc.*, 773 F.3d 1186, 1195–96 (Fed. Cir. 2014). Neither Petitioner nor Dr. Wilkie provide sufficient objective evidence or analysis demonstrating that the claimed TPP values were necessarily present in the prior art. Petitioner and Dr. Wilkie simply state that the fabric resulting from the combination of Radwanski, Rowan, and Murch inherently would have the properties necessitated by the construction of that fabric, without providing sufficient and credible explanation as to why that would be the case. Pet. 16; Ex. 1002 ¶ 104.

For example, Dr. Wilkie states that the TPP value "is a non-structural characteristic of a fabric dictated by the construction, weight, thickness, materials, and any flame retardant treatment of the fabric," but does not expound upon the reasons why a person skilled in the art would understand that to mean that the claimed TPP values are inherent in the fabric resulting from the combination of Radwanski, Rowan, and Murch. Ex. 1002 ¶ 104. As described by the '639 patent, the TPP test is not a simple measurement or calculation based on the properties of the fabric; it includes mounting the fabric sample in a holder positioned above a heat source, and measuring the heat transfer through the fabric using a calorimeter placed above the sample. Ex. 1001, 2:14–20. The rate of temperature rise is used in conjunction with the calorimeter constants to compute the heat flux received, and the TPP value "is calculated as the product of exposure energy heat flux and time to second degree burn." *Id.* at 2:22–32. There is no indication in the '639

patent that the TPP value of a fabric can be predicted or assumed based on its composition, and neither Petitioner nor Dr. Wilkie provide sufficient objective evidence to show otherwise. Based upon the evidence presented, we find that Dr. Wilkie's opinions are not persuasive as they are not supported by the evidence of record. *See* 37 C.F.R. § 42.65(a) ("Expert testimony that does not disclose the underlying facts or data on which the opinion is based is entitled to little or no weight."); *Ashland Oil, Inc. v. Delta Resins & Refractories, Inc.*, 776 F.2d 281, 294 (Fed. Cir. 1985) (stating a lack of objective support for an expert opinion "may render the testimony of little probative value in [a patentability] determination").

Consequently, we are not persuaded that Petitioner has demonstrated that the recited TPP value is a property inherent in the fabric that results from the combination of Radwanski, Rowan, and Murch. Petitioner instead assumes that is the case and asserts, on that basis, that the combination of Radwanski, Rowan, and Murch meets the limitation. But in the claims at issue, the TPP value is not simply a property possessed by any fabric that otherwise satisfies the structural limitations. Rather, the TPP value is recited as a limitation on what fabrics fall within the scope of the claims. Petitioner does not establish that the fabric resulting from the combination of Radwanski, Rowan, and Murch necessarily must be among these.

After considering Petitioner's and Patent Owner's positions, as well as their supporting evidence, we determine that Petitioner has not shown, by a preponderance of the evidence, that claim 1 of the '639 patent, and claims 2–10, 13–16, and 19–22 that depend, directly or indirectly, therefrom, would have been obvious over the combined teachings of Radwanski, Rowan, and Murch. Independent claims 11, 12, and 17 also require a TPP value of at

least 4.5. Ex. 1001, 12:47–13:20, 14:1–18. Therefore, for the reasons set forth above, we also determine that Petitioner has not shown, by a preponderance of the evidence, that claims 11, 12, and 17, and dependent claim 18, would have been obvious over the combination of Radwanski, Rowan, and Murch.

D. Secondary Considerations of Non-obviousness

Patent Owner contends that secondary considerations of non-obviousness, including unexpected results, long-felt but unsolved need, and commercial success of the patented product "compel a determination of non-obviousness." PO Resp. 49; *see id.* at 49–59. As discussed above, we find that Petitioner has not established that claims 1–22 of the '639 patent would have been obvious over the combination of Radwanski, Rowan, and Murch. Thus, we need not address Patent Owner's evidence regarding secondary considerations of non-obviousness.

III. PATENT OWNER'S MOTION TO EXCLUDE

Patent Owner moves to exclude Exhibits 1002 (Wilkie Declaration), 1022 (Horrocks Declaration), and 1023. Paper 23, 2–15. Because our Decision does not rely on Exhibits 1022 and 1023, we dismiss Petitioner's Motion to Exclude as to those exhibits as moot.

Patent Owner seeks to exclude the Wilkie Declaration on the theory that Dr. Wilkie is not qualified as an expert under Federal Rule of Evidence 702 ("FRE 702"). Paper 23, 2–7; Paper 33, 1–4. FRE 702 provides that a witness qualified as an expert by knowledge, skill, training, or education may testify in the form of an opinion if (a) the expert's knowledge will help the trier of fact to understand the evidence or to determine a fact in issue, (b)

the testimony is based upon sufficient facts or data, (c) the testimony is the product of reliable principles and methods, and (d) the witness has applied the principles and methods reliably to the facts of the case. Testimony on the issue of unpatentability proffered by a witness who is not "qualified in the pertinent art" generally is not admissible under FRE 702. *Sundance Inc. v. Demonte Fabricating Ltd.*, 550 F.3d 1356, 1363–654 (Fed. Cir. 2008). In determining who is qualified in the pertinent art under FRE 702, we need not find a complete overlap between the witness's technical qualifications and the problem confronting the inventor or the field of the endeavor. *See SEB S.A. v. Montgomery Ward & Co., Inc.*, 594 F.3d 1360, 1372–73 (Fed. Cir. 2010) (upholding admission of the testimony of an expert who admittedly lacked expertise in the design of the patented invention, but has experience with materials selected for use in the invention).

Patent Owner argues that Dr. Wilkie "is not a person of ordinary skill in the art or an expert in the textile art of the '639 patent." Paper 23, 2. Patent Owner argues that Dr. Wilkie testified that he has no experience working on textiles, he is "unfamiliar with the fabrics discussed in the '639 patent and the prior art references discussed in the Wilkie Declaration," and he "is also unfamiliar with the industry-standard values that are discussed and claimed in the '639 patent," including TPP. *Id.* at 5. According to Patent Owner, "[b]ecause Dr. Wilkie does not possess at least ordinary skill in the pertinent art and is not an expert in the relevant art, he cannot aid the Board in determining" obviousness or any of the underlying technical issues. *Id.* at 6 (citing *Sundance*, 550 F.3d at 1364).

Petitioner responds that "Dr. Wilkie's testimony can be considered if his testimony would help the Board, if he is 'qualified in the pertinent art' or

if his technical qualifications have at least some overlap with the problem addressed by the '639 patent." Paper 31, 5. Petitioner contends that "the nature of the problem confronted by the '639 patent was to impart thermal protection and flame retardancy to known substrates," and thus "the flame retardancy of the claimed intumescent coatings are clearly within the 'pertinent art' relevant to the '639 patent as they are the basis for creating the claimed flame retardant fabrics." *Id.* at 6. Petitioner notes that Dr. Wilkie "has over forty years of experience in research and education in fields pertinent to flame retardancy" and "[h]is entire career has been devoted to the field of flame and fire retardant chemicals." *Id.* at 7. Therefore, according to Petitioner, "Dr. Wilkie's declaration is, indeed, helpful to consideration of the issues here and, thus, admissible under FRE 702." *Id.* at 8.

We are not persuaded by Patent Owner's arguments. To testify as an expert under FRE 702, a person need not be a person of ordinary skill in the art, but rather "qualified in the pertinent art." *Sundance*, 550 F.3d at 1363–64; *SEB*, 594 F.3d at 1372–73. The '639 patent states that "[t]he present invention relates to a thermally protective, flame retardant fabric." Ex. 1001, 1:17–18. It also states that, "to overcome the drawbacks of the prior art . . . one aspect of the invention relates to a fabric comprising a substrate treated with a combination of a flame retardant and an intumescent agent." *Id.* at 3:60–64. The '639 patent discusses the types of finishes that can be used to render the claimed fabrics flame retardant, and the features that make an effective flame retardant. *Id.* at 6:3–49. The '639 patent also summarizes how an intumescent finish provides a thermal barrier to the fabric by charring and swelling upon contact to flame. *Id.* at 7:24–48.

Dr. Wilkie's qualifications, as summarized in his curriculum vitae (Ex. 1002, App. A), qualify him to give expert testimony on the subject of flame retardancy. He possesses a Bachelor of Science degree in chemistry and a Ph.D. in inorganic chemistry, and testifies that his "present research interests fall in the realm of fire retardancy (i.e., flame retardancy)." Ex. 1002 ¶¶ 3, 7; *see also id.* at App. A, 3 (research interests include flame retardancy of polymers). Dr. Wilkie has published extensively in the field of flame retardancy, and is a named inventor on three patents related to fire retardancy. *Id.* ¶¶ 8–12; *see id.* at App. A, 10–52.

Moreover, to the extent that Dr. Wilkie is more familiar with flame retardancy and less familiar with textiles generally, or to the extent that Dr. Wilkie's testimony is inconsistent or unsupported, we weigh Dr. Wilkie's testimony accordingly, taking into account the extent of his expertise in these areas. *See, e.g.*, *Yorkey v. Diab*, 601 F.3d 1279, 1284 (Fed. Cir. 2010) (holding the Board has discretion to give more weight to one item of evidence over another "unless no reasonable trier of fact could have done so"); *In re Am. Acad. of Sci. Tech Ctr.*, 367 F.3d 1359, 1368 (Fed. Cir. 2004) ("[T]he Board is entitled to weigh the declarations and conclude that the lack of factual corroboration warrants discounting the opinions expressed in the declarations."). Under these circumstances, we decline to exclude the Wilkie Declaration.

Accordingly, we deny Patent Owner's Motion to Exclude in relation to Ex. 1002.

IV. CONCLUSION

For the reasons given, we are not persuaded that Petitioner has shown by a preponderance of the evidence that claims 1–22 of the ’639 patent would have been obvious over the combination of Radwanski, Rowan, and Murch.

V. ORDER

In consideration of the foregoing, it is

ORDERED that Petitioner has not shown by a preponderance of the evidence that claims 1–22 of the ’639 patent are unpatentable;

FURTHER ORDERED that Patent Owner’s Motion to Exclude (Paper 23) is *dismissed-in-part* and *denied-in-part*; 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.

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